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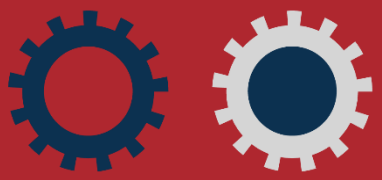

BSACI 2021

Accepted Abstracts

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O01

Trends in Allergic Rhinitis prevalence amongst UK adults between 2010-2019

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Objectives

- To assess the trends in annual lifetime point prevalence estimates of General practitioner (GP) diagnosed ARC between 2010 and 2019 amongst UK adults (aged 18 years or over)
- To assess odds of ARC prevalence based on age, gender and ethnicity as independent variables

Method

We obtained a longitudinal cohort of all patients included in The Health Improvement Network (THIN) database between 1st January 2010 and 1st January 2019. THIN contains coded information for more than 15 million patients from 787 UK primary care general practices, including patient demographics, symptoms, diagnoses, drug prescriptions, consultations, and laboratory test results. Participants were considered eligible one year after registration with an eligible general practice.

Annual point prevalence of ARC was estimated for each year. Using age categories, sex and ethnicity as independent variables, a logistic regression analysis was carried out for the year 2018.

Results

There were, on average, 3,358,338 (± 679,041) adults included in the database per year between 2010-2019. There was a year on year increase in ARC prevalence from 11.65% (95%CI:11.62-11.68) in 2010 to 13.1% (13.03-13.12) in 2019 amongst UK adults. Prevalence was highest in the 20-30 year age group.

Women were more likely to have ARC than men [OR 1.11(1.11-1.12) p<0.001]. Caucasians had the lowest prevalence of ARC compared with other ethnic groups. South Central and West Midlands regions of England had the highest prevalence of the condition in the UK.

Adults with ARC had very high odds of having concomitant diagnosis of asthma. They also had higher odds of being diagnosed with eczema, urticaria, drug allergy, food allergy and anaphylaxis.

Conclusions

The prevalence of GP diagnosed ARC amongst UK adults is high (over 10%) and increasing. Non Caucasians and women are more likely to be diagnosed with ARC. The odds of being diagnosed with other allergies is increased in these individuals.

O02

Development and validation of a mobile clinical decision support tool for the diagnosis of drug allergy

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Objectives

The aim of this project was to develop and validate a questionnaire-based algorithm built in a mobile application to support clinicians in collecting accurate history of previous reactions and diagnosing drug allergy appropriately.

Method

A survey was completed by 164 medical and nonmedical prescribers to understand barriers to best practice. Based upon the survey recommendations; we created a 10-item questionnaire-based algorithm to allow classification of drug allergy history in line with the National Institute for Health and Care Excellence guidelines on drug allergy. The algorithm was incorporated into a mobile application and retrospectively validated using anonymised clinical databases at a regional Immunology and Dermatology Centres in Manchester, UK.

Results

The important findings from our survey: 55.2% of prescribers (95%CI 47-63.4%) thought that it is not possible to draw a firm conclusion based on history alone and 59.4% (95%CI 51.4-67.5%) felt that, regardless of the details of the penicillin allergy history, they will avoid all beta-lactams. A Drug Allergy mobile application was developed and retrospectively validated revealing a low risk for misclassification of outcomes: NPV (100%), Sensitivity (100%), PPV (85%) and Specificity (83%).

Conclusions

Perceived lack of time and preparedness to collect an accurate drug allergy history appear to be important barriers to appropriate antimicrobial prescribing. The Drug Allergy App may represent a useful decision support tool to diagnose drug allergy correctly and support appropriate antibiotic prescribing.

O03

COVID-19 Vaccines and Reported Allergic Reactions: Suggested Algorithm for Use at Vaccination Hubs

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Objectives

The MHRA (Medicines and Healthcare Products Regulatory Agency) emergency use authorization of three COVID-19 vaccines (Pfizer BioNTech on 2nd December 2020, Oxford AstraZeneca on 30th December 2020 and Moderna on 8th January 2021) was a landmark in the pandemic response for British people. Unfortunately, there were few reported allergic reactions from day one of the national rollout that have raised public concern. Hence, these reactions have led to a closer review of the way we may deliver the COVID-19 vaccines safely at various vaccination hubs.

Method

An algorithm was developed to allow risk stratifying individuals prior to their first &/or second dose. The screening questions address MHRA guidelines and are accompanied by a "Frequently Asked Questions" document that written and updated frequently by a multidisciplinary team. The algorithm may trigger referral to allergy service for virtual review based upon individual's previous medical history. Following a virtual allergy review, a written advice would follow to allow safe administration of COVID-19 vaccines for those individuals with reported previous allergies.

Results

More than 44000 staff at North Care Alliance (NCA) has been vaccinated at NCA vaccination hubs as of early March 2021. Only over 100 staff were referred to allergy service. All 100 individuals underwent virtual allergy assessments. Over 10 individuals underwent Skin prick testing (SPT) with (Pfizer BioNTech and Oxford AstraZeneca vaccines) prior to their vaccinations; All SPTs were negative and subsequently all staff were vaccinated safely with no reported severe allergic reactions.

Conclusions

Using a simple algorithm at vaccination hubs with easy access to virtual allergy clinics allowed more individuals to receive COVID-19 vaccines safely despite their previous allergies, and provided more confidence to vaccinators at various vaccination hubs within NCA.

O04

Ratio of total IgE to PruP3 value is associated with clinical severity of Lipid Transfer Protein Allergy in the West of Scotland Anaphylaxis Service.

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Objectives

With emerging data on LTP allergy in Northern Europe, we aim to interrogate clinical and molecular signature of LTP allergy in a cohort of patients diagnosed through the West of Scotland Anaphylaxis Service (WSAS).

Method

We interrogated the WSAS records between 2017–present to identify demographics and clinical spectrum of LTP allergy, alongside clinical utility of PruP3 specific IgE testing and the use of objective tests (Total IgE to PruP3 ratio) in predicting severity or pattern of clinical reactions.

Results

We identified 35 patients diagnosed with LTP allergy. Patient group included 15 male and 20 female patients, with average age of 32 (±10.2) years. Majority of patients had prior diagnoses of atopy (85.6%), particularly hay fever (62.9%).

Clinical presentations included 65.7% patients with oral allergy syndrome, while 88.5% had systemic symptoms and 57.1% had anaphylaxis. Among patients with systemic reactions, 40% had delayed reaction by median of 60 min (40 - 240 min). Reactions were most commonly provoked by consumption of rosacea fruit (66%) or nuts (42.9%). Regardless of clinical trigger for LTP allergy, 94.3% of patients had positive PruP3 specific IgE on serum testing. Higher PruP3 serum values were associated with severe reactions, such as anaphylaxis (5.9±5.4kU/L in mild cases vs 14.4±16.9 in the anaphylaxis group). Reciprocally raised total IgE was found predominantly in patients with mild symptoms, with significant difference in the ratio of total IgE to PruP3 (1106±1441 in mild cases vs 109.3±164.3 in patients with anaphylaxis, p=0.01).

Conclusions

Patients diagnosed with LTP allergy in WSAS presented with a spectrum of clinical features and were unified by predominantly positive PruP3 serum testing. Severity of reaction was associated with higher PruP3 values and lower total IgE levels, thus identifying a Total IgE to PruP3 ratio as a useful serological marker in this cohort.

O05

IgE stewardship: requesting food allergy screening panel

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Objectives

IgE testing is an indispensable tool for the diagnosis and management of patients with food allergies. However, requesting an IgE food panel test in the absence of clinically relevant symptoms may have negative consequences.

Method

We retrospectively investigated data from all positive (>0.35 kUA/L) food screening (egg white, cow's milk, codfish, wheat, soya bean, soy PR-10) results requested from primary care between January-December 2019 and analysed in our Immunology Laboratory by ImmunoCAP (ThermoFischer). Demographics, presence of a referral to an allergy service, clinical details of these patients together with causes and consequences of these blood test requests have been reviewed.

Results

Three hundred forty five food screening test have been requested within the indicated time interval. Eighty-seven patients (mean age 17±15) had positive results. Their total IgE was 1138 ±1529 kU/L (mean±SD). Majority of all requests (54%) had also further food specific IgE test. Among those patients with a positive food screening results, only 43% (n=37) have been referred to an allergy clinic and only 5% of those referred had clinical symptoms to justify the need for this test to be requested. Test results were causing a dietary restriction in 27% of patients, this was more frequent in adult population (p=0.017). The main reason for these tests to be requested was atopic dermatitis (46%), other reasons were: food allergy (16%), urticaria (16%), chronic respiratory symptoms (8%), other skin lesions (5%) and gastric symptoms (3%), no reason was found in 5%.

Conclusions

In our audit, majority of patients with positive food screening tests were not referred to allergy services. Incompatible clinic history for requesting these tests and avoidance of foods as a result of screening were common among those referred. Food allergy screen panels may cause anxiety and confusion in patients and have a negative impact on healthcare resources.

O06

The detrimental clinical associations of anxiety and depression in a Difficult-to-Treat Asthma Cohort

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Objectives
To better understand the clinical impact of psychological comorbidities on difficult asthma outcomes.

Method
Using real-world data, we retrospectively phenotyped patients from the Wessex AsThma CoHort of difficult asthma (N=441) using clinical diagnoses of anxiety alone, depression alone, and dual anxiety and depression, against those without psychological comorbidities (controls). Additionally, we utilized Hospital Anxiety and Depression scales (HADS) to stratify patients by their self-reported severity of psychological distress.

Results
Psychological comorbidities were associated with worse disease-related questionnaire scores. Additionally, the three psychological comorbidity groups showed differential associations with difficult asthma. Anxiety alone was associated with dysfunctional breathing and more hospitalizations, while depression alone was associated with obesity and obstructive sleep apnea. The dual anxiety and depression group were characterized by multimorbidity, worse asthma outcomes, worse HADS Scores and showed female predominance plus younger age of asthma onset. Stratification of patients with the relevant psychological comorbidity using HADS-Anxiety (A) and HADS-Depression (D) scores found that worse HADS-A was associated with worse subjective outcomes while worse HADS-D was associated with worse objective and subjective outcomes.

Conclusions
Psychological comorbidities are common in difficult asthma but exert differential detrimental effects on such patients. Difficult asthma patients with dual anxiety and depression experience worse asthma outcomes alongside worse measures of psychological distress. There is a severity-gradient association between HADS scores and worse difficult asthma outcomes. Collectively, our findings highlight the need for a targeted, holistic, multidisciplinary approach that addresses psychological comorbidities in difficult asthma patients.

O07

Preliminary results of a phase II trial of peanut oral immunotherapy in adults

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Objectives

Peanut oral immunotherapy (OIT) has shown efficacy in achieving desensitisation in paediatrics but evidence from adult studies is lacking. Our aim was to evaluate the efficacy of peanut OIT in an adult population.

Method

We undertook a single arm phase II trial of peanut OIT in 21 peanut allergic individuals aged 18-40 years: the Grown Up Peanut Immunotherapy (GUPI) study (ClinicalTrials.gov: NCT03648320, funded by NIHR RfPB scheme). All participants underwent baseline double-blind placebo-control food challenges (DBPCFC) according to PRACTALL guidelines with logarithmic peanut doses 0.3-300mg. Participants tolerating ≥1mg but reacting ≤300mg were initiated on OIT with 2-weekly updosing of 3mg, 6mg, 12mg, 25mg, 50mg, 100mg, 250mg, 500mg daily peanut protein then maintenance dose 1000mg. Efficacy of treatment was assessed with exit DBPCFC with doses 0.3-3000mg.

Results

Twenty one adults (8 female; median age 23 years [IQR 21-26y]) with median Ara h2 level of 16.2kUA/L (IQR 1.9-28.5) were enrolled. On baseline challenge, reactive doses were 10mg (n=2), 30mg (n=6), 100mg (n=7) and 300mg (n=6). Six of 21 were withdrawn (3 OIT-related, 1 non-OIT related, 2 unrelated COVID-19 suspension), with 15 (71%) achieving maintenance dose of 1000mg. On exit challenge, of these 93% (14/15) met the primary endpoint tolerating cumulative dose 1400mg peanut protein (67% overall in per protocol analysis, or 74% excluding patients withdrawn early in protocol due to pandemic). Ten participants also met the secondary endpoint of tolerating a cumulative dose of 4400mg (53% overall excluding pandemic related withdrawal). The median highest tolerated dose at baseline was 30mg versus 3000mg at exit challenge, a 100-fold increase ($P<0.0001$). Adrenaline was used in 1/21 patient (4.8%) during baseline challenge and on 4 occasions by 3 participants during home dosing (of which 2 were withdrawn).

Conclusions

This study demonstrates that OIT is safe and effective for desensitisation of adult peanut allergic patients.

O08

Long-Term Dupilumab Treatment in Moderate-to-Severe Asthma With Type 2 Inflammation: Open-Label LIBERTY ASTHMA TRAVERSE Study

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Objectives

Dupilumab, a fully human monoclonal antibody, blocks the shared receptor component for IL-4/IL-13, key and central drivers of type 2 inflammation in multiple diseases. TRAVERSE (NCT02134028), a single-arm open-label extension study, evaluated long-term safety and efficacy of dupilumab added-on to standard-of-care treatment in adults/adolescents who participated in a previous dupilumab asthma study. This post-hoc analysis assessed the long-term efficacy of dupilumab asthma patients with type 2 inflammation who enrolled after completing QUEST (NCT02414854).

Method

Annualized rate of severe exacerbations (AER), change from parent study baseline in pre-bronchodilator forced expiratory volume in 1 second (pre-BD FEV_1) at Week 96, and change from parent study baseline in 5-item Asthma Control Questionnaire (ACQ-5) and Asthma Quality of Life Questionnaire (AQLQ) scores at Week 48 were analyzed in subgroups with elevated type 2 biomarkers (blood eosinophils ≥300 cells/µL, ≥150 cells/µL, FeNO ≥25 ppb, and patients with either eosinophils ≥150 cells/µL or FeNO ≥25 ppb) at parent study baseline.

Results

1,530 (80.4%) patients from QUEST rolled over to TRAVERSE. In the group of patients with blood eosinophils ≥300 cells/µL, AERs were 0.309 and 0.281 in the placebo/dupilumab and dupilumab/dupilumab groups, respectively. Pre-BD FEV1 improved by 0.44 and 0.46 L, respectively, at Week 96 in both groups. Asthma control was improved (ACQ-5 scores: −1.79 and −1.89); similarly, AQLQ scores improved (1.51 and 1.59) between parent study baseline and Week 48. Furthermore, these sustained improvements were also observed in patients with elevated type 2 biomarkers at parent study baseline.

Conclusions

Dupilumab demonstrated sustained efficacy for up to 3 years in patients with a type 2 asthma phenotype, as identified by either elevated FeNO or blood eosinophils. The findings were consistent with the parent study, where a similar rapid onset of response was observed in patients who had received placebo during the parent study.

O09

Do parents/carers of infants with non IgE-mediated cow's milk protein allergy (CMPA) find smartphone-delivered dietitian support acceptable and engaging?

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Objectives

The role of technology in allergy care is evolving. Since the COVID pandemic there is now even more reliance on remote care delivery to support patients. This service evaluation aimed to determine the acceptability of using a NHS Digital-approved smartphone app to support the dietetic management of non IgE mediated CMPA, whilst exploring in-app behaviours of parents/carers.

Method

A remote dietitian-led CMPA service supports parent/carers through a rapid access clinic. Infants are assessed by a specialist paediatric dietitian via video or telephone call, with follow up provided through the smartphone app. Parents/carers used the app to send text communications to the dietitian, log their infant's meals and symptoms, and access learning content through a 'learn' feature which includes podcasts and factsheets to support milk allergy. In-app data and evaluation surveys from service users between January-December 2020 were collected and analysed.

Results

A total of 349 patients were referred, with 321 (90%) opting to use the app for follow up. On average patients are within the service for 6-12 months. Of the 321, 70% viewed the 'learn' section to support advice given by the dietitian. The most commonly used app feature was messaging to the dietitian, with an average 240 messages sent each month (4 per patient/month). 52% of parent/carers logged meals or symptoms through the app. Of the patients giving feedback (n=80), 100% either agreed/strongly agreed that they found the app simple to use. 100% of patients found the app to be a convenient way of receiving advice and support from their dietitian.100% of parents/carers rated their experience as good or very good.

Conclusions

Parents/carers of infants with non IgE mediated CMPA find dietitian care delivered via a smartphone app acceptable and engaging. Further research is needed into potential cost-effective benefits of such apps.

O10

The dietary management of children or adults with eczema – the perspective of dietitians in the UK

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Objectives

To establish dietitians' current practices regarding the diagnosis of food allergy as the cause for patients' eczema.

Method

Dietitians who treat children or adults with eczema were invited to complete an online survey on the use of allergy tests and dietary exclusion. The anonymised responses were analysed and reported descriptively.

Results

Between 16 February and 28 March 2021, 49 UK dietitians completed the survey. The majority (86%) were either Specialist Paediatric Dietitians or Specialist Allergy Dietitians, with over 10 years' experience, who treated children only. Respondents reported that allergy tests were performed, usually, when the clinical history suggests the presence of a food allergy. Milk, egg, wheat, and peanut were the foods most often tested. Most respondents (78%) would then exclude any foods with a positive test, providing the patient also had a history suggestive of an allergy. Just over half of respondents would exclude the food for 4 weeks, but some would continue it for more than 6 weeks. Some of the respondents (45%), would also retest these foods before their reintroduction. For patients with a negative test, or for whom no test had been performed, 63% of respondents opted to exclude all foods suspected to be worsening the eczema, with foods re-introduced one-by-one every 4-6 weeks.

Conclusions

Allergy tests are commonly used to determine which foods should be excluded in patients with eczema who have a history suggestive of a food allergy. However, in those with negative tests, foods might still be excluded if the history is suggestive of a non-IgE-mediated food allergy. Rigorous studies are needed

O11

Global Assessment of Psychological Services for Food Allergy: the GAPS study

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Objectives

Objective. Food allergy (FA) is associated globally with high levels of psychological distress such as anxiety and stress. Psychological support is extremely important for patients and families but is not always available. The aim of the GAPS study is to improve allergy patient outcomes by ensuring psychological needs are met. In the first phase of this study we aimed to assess availability and uptake of psychological services across the United Kingdom, mainland Europe, North America and Australia.

Method

Methods. Participants (n=1062 adults with FA; n=1165 parents of children with FA) from 20 countries were recruited through patient organisations, social media adverts and online survey panels to complete an online survey about access to and uptake of psychological services. Surveys were offered in eight languages.

Results

Results. A total of 68.9% of adults and 79.5% parents reported they had experienced psychological distress related to their or their child's FA, respectively. Only 16.3% of adults and 11.5% of parents had been assessed for FA-related psychological distress during their or their child's FA appointment; only 21.2% of adults and 12.9% of parents had seen a mental health professional for treatment for their or their child's FA related distress. A minority (9% of adults; 7% of parents) had been diagnosed with a mental health disorder that was related to their or their child's FA. The biggest barriers to seeing a mental health professional were cost/lack of insurance, failure to provide a referral, finding childcare and lack of practitioner in the area.

Conclusions

Conclusions. Across the United Kingdom, Europe, North America and Australia large proportions of adults and parents report FA-related psychological distress but few have accessed the psychological care and support they need. The barriers reported indicate that easily accessible low-cost or free resources are needed to help support patients and their families.

O12

Parental satisfaction with a temporary allergy day care unit established at an off-site location during the COVID-19 pandemic

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Objectives

COVID-19 social distancing regulations have restricted the number of children who can be admitted to Bristol Children's Hospital with significant consequences for oral Food Challenge (OFCs), Supervised Feed and Drug Provocation test waiting lists, and for appointments for sublingual immunotherapy and biologic therapies. To reduce patient backlog, provision was made to offer allergy inpatient services from the Nightingale Hospital Bristol (NHB).

Method

An application was made to the Nightingale Hospital for permission to develop a 12 bedded area. An operational model was developed for a 'military field hospital' including fire service, safeguarding, resuscitation team, pharmacy, executive and CQC approvals. The pop-up Allergy Daycare Unit operated fortnightly between December 2020 and March 2021, supervised by a Consultant Allergist and supported by the Consultant Nurse, Allergy CNS team and Day Care unit nurses. All OFCs selected for NHB were low risk.

Results

Feedback was obtained from 72 parents. 64(77%) of parents found their visit easier than attending the Children's Hospital. All parents found NHB acceptable and 70 (97%) would be happy to return. 29(40%) of parents would prefer future appointments to be at NHB, 7(9.7%) would prefer to be at the Children's Hospital and 36(50%) had no preference. All comments about the service itself were positive with any negative comments focussed on the signposting to NHB, the lack of catering facilities and the small number of toilets. There were also some admin difficulties associated with appointment letters.

Conclusions

The Nightingale Hospital provided a safe and secure environment. There is a potential future role for relocation of some low-risk allergy daycare procedures outside the hospital. Having a dedicated allergy unit for a day provided more comprehensive provision of care than having access to fewer beds more frequently. Parents were more than happy to attend out of hospital settings.

O13

Provision of allergy emergency bags and training to local schools: feedback one year on.

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Objectives

In 2019 we performed a survey of Primary and Secondary state schools in Wandsworth and Merton. The results highlighted a low uptake of purchasing spare adrenaline auto-injectors (AAIs), inconsistencies in the storage and management of medicines and in staff and pupil training.

Through our local CCGs, we secured funding for Allergy Emergency Bags in all 140 local state schools. Each Allergy Emergency Bag contains two AAIs as well as relevent paperwork. An online training session was provided for school nurses and first aiders and was recorded to allow catch up and/or repeated viewing.

Aims:
1) Establish the number of times the Allergy Emergency Bag had been used
2) Assess the number of times the training session for Allergy Emergency Bags had been viewed and the impact of the training session
3) Establish whether first aiders felt that the project should be rolled out nationally

Method

A short, anonymous, online questionnaire was e mailed to first aiders in local schools at the end of the first year of the project.

Results

The Allergy Emergency Bag has been used on one occasion. 37% (10/28) reported managing an allergic reaction during the school year 2020-2021 and 20% (2/10) of these required AAI.

The training was attended by approximately 30 individuals and the recorded video has been viewed 653 times. 93% (27/29) of respondents reported to know *who* the spare AAIs could be used for and 86% (25/29) felt confident or very confident about *when* the AAI should be used.

100% (29/29) schools reported to keep medications centrally (compared to 82% before provision) and 76% (22/29) keep medications unlocked (compared to 70% before provision).

Conclusions

Provision of Allergy Emergency Bags and training has improved the safety of food allergic children and has been well received by first aiders. Feedback will help improve the programme for the coming year.

O14

National survey of Allergen Immunotherapy during the pandemic

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Objectives

A national survey to understand the impact of Covid-19 on UK NHS immunotherapy services

Method

An online questionnaire was emailed to all 764 BSACI members with a request for only one person per centre to be responsible for completing the survey. The was sent out twice and was open for two weeks in May 2021

Results

In total, 35/764(4.6%) responses were received. Eighteen(56%) were registered BRIT users. Twenty-six respondents were medical (74.3%), 7(20%) were nursing. There was no differentiation between adult and paediatric centres. Six responses were removed from the analysis as respondents did not perform immunotherapy.

Staff were redeployed in up to 90% of responding centres. Medical staff were redeployed in 17/29 (58.6%) and nursing staff in 26/29 (89.6%) centres.

Pre-pandemic, venom SCIT was offered by 17(49%) centres. SCIT for aeroallergens was offered in 20(57%) of centres and SLIT in 27(77%). 10(30%) respondents reported their immunotherapy delivery had been unaffected by the pandemic.

Post-pandemic, two(6%) respondents reported closure of immunotherapy services. Eight(24%) reported reduction in venom SCIT, 11(33%) in aeroallergen SCIT. Twenty-eight(84%) services did not change any patients from SCIT to SLIT. Three(9%) centres transferred all aeroallergen SCIT to SLIT whilst two(6%) centres converted less than half of their SCIT patients. Six(18%) reduced SLIT delivery whilst four(12%) observed an increase in SLIT. Immunotherapy in 30% of centres was unaffected by the pandemic.

Conclusions

The pandemic impacted staffing in immunotherapy services. A minority closed completely. Whilst there was a reduction in aeroallergen SCIT the majority of services did not convert patients from SCIT to SLIT in response to service reductions. The survey response rate was poor, therefore difficult to make generalisable conclusions. Switching to sublingual immunotherapy could provide a pragmatic response to further lockdowns

O15

Non “G8” food allergies in the North of England and North Wales: A focus on less common food allergens

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Objectives

The eight commonest food allergies in children are milk, egg, wheat, soya, peanuts and tree nuts, fish and shellfish. The purpose of this study was to examine the spectrum of the “less common” food allergies suffered by children in 15 paediatric allergy centres across the North West of England and North Wales.

Method

The North West & North Wales Paediatric Allergy Network anonymised database was used to collate the information. Data was collected during a two-year period between April 2019 and March 2021.

Results

Data on 5,080 children, median age 5 (range 0 to 19) years old were available. Most children presented with classical immediate or delayed hypersensitivity reactions. 54% had an allergy to one food, 27% to two foods, 10% to three foods and 9% to four or more foods. 47 suffered from OAS, 13 FPIES, and 7 eosinophilic enteropathy. 35% had associated eczema and 25% asthma.

624 (12%) patients had one or more non “G8” food allergies. Legumes (35%), kiwi (19%), banana (6%), tomato (6%) and strawberry (5%) were most prominent. Children in Greater Manchester (42%) and Lancashire & Cumbria (43%) particularly those from Blackburn, Bolton, Oldham, Preston and Wigan, were significantly more likely to have a history of legume allergy than children in Cheshire & Mersey (28%) or North Wales (20%) ($p < 0.001$). There was a 3.4 (2.4 – 4.8)-fold higher risk of legume allergy in patients who had a peanut allergy. Legume allergy (OR 1.7), peanut allergy (3.5), asthma (3.7) and age (1.2) were all independently associated with a significantly increased risk of the child having an adrenaline auto-injector.

Conclusions

Allergies to legumes are prevalent, particularly in traditionally more multi-cultural areas of the North West. Children with these allergies are more likely to have an associated peanut allergy and carry an adrenaline auto-injector.

O16

Dupilumab is effective in children aged 6–11 years with severe atopic Dermatitis (AD) regardless of baseline serum total immunoglobulin E levels

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Objectives

AD is a chronic inflammatory systemic condition predominantly driven by dysregulated type 2 immunity. In AD, type 2 polarization is associated with increased total IgE; higher concentration of total IgE is associated with higher clinical severity. We present efficacy of dupilumab according to baseline serum total IgE in children (6–11 years) with severe AD.

Method

In LIBERTY AD PEDS (NCT03345914), children were randomized 1:1:1 to dupilumab 300mg every 4 weeks (q4w; loading dose 600mg), 100mg/200mg q2w (loading dose 200mg/400mg), or placebo, with concomitant medium-potency topical corticosteroids (TCS). Data were stratified per quartile baseline serum IgE. We report the proportion of patients achieving a 75% improvement in Eczema Area and Severity Index (EASI-75), ≥4-point improvement in worst itch score, and ≥6-point improvement in Children's Dermatology Life Quality Index (CDLQI). Only data for the EMA-approved 300mg-q4w+TCS dosing regimen are shown.

Results

This analysis included 243 patients treated with dupilumab 300mg-q4w+TCS/placebo+TCS. At Week (Wk) 16, significantly more patients receiving dupilumab 300mg-q4w+TCS in all quartiles achieved EASI-75 vs placebo+TCS (**Table**). Significantly more dupilumab-treated patients achieved clinically meaningful improvements in worst itch score and CDLQI in all quartiles at Wk16 (**Table**). The safety profile was acceptable and consistent with the known dupilumab safety profile.

	Baseline IgE levels (kU/L)			
	≤1343.5	>1343.5–≤4541.0	>4541.0–≤12718.0	>12718.0

Patients with, %	Dupilumab+ TCS (n=38)	Placebo+ TCS (n=32)	Dupilumab+ TCS (n=28)	Placebo+ TCS (n=27)	Dupilumab+ TCS (n=23)	Placebo+ TCS (n=34)	Dupilumab+ TCS (n=32)	Placebo+ TCS (n=29)
EASI-75	71.1*	40.6	78.6***	22.2	69.6*	26.5	59.4*	17.2
≥4-point improvement in worst itch score	44.7*	21.9	57.1*	18.5	54.5**	5.9	48.4**	3.6
≥6-point improvement in CDLQI	72.2*	37.0	90.9**	50.0	71.4*	36.7	76.7*	48.1

*P<0.05,**P<0.001,***P<0.0001 vs placebo+TCS

Conclusions

Dupilumab+TCS provides robust efficacy in AD signs, symptoms, and quality-of-life in children (6–11 years) with severe AD, regardless of baseline serum total IgE.

O17

Dupilumab Efficacy and Safety in Children With Uncontrolled Moderate-to-Severe Asthma: The Phase 3 VOYAGE Study

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Objectives
Type 2 inflammation underlies most cases of paediatric asthma. Despite optimized standard-of-care treatment, children with moderate-to-severe asthma may continue to have uncontrolled disease. Dupilumab, a fully human monoclonal antibody, blocks the shared receptor component for interleukin-4/interleukin-13, key and central drivers of type 2 inflammation in multiple diseases. VOYAGE, a 52-week randomized, double-blind, placebo-controlled phase 3 study (NCT02948959), evaluated dupilumab efficacy and safety in children aged 6 to <12 years with uncontrolled, moderate-to-severe asthma.

Method
Paediatric patients received add-on dupilumab 100/200mg every 2 weeks (body weight ≤30kg/>30kg, respectively) or matched placebo. Primary populations: patients with type 2 inflammatory phenotype (blood eosinophils ≥150cells/µL or FeNO ≥20ppb) or blood eosinophils ≥300cells/µL at baseline. Assessments: annualized severe asthma exacerbations rates (AER) (primary endpoint), change from baseline at Week 12 in pre-bronchodilator (BD) FEV1 percent-predicted (FEV1pp) and FeNO level, and change in Asthma Control Questionnaire–Interviewer Administered (ACQ-7-IA) score at Week 24.

Results
350/408 patients had type 2 inflammatory asthma phenotype at baseline; 259 had baseline blood eosinophils ≥300cells/µL. In patients with a type 2 phenotype, dupilumab vs placebo reduced AER by 59.3% (P<0.0001); improvements in mean change from baseline in pre-BD FEV1pp (least squares mean difference [LSMD]: 5.21%; P=0.0009) and FeNO (LSMD: 17.84ppb; P<0.0001) were significant. At Week 24, dupilumab vs placebo improved ACQ-7-IA scores from baseline (LSMD −0.33, P=0.0001). Similar findings were observed in patients with eosinophils ≥300cells/µL at baseline. In the safety population, treatment-emergent adverse events (TEAE), serious TEAEs, and adverse events leading to permanent study discontinuation in dupilumab vs placebo were 83% vs 80%, 4.8% vs 4.5%, and 1.8% vs 1.5%, respectively. Dupilumab decreased median blood eosinophil values below baseline values by Week 52.

Conclusions
Dupilumab demonstrated efficacy and an acceptable safety profile in patients aged 6 to <12 years with uncontrolled, moderate-to-severe asthma with a type 2 inflammatory phenotype.

O18

Is it possible to safely reintroduce children to egg at home and is it acceptable to families?

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Objectives

To review the safety and effectiveness of home reintroduction of egg in allergic children and to explore the impact that this has on families.

Method

Service evaluation with a retrospective analysis of patients under 18 years old where home reintroduced egg at home was attempted, 2013-2020. Data collected from notes and a parent questionnaire; analysed with SPSS.

Results

Of 300 patients, questionnaire information was received from 72 (24%). Median age at reintroduction 2.98 years (range 2.06-4.66) with median egg SPT 2mm (0-3mm). Baked egg: 105/111 (94.59%) successful on first attempt, five on second, one on third. Egg powder: 144/165 (87.27%) successful on first attempt, 19 on second, two on third. Questionnaire: 41/72 (56.9%) reported a reaction on reintroduction: mild 16 (22.2%), moderate 10 (13.9%), severe five (6.9%). Most severe started three hours after ingestion - urticaria and possible respiratory symptoms resulting in adrenaline being given; other severe reactions involved only cough. Views of families detailed in table.

Table: Feedback from parents about the experience of home reintroduction

	Strongly agree	**Agree**	**Somewhat agree**	**Neither agree nor disagree**	**Somewhat disagree**	**Disagree**	**Strongly disagree**
You feared for your child's health/ wellbeing	3(4.2%)	5(6.9%)	11(15.3%)	5(6.9%)	3(4.2%)	27(37.5%)	19(26.4%)
Reintroducing egg products had a negative	1(1.4%)	0(0.0%)	7(9.2%)	2(2.8%)	0 (0.0%)	25(34.7%)	37(51.4%)

impact on you/your child's mental health							
Overall the reintroduction was a positive experience	19(26.4%)	33(45.8%)	6 (8.3%)	3(4.2%)	7(9.2%)	2(2.8%)	2(2.8%)
You/your child would have benefited from being reintroduced to egg products in the hospital.	4(5.6%)	4(5.6%)	4(5.6%)	7(9.2%)	4(5.6%)	29(40.3%)	19(26.4%)

Conclusions

Almost successfully reintroduced egg at home with just one reported potentially severe reaction. Most but not all felt it was a positive experience.

O19

Allergy education for paediatric emergency medicine clinicians is fundamental to successful penicillin allergy de-labelling

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Objectives

Penicillin allergy (PenA) is the most common reported drug allergy in the emergency department (ED). There is growing data to support key historical features to accurately stratify patients into low and risk groups which is crucial in application of direct oral challenge[1]. The aims of this study were to evaluate the knowledge of risk stratification of reported PenA symptoms and impact of PenA labels amongst clinicians in a children's ED.

Method

A cross-sectional anonymised survey of paediatric emergency clinicians was performed. The survey explored knowledge of risk stratification of PenA symptoms, impact of PenA labels, and choice of antibiotic with history of delayed non-severe rash to penicillin.

Results

62 paediatric emergency clinicians of varied grades responded. 59 (95%) clinicians correctly identified orofacial swelling, wheeze, and immediate cutaneous reactions as high-risk symptoms. The least correctly identified high-risk symptoms were abdominal pain and oral blisters (26/62; 42% and 33/62; 53% respectively). Delayed cutaneous symptoms were the least correctly identified low-risk symptoms: pruritus and maculopapular rash in 33/62 (53%) and 38/62 (61%) respectively. Clinicians who correctly identified delayed non-severe rash as low-risk would prescribe penicillin-based antibiotic if indicated (57.8% versus 25%; p-value 0.01). 54 (87%) clinicians agreed that PenA is over-diagnosed; only 21 (34%) were aware that oral drug challenge confirms PenA. 52 (84%) clinicians would be willing to adopt an algorithm for de-labelling.

Conclusions

There is poor understanding of low-risk symptoms of PenA amongst clinicians working in the ED. Allergy education, in conjunction with an algorithm to safely de-label children with such symptoms in the ED, could contribute to antimicrobial stewardship. This survey demonstrated willingness of emergency clinicians to adopt such decision tool.

1. Vyles D, Adams J, Chiu A, et al. Allergy testing in children with low-risk penicillin allergy symptoms. Pediatrics 2017; 140:e20170471

O20

Patterns of specialised formula consumption in Australia, England and Norway suggest significant milk allergy over-diagnosis

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Objectives

Cow's milk allergy (CMA) affects approximately 1% of infants, but may be prone to over-diagnosis and thus, unnecessary management with hypoallergenic specialised infant formulas (SIF) with adverse impacts on breastfeeding. We aimed to evaluate potential CMA over-diagnosis and over-consumption of SIF by analysing volume and cost of SIF sales for under-1-year-old infants.

Method

A cross-sectional survey of national prescription databases was conducted to evaluate consumption of amino acid formulas (AAF), extensively hydrolysed formulas (EHF) and soya-based formulas (Soya). Expected SIF consumption was calculated using national formula-feeding rates and an estimated 1% CMA prevalence.

Results

Twenty-three countries were screened for eligibility and three countries with suitable databases were identified. Between 2009 and 2019, total SIF consumption increased by 0.4% per annum in Australia, 9.0% in England and 7.3% in Norway. In this time in Australia, AAF consumption decreased by 20% overall while eHF consumption increased by 60%. Meanwhile, combined eHF and AAF consumption increased by 270% in England and 120% in Norway, while Soya consumption decreased by 93% and 100% respectively. In this period, the number of under-1-year-olds consuming any SIF in Norway increased by 2.4-fold. Total SIF reimbursement costs decreased by 25% in Australia and increased by 310% in England and 160% in Norway. In 2019, total reimbursed SIF volumes were 4.6-fold greater than expected in Australia, 12.0-fold in England, and 13.7-fold in Norway. In 2020, 7.0% of infants in Norway were prescribed SIF in their first year of life.

Conclusions

In Australia, England and Norway, SIF prescription volumes between 2009-19 greatly exceeded expected volumes and rose significantly. Different prescription guidelines could explain the relatively less excessive consumption in Australia. There is little evidence that CMA prevalence changes paralleled

these observations. This suggests significant CMA over-diagnosis and an important shift in population nutrition, with implications for population health and health system expenditure.

O21

An Audit of the Home Food Introduction Service developed during the COVID-19 Pandemic

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Objectives

During the COVID-19 pandemic, food challenges in our department were suspended. A nurse-led home introduction service was developed to allow patients at low risk of allergic reactions to introduce food at home. We have audited the service a year later to ascertain whether it remains of value as we move into the recovery phase of the pandemic.

Objectives:

We aimed to establish:

- Numbers of patients who proceeded with home introduction after referral
- Outcomes of home introduction
- If any patients had severe allergic reactions at home requiring adrenaline or hospital attendance

Method

Children identified as being suitable for home introduction were referred to the nurse- led home introduction service. An initial telephone consultation with a nurse specialist was followed by email contact and a second telephone call after 2 weeks. Outcomes were tabulated in a spreadsheet.

Results

66 patients were referred for 77 separate introductions.

Outcome	**%**
Requested hospital challenge	42
Home introduction went ahead	38
DNA initial appointment	14
No longer required (child already eating food)	4
Introduction ongoing	4

29 home introductions went ahead. Outcomes as follows:

No reaction	72%
Reacted	21%
Inconclusive (did not complete)	7%

6/29 (21%) patients reacted. All had hives or itching which needed no treatment or antihistamines. None required adrenaline or hospital attendance.

Conclusions

29 home challenges went ahead, meaning these patients did not need to wait for hospital appointments. Of the 21% that reacted, none required hospital treatment indicating the triage process was robust and service was safe. 42% of patients preferred to wait for a hospital challenge and a further 14% did not attend the initial appointment.

We will continue to develop the service and re-audit later this year to evaluate the impact of the pandemic easing and whether this affects outcomes.

O22

Randomised trial of lotion versus cream versus gel versus ointment in children: findings from the best emollients for eczema study

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Objectives

To compare the effectiveness and acceptability of four different types of emollients in children with eczema.

Method

Pragmatic, multicentre, trial (ISRCTN84540529). We sought 520 children aged >6 months and <12 years with at least mild eczema and no known sensitivity to study emollients via their GP. Participants were randomised to a study-approved lotion, cream, gel or ointment as their only leave-on emollient. The primary outcome was weekly POEM over 16 weeks. In a nested qualitative study, a purposeful sample of parents/children were interviewed at ~4 and ~16 weeks.

Results

550 children were recruited via 77 GP surgeries. There was no evidence of a difference in mean POEM scores over the first 16 weeks of the study between emollient types (intention to treat – primary analysis, p=0.784). Similarly, there were no differences between groups after imputing for missing data, a per protocol analysis, in any of the secondary outcomes (including EASI by masked researcher and health related quality of life) or in pre-specified subgroup analyses (parent expectation, age, disease severity and applying the UK diagnostic criteria). There were fewer adverse reactions with lotions and ointments. Median daily use was lowest in ointments. Overall satisfaction was higher for lotions and gels and more varied in the cream and ointment groups. In interviews with 44 parents and 25 children, participants reported improved knowledge about and use of emollients, as a result of taking part.

Conclusions

Despite a common belief that ointments may be “best”, the four emollient types were equally effective. Satisfaction with the same emollient types varies, with different parents/children favouring different ones, although effectiveness may be favoured over acceptability. The “best” emollient is the one that families will use, with choice from a range of emollient types supported by education on how to correctly use them.

O23

Room for improvement in anaphylaxis and adrenaline autoinjector training: results from a UK primary care survey

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Objectives

Adrenaline is first line treatment in anaphylaxis. Early delivery can prevent severe and fatal outcomes. Appropriate training for patients on treating acute episodes, particularly on using their adrenaline autoinjector (AAI) is essential. Primary care physicians are important in the ongoing review of these patients. We examined the management of anaphylaxis patients and AAI training in primary care with the aim of identifying any knowledge deficiencies.

Method

A cross-sectional online survey of 500 UK GPs using a short questionnaire was conducted between December 2020 and January 2021.

Results

The mean number of patients per practice at risk of severe allergy was 53. Of those 70% were prescribed an AAI. When questioned about AAI device knowledge, 47% GPs responses were incorrect, only 19% GPs answered all device questions correctly. Thirty-one percent of GPs were not confident about patients' ability to successfully manage anaphylaxis. GPs acknowledged that poor patient AAI technique was largely due to issues with quality and frequency of training. Regarding follow-up frequency, 37% of GPs reported that patients with severe allergies do not receive regular follow-up on managing anaphylactic episodes and 23% GPs were unsure who was responsible for conducting this follow-up. Ninety-one percent of GPs reported patients switching between different AAI brands and 34% reported that this happened often. When switching occurs, 20% reported that patients receive no additional training on the new device and 20% reported that they refer to the pharmacist for further training. In free text responses GPs highlighted areas for improvement as regular in-house staff training on anaphylaxis and detailed training on the differences between AAI devices.

Conclusions

This survey highlights a need for improvement in primary care anaphylaxis and AAI training. The process for ensuring regular follow-up of anaphylaxis patients needs defining as well as clarity on which health care professional is responsible for delivering this follow-up.

Acceptance type: Oral Education

O24

Teaching management of severe allergic reactions using video call appointments within the West of Scotland Anaphylaxis Service.

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Objectives

Clinical Nurse Specialist (CNS) video appointments providing education on the management of anaphylaxis were introduced in the West of Scotland Anaphylaxis Service due to changes in practice during the COVID19 pandemic. A six-month service evaluation assessed, specifically: Effectiveness of adrenaline autoinjector (AAI) education, -Comparative efficiency of video and face-to-face (F2F) appointments, -Patient satisfaction.

Method

44 NHS patients aged 18 and over, with diagnosed or suspected Type 1 Allergy and prescribed AAI were recruited from CNS clinics.

Quantitative data collected included; patient knowledge of how and when to use AAI assessed and scored before and after education, knowledge rescored at follow up appointment, teaching time (minutes), clinic attendance rates, travel time (minutes) & patient reported satisfaction scores.

Results

Participants grouped by appointment type (36 video, 8 F2F). Findings for the video group at follow up were significantly improved from initial consultation, with recollection of symptoms improved ($p< 0.001$), and recollection of AAI use at follow up ($p<0.001$). Overall concordance scored highly in both groups. Did not attend rate was higher for video (17.3%) compared to F2F appointments (2.6%). Video group saved average travel time of 1 hour 36 minutes. High patient satisfaction scores for both types of appointments.

Conclusions

Video appointments are an efficient and effective way to teach management of severe allergic reactions and can easily be added to clinical service. Future work will determine potential barriers and improvements to these video consultations and applicability to other patients including young adults.

O25

The development and evaluation of Anaphylaxis Toolkit, a competency based online education course for Allied Healthcare Professionals (AHP's). A Pilot Study.

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Objectives

Allied healthcare professionals (AHPs) play an important role in allergy management however, knowledge gaps continue to be identified in their management of anaphylaxis. This study developed and evaluated an online Anaphylaxis Toolkit for dietitians and nurses working in allergy recruited through their professional specialist groups. Knowledge gain and achievement of competency was assessed using the European Academy of Allergy and Immunology (EAACI) allergy competencies for AHPs.

Method

Interested allergy dietitians and nurses consented to participate in either an interview exploring their role in teaching families about anaphylaxis and adrenaline auto-injector (AAI) use and/or the online course. The peer reviewed Anaphylaxis Toolkit was designed to meet the EAACI AHP competencies for anaphylaxis knowledge and understanding providing 4-6 hours of learning. Course assessments were completed at 3 timepoints: pre-course, post-course and 1-3 months after course completion measuring baseline knowledge, learner gain, self-assessed confidence, and knowledge retention in anaphylaxis management.

Results

Nine dietitians participated in the pre-course interview. All failed to teach correct administration of the AAI (95% CI: 70%-100%). Twenty-nine AHPs, 25 dietitians and 4 nurses, completed the online course with 28, 24 and 21 completing the pre, post and final course assessments respectively. A significant improvement in assessment and confidence scores was measured between pre and post assessment, 15.5% (p=<0.001, 95% CI:11.4%-19.6%) and 9% (p=<0.001, 95% CI:7.8%-11%) respectively, with 88% achieving the EAACI competencies post course. There was no difference in post-course assessments (p= 0.561, 95% CI: -2.3%-4.1%) indicating knowledge and confidence retention after 1-3 months. The course was rated very good to excellent by all participants (n=22).

Conclusions

Taking the Anaphylaxis Toolkit short course improved and retained knowledge and self-assessed confidence in anaphylaxis management. Integration of the Toolkit into the allergy AHPs annual appraisal would ensure maintenance of anaphylaxis competency and potentially positively impact patient care, improving patient outcomes.

O26

Can Fizzmo the cat teach primary school children how to use an EpiPen© as well as a face-to-face demonstration?

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Objectives

It is important that the best teaching method is used to enable children to use their EpiPens© as they grow older. Traditionally, children were taught face-to-face. Since the COVID-19 pandemic, an innovative approach has been explored, that has the potential to be used 'virtually'. The aim was to evaluate the methods of teaching primary school aged children EpiPen© usage; comparing the standard face-to-face technique with an interactive video method using a cartoon cat, Fizzmo.

Method

The two methods were alternately taught in a convenience sample of EpiPen© naïve children attending outpatients. The children's ability was evaluated by 5 set criteria using trainer pens to demonstrate successful technique;

- Correct administration location,
- Safety cap removal,
- Fist grip for Place and press technique(P&P),
- Holding for 3 seconds
- Successful "click" signifying firing.

Results were compared using Fisher's exact test for Chi-squared analysis (https://www.socscistatistics.com/tests/fisher/default2.aspx).

Results

60 children participated; 30 were trained using our standard demonstration (DEM) method and 30 via the interactive video(VID). The median age(range) was similar in both, DEM 9.3years(6-12) & VID 8.5years(5-12).

Assessment Criteria	DEM n=30	VID n=30	Fisher's Chi-squared
Correct Location	28	28	p = 1.00(ns)
Safety Cap Removal	25	30	p = 0.052(ns)
Fist Grip and P&P	29	29	p = 1.00(ns)
Hold for 3 seconds	13	24	p =0.007

Successfully "fired"	26	28	p = 0.67(ns)

Conclusions

Most children were able to follow the instructions correctly, and almost all ‘fired’ the pen successfully. They held it for the correct duration more often when shown the video.

The pilot interactive video method seems as good as the current demonstration technique. Innovative technological solutions can be incorporated into clinical education for young children and may be more successful than conventional methods.

O27

Paediatric anaphylaxis 'EduCAKEtion' in 10-minutes: A multicentre initiative

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Objectives

Anaphylaxis is often over or undertreated with intramuscular adrenaline. Previous research in the Midlands has found that 32% of health professionals / medical students would administer intravenous adrenaline inappropriately. Our aim is to promote training in the recognition and management of anaphylaxis using an innovative technique.

Method

We designed a 10-minute anaphylaxis education program composed of classifying symptom discs into type of reaction, management scenarios and adrenaline autoinjector (AAI) training. Small group sessions were designed to ensure social distancing in the COVID era, but also to allow hands-on training. Pre and post education scores were monitored. Following the session there was cake and debrief with participants to give the opportunity to answer any questions and provide feedback.

Results

131 health professionals were trained across three trusts (Sandwell and West Birmingham Hospitals NHS Trust, University Hospitals of North Midlands NHS Trust and Shrewsbury and Telford Hospitals NHS Trust) over a period of four months. 49% (64/131) were qualified nurses, 24% (32/131) doctors, 17% (22/131) healthcare assistants and 10% (13/131) other professionals. Experience of nurses ranged from 10% (7/71) being students to 14% (10/71) having worked over 30 years. 56% (18/32) doctors were ST3 level or below. Mean pre-education and scenario score was 18 and post score was 23 indicating a 28% improvement. Mean AAI training pre score was 4, post score was 8, indicating 100% improvement. The total mean pre score was 21 and post score 30, indicating a 43% improvement (p value <0.01). The maximum overall score possible was 32.

Conclusions

This is a novel education method developed to be short, interactive and suitable for a wide variety of professionals. Feedback has included "concise and stimulating", "fun way of learning". It is being adapted to be delivered virtually for easier access but will also be reassessed to ensure retention of information.

Acceptance type: Poster

P001

Three cases of red meat allergy due to alpha-gal sensitisation in the UK

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Objectives

Meat allergy caused by sensitisation to galactose-alpha-1,3-galactose (alpha-gal) is rare, likely underdiagnosed but with increasing prevalence. It is characterised by delayed onset (usually 2-6 hours) of symptoms varying from mild urticaria to anaphylaxis after consumption of red meat and is usually associated with tick bites. It is more common in countries where exposure to ticks is high. Within the last ten years we have seen three cases in our department of red meat allergy due to alpha-gal sensitisation.

Method

Case A:
17-year-old male reported 10-15 episodes of urticaria and angioedema 11-12 hours after eating beef burgers and pork. In between these episodes, he has tolerated steak and mince beef. He has had tick bites in Scotland. Specific IgE was positive to beef (5.82kAU/l) and alpha gal (16.9 kAU/l).

Case B:
35-year-old female reported episodes of diarrhoea and vomiting or urticaria occurring 1 to 3 hours after eating beef, pork and lamb. Specific IgE was positive to alpha gal (0.75 kAU/l).

Case C:
21-year-old male has confirmed chicken and poultry allergy. He has had reactions (chest tightness, breathlessness, angioedema and urticaria) with mincemeat, ox liver and cold cuts of beef which he attributed to cross contamination with poultry. Specific IgE was positive to alpha gal (0.38 kAU/l).

Results

These cases remind us that alpha-gal allergy can present with symptoms that may not occur consistently on every exposure to red meat which could be due to variability in the concentration of alpha-gal in different meats or the role of co-factors; onset of symptoms may not always be 2-6 hours after red meat consumption and patients may incorrectly attribute symptoms to other known food allergens or food allergy may not even be suspected.

Conclusions

We are reporting three different presentations of alpha-gal allergy to increase awareness of testing for alpha-gal in the UK.

P002

Prevalence of SARS-CoV-2 Specific Antibodies in Asymptomatic Hemodialysis Patients

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ZOHREH BABALOO

Objectives

Since the outbreak of the new coronavirus pandemic, the importance of carrying out an infection check to prevent acquisition and transmission among end-stage renal disease patients (ESRD) under maintenance hemodialysis (MHD) has become a major concern in the health care system. Applying serology screening tests could enlighten the view with regards to disease prevalence in dialysis wards.

Method

We subjected 328 end-stage renal disease patients to maintenance hemodialysis. After dividing patients into suspicious and non-suspicious groups for COVID-19 infection based on their clinical manifestation, they were investigated for SARS-CoV-2 specific IgM and IgG screening against nucleoprotein (NP), spike protein (SP), and receptor-binding domain (RBD), utilizing our recently developed ELISA tests.

Results

We found that approximately 10.1% of asymptomatically tested cases were antibody positive. Although IgG positivity showed a higher prevalence than IgM across all three virus antigen subunits, there were no significant differences among mentioned immunoglobulins of the studied groups. The most prevalent antibody was from the IgG subtype against virus nucleoprotein (NP), while the lowest prevalence was attributed to receptor-binding domain (RBD) IgM.

Conclusions

High seropositive rate among asymptomatic end-stage renal disease patients, as a sample of high-risk population, reflected the importance of considering SARS-CoV-2 specific antibody screening for disease containment.

P003

A responder analysis to demonstrate dupilumab treatment effect across objective and patient-reported endpoints for patients with severe chronic rhinosinusitis with nasal polyps (CRSwNP)

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Objectives

Dupilumab has demonstrated reduction in nasal polyp score (NPS) and individual symptom scores in patients with severe CRSwNP; however, combined responder analyses using these endpoints have not been conducted. This post hoc analysis explored the overall effect of dupilumab across both objective and patient-reported endpoints.

Method

Endpoints were compared in patients with severe CRSwNP receiving dupilumab 300 mg or placebo every 2 weeks in the Phase 3 SINUS-52 study (NCT02898454; intention-to-treat population). The objective endpoint was NPS (range 0–8); patient-reported endpoints were symptoms of nasal congestion (NC), loss of smell (LoS), anterior rhinorrhoea, and posterior rhinorrhoea scores (all 0–3); higher scores indicate worse disease burden. The proportion of patients achieving ≥1-point improvement from baseline in endpoints was assessed at Weeks 24 and 52: NPS OR any of NC/LoS/anterior/posterior rhinorrhoea scores; NPS AND any of NC/LoS/anterior/posterior rhinorrhoea scores.

Results

A greater proportion of patients achieved ≥1-point improvement in NPS OR any of NC/LoS/anterior/posterior rhinorrhoea scores with dupilumab (n=104/132, 78.8%; n=104/132, 78.8%) versus placebo (n=51/137, 37.2%; n=42/137, 30.7%) at Weeks 24 and 52, respectively (both $P<0.0001$). A greater proportion of patients also achieved the more stringent responder definition of ≥1-point improvement in NPS AND any of NC/LoS/anterior/posterior rhinorrhoea scores with dupilumab (n=62/132, 47.0%; n=86/132, 65.2%) versus placebo (n=8/137, 5.8%; n=13/137, 9.5%) at Weeks 24 and 52, respectively (both $P<0.0001$).

Conclusions

Responder analyses show that dupilumab treatment led to significant improvements versus placebo in objective and patient-reported endpoints, both individually and combined, in patients with severe CRSwNP.

P004

Running into trouble with soya; a case of exercise-induced anaphylaxis.

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Objectives

Background:

Food-dependent exercise-induced anaphylaxis (FDEIA) is a rare presentation, manifesting with symptoms of allergy upon exertion following ingestion of foods that are normally tolerated. Herein we present a case of FDEIA to Soyabean, in a patient with known peanut allergy.

Method

Case Presentation:
A 16-year-old girl experienced anaphylaxis during football training on a background of asthma, allergic rhinitis and peanut allergy. The patient consumed a 'spice-bag' (chips, peppers, onion, breaded chicken, chilli, paprika, garlic) one hour before exercise. Within 10minutes of exertion she developed throat irritation, rhinorrhoea, periorbital oedema, chest tightness and airway obstruction. Intramuscular adrenaline 300mg x 2, antihistamine and inhaled salbutamol were administered while awaiting an ambulance. No obvious trigger was identified and similar 'spice-bags' had been tolerated since the event. A possible food contaminant was suspected.

In the subsequent months she described anaphylaxis while cycling; 30minutes after consuming a fruit smoothie and granola, which she had eaten and tolerated in preceding days. She also had throat irritation and perioral oedema after a 'Fulfil' protein bar. Soya protein was revealed to be a common ingredient; protein bar, granola and bulking agent in chicken pieces present in the spice bag.

Results

Discussion:
Investigations were confirmatory; positive soyabean skin-prick testing, elevated specific IgE Soyabean (1.06kUa/L) and notably sensitised to Gly m 6, a soyabean component described in FDEIA episodes primarily in Asia.

Conclusions

This case highlights the importance of identifying the culprit ingredient in cases of anaphylaxis to a diverse range of foods. Furthermore, a trend toward plant-based eating and protein supplements around exercise could lead to increased presentation of this allergy.

P005

Our experience with COVID-19 vaccines: Is there cross-reactivity between PEG and Polysorbate 80? Authors: I. Makki , S. Elamin, T. Coulter

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Objectives

Introduction:

Polyethylene glycol (PEG) and polysorbate 80 are used as additives in a range of pharmaceutical and cosmetic products. The Pfizer and Moderna mRNA COVID-19 vaccine contain PEG 2000. Polysorbate 80 is present in the Astrazeneca COVID-19 vaccine. Hypersensitivity to PEG and Polysorbate is rare but cross-reactivity between PEG and polysorbate 80 has been reported in literature. This potential cross reactivity has posed a challenge in determining COVID-19 vaccine choice for patients with one of these allergy labels.

Method

Three patients with confirmed PEG allergy underwent skin testing to polysorbate 80 containing drugs: skin prick testing to Prevnar vaccine, tween 80 and polysorbate eye drops; intradermal testing to Prevnar vaccine (1:100 and 1:10). These patients were challenged using the Astrazeneca COVID-19 vaccine.

One patient with confirmed polysorbate 80 allergy underwent skin testing to PEG containing drugs: skin prick testing to the Pfizer COVID-19 vaccine, eye drop containing PEG, movicol and depomedrone; intradermal testing to 1:10 depomedrone. This patient was challenged with the Pfizer COVID-19 vaccine.

Results

The three patients with PEG allergy had negative skin testing to polysorbate 80. These patients went on to receive the Astrazeneca COVID-19 vaccine without allergic reactions. The one patient with polysorbate 80 allergy had negative skin testing to PEG. She proceeded to receive the Pfizer vaccine with no signs of immediate hypersensitivity reaction.

Conclusions

Despite limited numbers, our findings did not demonstrate there is cross-reactivity between PEG and polysorbate 80.

P006

The effect of indoor air quality on asthma outcomes: baseline findings from a double-blinded, placebo-controlled, investigator-led, Dyson air purifier randomised controlled trial

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Objectives
To investigate the effect of indoor air pollution, humidity and temperature on adult asthma outcomes.

Method
We analysed baseline clinical data from the Dyson air purifier randomised controlled trial (NCT04729530). Adult (≥18 years of age) participants (N=50) who had a confirmed clinical diagnosis of mild-moderate persistent asthma (British Thoracic Society guidelines steps "regular preventer therapy" to "additional add-on therapies") with an Asthma control questionnaire - 6 (ACQ6) of >1.5 were included in the study. Baseline clinical outcomes collected include: ACQ6, Asthma specific Quality of Life questionnaire (AQLQ), Spirometry [forced expiratory volume in one second (FEV_1), FEV_1/Forced vital capacity ratio, mid expiratory flows, and peak expiratory flow], fractional exhaled nitric oxide (FeNO) and exacerbations in the past year. Additionally, baseline (first week of the study) indoor air pollutants (PM2.5, PM10), temperature, and humidity levels of the participant's bedroom and living room were collected using the Dyson Pure Cool™ Towers (intervention) installed in the participant's homes. Multivariable linear regression modeling (backward stepwise likelihood ratio) using relevant covariates was performed to assess the relationship between indoor air pollutants, indoor temperature, and indoor humidity levels with asthma outcomes.

Results

In multivariable linear regression, higher baseline bedroom levels of PM2.5 was significantly associated with worse AQLQ **(P=0.006)**, but not ACQ6, spirometry or FeNO. Higher Bedroom levels of PM10 was only significantly associated with worse AQLQ **(P=0.003)** and more asthma exacerbations in the past year **(P=0.035)**. Warmer bedroom temperatures were associated with better FEV_1 **(P=0.014)** values. Higher bedroom humidity was significantly associated with worse FEV_1 **(P=0.013)** values and worse FeNO **(P=0.020)**.

Conclusions

In summary, increased indoor air pollution is related to poorer asthma-related quality of life. Similarly, indoor humidity and temperature may also significantly affect asthma outcomes. Improving indoor air quality and regulating indoor humidity and temperature, may improve asthma outcomes.

P07

The impact of COVID-19 pandemic on the Allergy Nursing role .

Deborah Hughes, BSACI NURSES COMMITTEE

BSACI nurses group, London, United Kingdom

Deborah Hughes

Objectives

In March 2020,alongside WHO Declared Year of the nurse ,in honour of 200 years since the birth of Florence Nightingale ,COVID was declared a pandemic .

The BSACI nurses recognised many nurses in June 2020 had recently started to return from redeployment and wanted to capture the current status of the allergy nurses workforce.

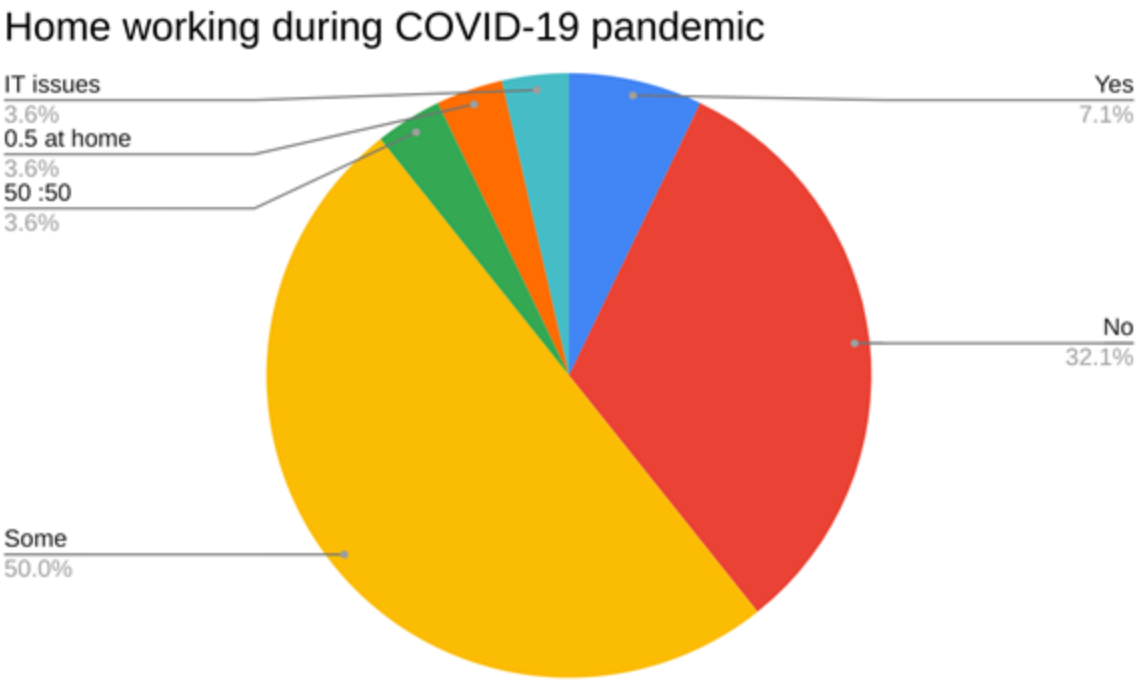
Our objectives were to conduct a survey to all our BSACI nurses after the first surge to provide a snapshot of the impact of COVID-19 and the role of the allergy in response to COVID-19 pandemic

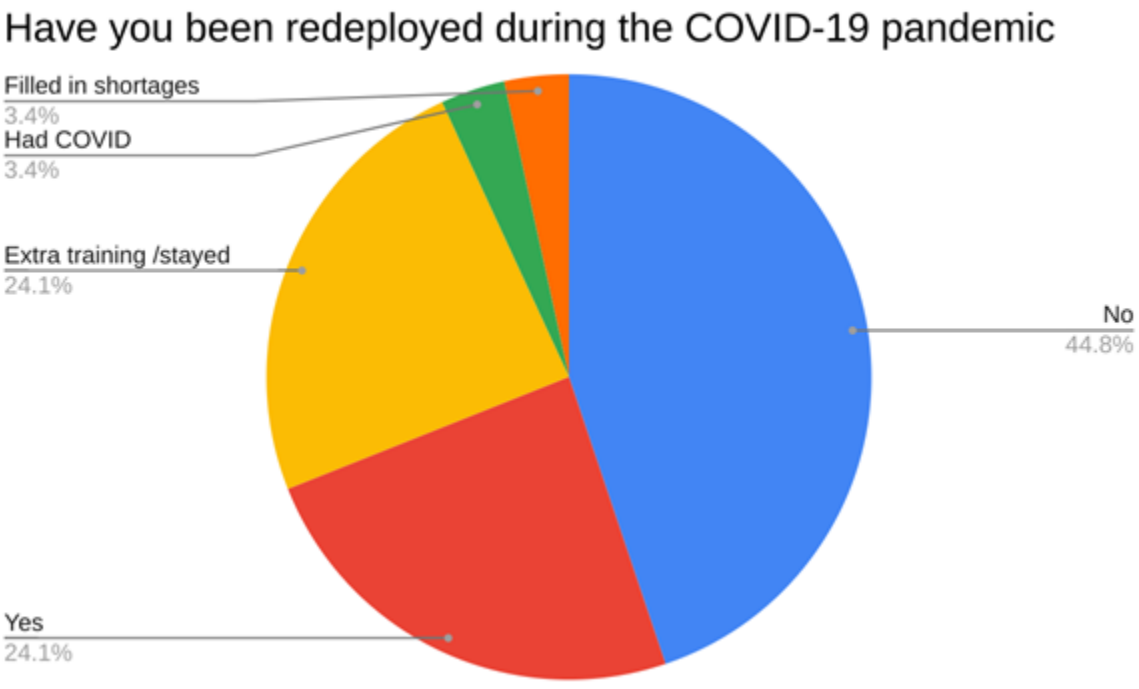
Method

In June 2020, a survey monkey was set up to ask BSACI nurses specific questions about the pandemic .

The survey monkey was sent by email on behalf of the BSACI to the nurses registered with the BSACI**.** We sent out 77 email invites to the BSACI nurses and we received 29 responses.

Results





Is there anything within your allergy nursing role you would like to add?

" I feel the work we continued to undertake during COVID-19 has not been acknowledged and the risks that have gone with our nurses".

"I am not sure mentally how many times I can close the allergy service down"

"During COVID I have increased my working hours to cover the needs of the service"

" In addition I covered the consultant's two allergy clinics per week for 3 month".

Conclusions

This survey demonstrates resilience of nurses during the pandemic to sustain specialised services whilst supporting their Trust. 7% began to set up clinics from home . With 50% using a blended model of working from home or work setting.

Service provision during the pandemic has been compounded 24 % of allergy nurses bring redeployed with a further 24 % trained and ready to support local shortages.

The individual comments support that alongside the physical provision of services ;there must be recognition in the the psychological changes among nursing staff as part of the restoration of allergy services .Wellbeing has been addressed within BSACI nurses group webinars.

This survey will be conducted again in 2021.

P007

Multi-professional, multi-system management of COVID19 vaccination allergy enquiries in Nottingham and Nottinghamshire

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Objectives

To promote and facilitate safe administration of 1st and 2nd doses of COVID19 vaccinations, in a timely fashion, whilst managing the workload of COVID vaccination allergy enquiries by utilising multi-professional workforce.

Method

A working group comprising Nottinghamshire GPs, vaccination hub leads, NUH (Nottingham University Hospitals) pharmacy and Allergy services, devised a referral pathway for allergy enquiries regarding 1st and 2nd COVID19 vaccinations. Extended flowcharts to those published in the Green Book Chapter 14a in February 2021 were produced and made accessible to Nottingham and Nottinghamshire GPs. For complex cases, the flowchart directed GPs to email NUH vaccination team a completed comprehensive referral form detailing full drug and vaccination history. Initial triage of these referrals was processed by a pharmacist in conjunction with the allergy team. Vaccination Lead nurse subsequently booked patients in to appropriate hub with predefined vaccine type and observation period.

Results

In the first 7 weeks of the pathway being published 58 patients were processed through the email triage and received vaccination. 37 of these were first dose enquiries and 21 were second dose enquiries. 31 patients were vaccinated in a hospital hub and all 2nd dose queries received vaccination within 12 weeks of 1st vaccine.

Conclusions

This pathway was developed in a multi-professional manner with interaction between primary and secondary care. This novel approach utilises the skill set of pharmacists regarding excipient content of drugs and vaccines. This resulted in the allergy service maintaining their normal allergy services in the context of a stretched allergy workforce. This pragmatic approach to vaccine advice has allowed all 58 patients referred through the triage system to be vaccinated in a timely fashion without requirement for vaccine skin testing. To date no use of adrenaline has been required for reactions to vaccines advised following triage.

P008

Introduction of Primary Care Pathway for management of Chronic Spontaneous Urticaria (CSU) in Nottingham.

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Objectives

To improve the management of CSU in primary care via the use of recommended treatment pathways, and reduce the waiting time for patients requiring specialist secondary care review

Method

Pilot audit of referrals received form General Practice for 2 week period March/April 2019 to determine the proportion that could be managed by primary care and those requiring secondary care.

Multi-disciplinary working group of pharmacists, GPs and Allergy team devised a pathway for managing CSU in primary care and identifying those that needed onward referral. Following introduction of the pathway we analysed for six months the proportion of referrals that were triaged to primary care.

Results

Initial 2 week pilot suggested that potentially 34.5% of referrals accepted could have further management for CSU delivered in primary care.

In the 6 months following the introduction of the CSU pathway 38% of referrals received were redirected to primary care management.

This resulted in a reduction in 218 referrals.

Conclusions

Educating GPs in the diagnosis and management of CSU has a positive impact on waiting times and allows prompt patient management for both the primary care groups and those requiring secondary care review.

This is a welcome development in the context of a scarce allergy workforce.

P009

Real World Experience of Managing Covid-19 Vaccine Allergy Concerns

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Objectives

The UK National Covid-19 vaccination programme commenced in December 2020 with cases of suspected vaccine allergy being reported within days, generating much media interest and patient and HCP anxiety. Anticipating a large volume of vaccine allergy queries pre and post vaccination, our Unit collaborated with our CCG to develop a standardised rapid-response advice and guidance service with the ultimate aim of avoiding vaccination delays. We used this experience to develop a decision aide for use in vaccination centres to complement guidance provided in the Green Book Chapter 14a.

Method

This poster will present our learning and recommendations throughout this process and provide an overview of the patient cohort we managed.

Results

Between 11/2/21 and 1/6/21, 511 patient events were discussed. 92% of referrals came from GP's. The male to female ratio was 1:4. 51% of queries related to events after a covid-19 vaccine with 62% of those occurring after the Oxford AZ vaccine. Of the total cohort we were able to advise vaccination without significant delay in 88% of patients. We arranged to review only 22 patients (4.5%) in telephone clinic, many of whom were able to proceed to vaccine once additional clinical history was established.

Conclusions

We have identified 6 main learning points from this experience;

- anticipate a large scale problem and plan early where possible
- coordinate with regional bodies to provide a standardised approach
- be clear on the objective, in our case that was not to delay the vaccination programme
- keep the process as simple as possible
- collect data as you go along to ensure learning points are captured

think about sustainability of the endeavour and plan for delegation to appropriate parties once consensus has been reached and the advice provided can be clearly articulated.

P010

Retreatment with ligelizumab achieves over forty percent higher complete response rate in patients with chronic spontaneous urticaria originally treated with omalizumab

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Objectives

Ligelizumab, a humanised monoclonal anti-IgE antibody, binds to IgE with stronger affinity than omalizumab. Here we report the efficacy and safety of ligelizumab 240 mg up to 1 year in an extension study (NCT02649218) in patients originally treated with omalizumab in the core study (NCT02477332) who had active disease (weekly Urticaria Activity Score [UAS7] ≥12) in the 16 weeks after omalizumab cessation.

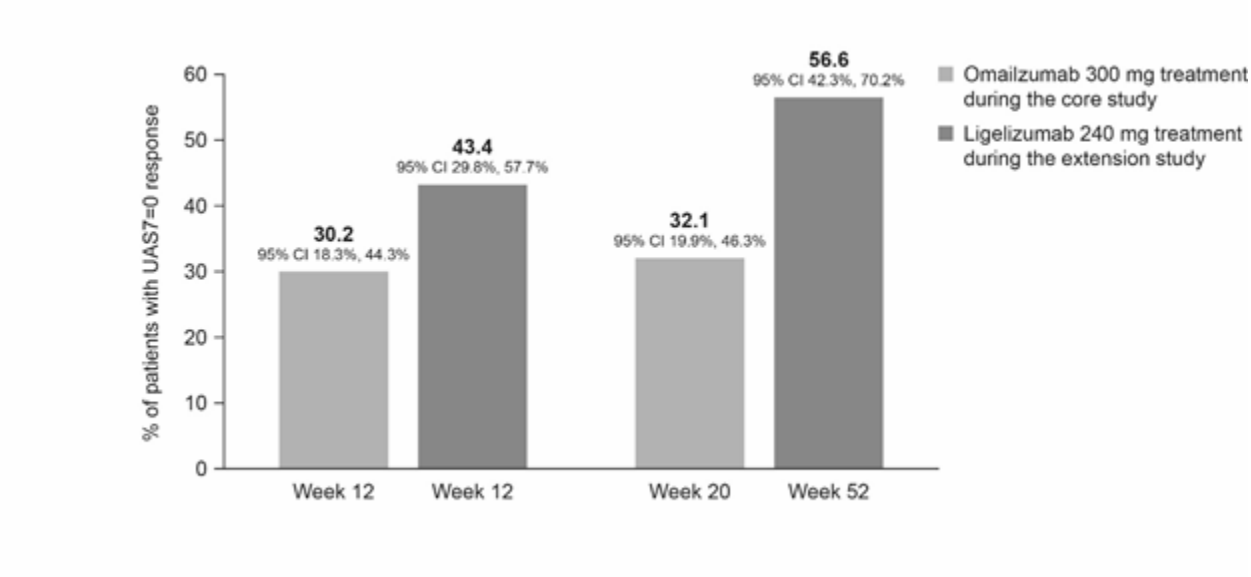
Method

In the 20-week core Phase 2b study, adults with moderate-to-severe chronic spontaneous urticaria (weekly UAS7 ≥16) were randomised to receive ligelizumab 24, 72 or 240 mg, omalizumab 300 mg, ligelizumab 120 mg (single dose) or placebo every 4 weeks (q4w) for five injections. Following a 16-week washout period, eligible patients (UAS7 ≥12) entered a 12-month open-label, single-arm (ligelizumab 240 mg q4w) extension study. Mean absolute change in UAS7 from baseline to Week 12 and the proportion of patients achieving complete disease control (UAS7=0) were calculated.

Results

In total, 70.6% (226/320) of patients (UAS7 ≥12) entered the extension study (Week 32) and 88.9% (201/226) of these completed 12-month open-label treatment. The mean absolute change in UAS7 from baseline to Week 12 was -17.65 (n=53) in patients treated with omalizumab 300 mg in the core study and -20.88 (n=53) following retreatment with ligelizumab 240 mg. In the core study, 30.2% of patients achieved a complete response (UAS7=0) at Week 12 with omalizumab; this increased to 43.4% upon retreatment with ligelizumab for 12 weeks. At Week 20 in the core study, 32.1% of patients achieved UAS7=0 with omalizumab; following retreatment with ligelizumab, 56.6% achieved UAS7=0 at Week 52 **(Figure)**.

Figure. Patients achieving a complete response in the core and extension studies



Conclusions

Retreatment with 240 mg ligelizumab (12 weeks) led to a >40% higher rate of complete response in patients initially treated with omalizumab. This improved response was sustained throughout the treatment period.

P011

Managing Covid-19 vaccine allergy clinical queries: the impact and experience of a Quality Improvement Initiative in a tertiary care allergy service.

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Objectives

The delivery of allergy services has been impacted by emerging and rapidly changing data and advice regarding the COVID-19 vaccine and people with allergies. On 1st March 2021 an Advice & Guidance (A&G) COVID-19 vaccine allergy pathway for General Practitioners seeking specialist clinical advice was implemented. Our aim was to develop a robust pathway for the safe and effective provision of services for patients who require specialist allergy guidance for potential or suspected reaction to the COVID-19 vaccine, in particular the development of a COVID-19 vaccine allergy clinic.

Method

We undertook a multidisciplinary, Quality Improvement (QI) project to review the service demand and response to COVID-19 vaccination allergy queries. Over three QI workshops, allergy nurses, pharmacist, business manager and Consultant Allergists collaborated to process map the service from A&G to the development of a COVID-19 vaccine allergy clinic. We used Life QI online quality improvement platform to manage the change process and Plan, Do, Study, Act (PDSA) cycles to test changes and evaluate impact on the service and patients.

Results

A total of 284 A&G COVID-19 vaccine allergy queries were received in the 8 weeks from 1st March to 28th April 2021, equating to an average of 36 A&G queries per week or 7 per day. Of these queries, 29 required an outpatient review with a Consultant Allergist. Process mapping has identified the need for improvements to the A&G pathway resulting in a number of initiatives to better support GPs. Mapping of the pre, during and post COVID-19 vaccine clinic service pathway has resulted in improved clinical governance and patient communication.

Conclusions

A QI initiative has enabled the allergy service to navigate a challenging clinical landscape by improving the pathway for COVID-19 vaccine queries and facilitating the safe and effective development and delivery of a COVID-19 vaccine allergy clinic.

P012

Management of suspected hypersensitivity reactions to anti-TB drugs in a UK specialist regional allergy service

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Objectives

Hypersensitivity reactions (HSRs) to first line anti-tuberculosis (TB) drugs, [rifampicin (R), isoniazid (H), pyrazinamide(Z) and ethambutol (E)] are relatively rare and challenging to manage as evidence base is sparse and there are no consensus guidelines.

Method

Retrospective review of clinical documentation: cases were identified from our clinic database.

Results

15 cases were identified. Age range 19-64yrs; gender: 13F/2M; ethnicity:46% were South Asian, 5 (33%) White British, 1 Nigerian, 1 Vietnamese and 1 Ethiopian; all cases were HIV negative. TB diagnosis: lymph node (40%), latent (33%), lung (26.6%) and miliary (7%). 33% were on dual (RH) and and 67% on quadruple (RHZE) therapy. Index history: 14 (93%) of cases presented with cutaneous symptoms (erythema ± pruritis ± rash), 6 (40%) with angioedema, and a minority had associated constitutional symptoms. 5 (33%) episodes occurred <1hr after first dose and the remainder were non-immediate (median: 10.5 days after commencing treatment).

Skin tests: Rifampicin was identified as culprit in 10 (66%) cases and regardless of clinical history, these patients had a positive immediate skin test (9 +ve IDT and 1 +ve SPT). Of these, 1 patient avoided rifampicin and completed a prolonged 18-month treatment course, 6 patients underwent rapid oral rifampicin desensitisation uneventfully and in 3 cases desensitisation is pending. Other drugs were negative on skin testing and were re-introduced successfully under supervision. In the remaining 5 (33%) cases, no culprit was identified on skin testing and all drugs were re-introduced sequentially under supervision in 2 cases and pending in 3. A high proportion of cases with a history of non-immediate HSR had had a break in treatment prior to their reaction which might in part explain sensitisation

Conclusions

Type1 HSR to rifampicin was the only demonstrable patho-mechanism. A systematic approach including history, skin tests and stratification for drug desensitisation and challenge is recommended in clinical management.

P013

Anaphylaxis to Milk Thistle: a case report

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Objectives

Milk thistle (Silybum Marianum) is a plant of the Asteraceae family found native to Southern Europe and Asia. The main active ingredient of the milk thistle fruit is the flavonoligan silybin thought to have beneficial anti-inflammatory properties. Milk thistle is being increasingly used in gluten-free flour.

Method

A 38-year-old female was referred to the allergy department following eating a pancake made from milk thistle seed flour and immediately after consumption developed rhinitis, periorbital angioedema, generalised urticarial rash with throat tightness. She had cycled before the reaction but there were no cofactors at the time of eating. She had eaten all the same ingredients again without issue but continued to avoid the milk thistle seed. She last consumed milk thistle seed flour in capsule form from a herbal shop around 7 years ago which she tolerated. She had no other history of atopy or food allergy. Specific IgE testing and skin prick testing to milk thistle seed were not commercially available. Prick-to-prick skin testing was however performed to milk thistle seed flour (supplied by the patient) which was positive with a 5x5 mm wheal diameter. We did not progress to food challenge given this result, and the patient was diagnosed with milk thistle seed allergy.

Results

This is, to our knowledge, the first systemic IgE-mediated allergic reaction following ingestion of milk thistle seed in a food product confirmed by prick-to-prick skin testing. Elsewhere in the literature there is a reported case of a potential respiratory focused allergic reaction (rhinitis and wheezing) following inhalation of ground milk thistle, which was also confirmed by prick-to-prick testing.

Conclusions

Milk thistle seed should be regarded as an important and relevant food allergen, capable of inducing anaphylaxis on consumption. This may prove to become a more common issue in the future with the increased use of gluten-free products.

P014

Perioperative Immediate Hypersensitivity Reactions: Demographics and Clinical Features in our Patients.

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Objectives

Evaluate the activity of our Perioperative Immediate Hypersensitivity Reactions assessment and management service. Our objectives were to establish the demographic features of our patients, most frequent suspected culprits, type of reaction, treatment of the episode and mast cell tryptase levels.

Method

We collected the data retrospectively of 36 patients referred to our Allergy Adult Service with a suspected Perioperative Immediate Hypersensitivity reaction from April 2018 to March 2021.

Results

We found that the average age was 56 years old with the older patient being 82.

72%(26) were females and 27% (10) males, most of them were white British 72% (26).

52%(19) of the patients were ASA (American Society of Anaesthesiologists) Physical Status classification 3.

The main culprits suspected by the anaesthetists were neuromuscular blocking agents (11 patients), antibiotics (10 patients), patent blue dye (4 patients), and chlorhexidine (1 patient).

More than one culprit was suspected in 50%(18) of the cases.

Most of the reactions 55%(20) happened during the induction process and 5 minutes after the suspected culprit was given in 72% of the cases(26)

Regarding the clinical score grading, 36% (13) of them had a very likely reaction and 27%(10) almost certain reaction.

66%(24) of the patients suffered a grade 3 anaphylaxis(classification of Ring and Messmer), presenting most of them with severe hypotension.

We confirm mast cell activation in 52%(19) of our patients referred.

Half of the reactions were treated in Intensive Care.

Conclusions

Perioperative Immediate Hypersensitivity reactions are challenging due to the increased number of drugs given in a short period of time.

As previously reported, our series showed that the most frequent suspected culprits were NMBA, followed by antibiotics, patent blue dye and chlorhexidine.

These results are very similar to the previous results published in the National Audit Project 6th.

P015

Long-term ligelizumab treatment leads to prolonged symptom control during post-treatment follow-up in patients with chronic spontaneous urticaria

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Objectives

Ligelizumab, a humanised monoclonal anti-IgE antibody, demonstrated greater symptom control versus omalizumab during the core Phase 2b trial. Here we examine symptom control during post-treatment follow-up in the Phase 2b trial (NCT02477332) and extension study (NCT02649218).

Method

Eligible subjects with moderate-to-severe chronic spontaneous urticaria (weekly Urticaria Activity Score (UAS7) ≥16) were randomised to ligelizumab 24, 72 or 240 mg, omalizumab 300 mg or placebo every 4 weeks (q4w) for five injections. Following a 16-week washout period and evidence of disease activity (UAS7 ≥12), eligible subjects entered a 12-month open-label, single-arm (ligelizumab 240 mg q4w) extension study plus 12-month treatment-free follow-up. Symptom control maintenance during follow-up was analysed using the Kaplan-Meier method.

Results

In the core study (Week 20), more patients receiving ligelizumab versus omalizumab achieved well-controlled disease activity (UAS7 ≤6) **(Table)**. During the post-treatment follow-up, the median duration of well-controlled symptoms in patients with UAS7 ≤6 at Week 20 was 16.0 weeks for ligelizumab 240 mg and 8.0 weeks for ligelizumab 72 mg and omalizumab, respectively **(Table)**. In the extension study (Week 52), 61.1% (138/226) of patients achieved well-controlled disease activity. Following the end of treatment, the median duration of well-controlled disease activity was 28.0 weeks (**Table**).

Table. Disease activity in the core and extension study

Treatment[a]	Well-controlled (UAS7 ≤6), n (%)	Median duration of well-controlled activity, weeks

Core study, Week 20		
Ligelizumab 72 mg (n=78)	51 (65.4)	8.0
Ligelizumab 240 mg (n=74)	38 (51.4)	16.0
Omalizumab 300 mg (n=73)	36 (49.3)	8.0
Extension study, Week 52		
Ligelizumab 240 mg (n=226)	138 (61.1)	28.0

[a]q4w.

Conclusions

Following the end of treatment in the core study, ligelizumab 240 mg achieved longer maintenance of symptom control versus the other treatment groups. Furthermore, longer-term treatment with ligelizumab 240 mg in the extension study achieved more prolonged symptom control versus the core study

P016

Learning from the pandemic: Implementing and evaluating a home therapy based programme for our Omalizumab service

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Objectives

The coronavirus pandemic led to restriction of many non-acute services to allow redeployment of staff & resources to care for emergency inpatients. This included minimising outpatient visits for clinic assessment and treatment. Continuing our omalizumab service was crucial in ensuring that patients with severe chronic spontaneous urticaria received appropriate treatment for their symptoms while minimising the need for immunosuppressants and corticosteroids. The service implemented a home therapy programme and conducted patient surveys several months later to identify potential improvements.

Method

Training packages were created to teach patients to self-administer omalizumab, during the first three injections in hospital. UAS7 scores were collected via email and telephone appointments conducted at the end of the 6th injection. The vast majority of our patient cohort was successfully enrolled onto the home therapy programme. We undertook a postal based survey of 51 consecutive patients to understand the patient experience as well as identify strengths and areas for improvement.

Results

100% of patients surveyed were satisfied with their home therapy training. 96% felt confident administering their own injections and 96% felt they had support from the team when needed. Only one patient reverted back to hospital therapy for convenience. The main areas identified for improvement were with delivery of medications and ancillaries.

Conclusions

Converting the omalizumab service to a home therapy based programme has resulted in several positive changes. Patients reported that home therapy is more convenient, easier to access and improves lifestyle flexibility. There were some challenges with UAS7 score monitoring – e.g. patients forgetting to email their scores in. Our department is now planning to implement a nurse led clinic to review these patients before injection 5 to ensure that UAS7 scores are collected in a timely manner and provide additional treatment support before the end of their course.

P017

Crustacean allergy in clinical practice: a retrospective study comparing diagnostic modalities

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Objectives

To determine the most effective method for the diagnosis of crustacean allergy, a common adult-onset food allergy.

Method

This retrospective cohort study included 153 patients who underwent an oral food challenge to seafood between 2010 and 2019 at the Royal Brompton Hospital. The results of skin prick tests (SPT) to shrimp reagent, prick to prick test (PPT) to fresh King prawn and North Atlantic prawn, and specific IgE to shrimp reagent were compared against the outcome of the diagnostic gold standard of oral food challenge (OFC).

Results

In total 93 patients were challenged to crustaceans and 44 to molluscs. Eighty percent of reactions reported were to crustaceans and 20% to molluscs, with King prawns and North Atlantic prawns being the most frequent triggers. The most commonly reported symptoms were skin rash and oral itching, with 70% of symptoms occurring within 120 minutes of food ingestion. The majority of challenges (79%) were negative, and those which were positive occurred mainly with crustaceans; 22% of all crustacean challenges were positive, compared with 0.05% for molluscs. The best predictor of the outcome for a challenge to King or North Atlantic prawn was SPT to fresh prawns, especially King prawns (Sensitivity: 36%-57%, Specificity: 71-82%, PPV: 25%-33%, NPV: 84%-91%), compared with specific IgE blood test and SPT reagents to shrimp which had limited sensitivity (27%-75%) and positive predictive value (PPV)(12%-19%) but high specificity (54%-71%) and negative predictive value (NPV)(80%-96%).

Conclusions

This retrospective data review demonstrates that PPT with fresh prawns is a more accurate predictor of challenge outcome than reagents. This might be due to patients being sensitised to a variety of different shellfish allergens. Tropomyosin is the most common sensitising allergens, but in some species of prawns, other allergens may dominate and thus PPT with the whole prawn is a better diagnostic test.

P018

Is vegan confectionary sold online in the united kingdom ‘free from’ cow’s milk?

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Objectives

The study aimed to analyse the food labels of vegan confectionery sold online in the United Kingdom (UK) with reference to cow’s milk. The secondary aim was to verify the findings of the online food labels with the food labels found on the physical products.

Method

Food labels on vegan confectionery sold at 4 major grocery stores in the UK were analysed online to determine if they were labelled as: ‘free from’ cow’s milk; if there were precautionary allergy labelling (PAL) for milk; if cow’s milk was listed as an ingredient or if no reference to cow’s milk was made on the food labels. A random 10% subsample of the online food labels was verified instore by checking the food label on the actual product. The exact binomial test was used at a 5% significance level to verify the online food labels with the food labels on the physical products.

Results

Vegan confectionery (n=143) products were analysed online, where 52.5% were found to be labelled as ‘free from’ cow’s milk; 27.3% made no reference to cow’s milk and 20.3% were labelled with a PAL statement for cow’s milk. No products listed cow’s milk as an ingredient. When verified instore (n =16), a significant number of food labels’ (n=3) reference to cow’s milk did not match the food label information available online ($p<0.05$).

Conclusions

Vegan confectionery sold in the UK is not necessarily labelled as ‘free from’ cow’s milk. Cow’s milk allergic patients should analyse food labels on vegan confectionary products, as they would for non-vegan products, to determine if they are suitable for consumption. The physical food label of products purchased online should be checked prior to consumption, as allergy information on the product may differ from information available online.

P019

Impact of Food Hypersensitivity on quality of life and daily life in the UK: The FoodSensitive study

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Objectives

Objective. Food hypersensitivity (FHS) covers food allergy, food intolerance and coeliac disease. Food allergy has been shown to affect the quality of life (QoL) of patients but less is known about QoL in those with other hypersensitivities. The Food Standards Agency commissioned this project with the aim to understand what factors impact QoL for individuals with FHS living in the UK.

Method

Methods. Participants (n=930 adults with FHS; n=686 parents of children with FHS; n=225 children aged 8-17 years with FHS) were recruited through patient organisations, social media adverts and online survey panels to complete an online survey about the impact of FHS. They completed measures of generic QoL (EQ5D), FHS specific QoL (FAQLQs; FIQLQs; CDQoL) and answered questions about eating out, food labelling and shopping.

Results

Results. Clinical and social variables significantly correlated with QoL across all participant groups and all types of FHS. Frequency of eating out, being more comfortable asking staff for information and confidence in information provided when eating out were related to better QoL. However, frequency of checking information at different stages of eating out (e.g. before choosing a restaurant or before ordering food) and frequency of checking food labels was related to poorer QoL (all ps<0.05). Greater self-reported severity of FHS was significantly related to poorer QoL across all participant groups. Adults, parents of children aged 0-17yrs, and 13-17 year olds with food intolerance reported poorer generic QoL than participants with food allergy or coeliac disease. (all ps<0.05).

Conclusions

Conclusions. Eating out and food shopping activities are related to QoL in consumers with all types of FHS. More frequent checking behaviour may create a greater burden on consumers. Being able to eat out and confidence in the information provided without a higher burden of checking information should be supported for those with FHS.

P020

The role of allergy nurses to celebrate the Year of the Nurse 2020(World Health Organisation(WHO)

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Objectives

In March 2020,alongside the WHO Declared Year of the Nurse ,in honour of 200 years since the birth of Florence Nightengale,COVID-19 (SARS) was declared a pandemic.

The BSACI nurses recognised the roles of nurses in allergy service provision. Including setting up new ways of working either from home, hospital or community within both paediatric and adult services.

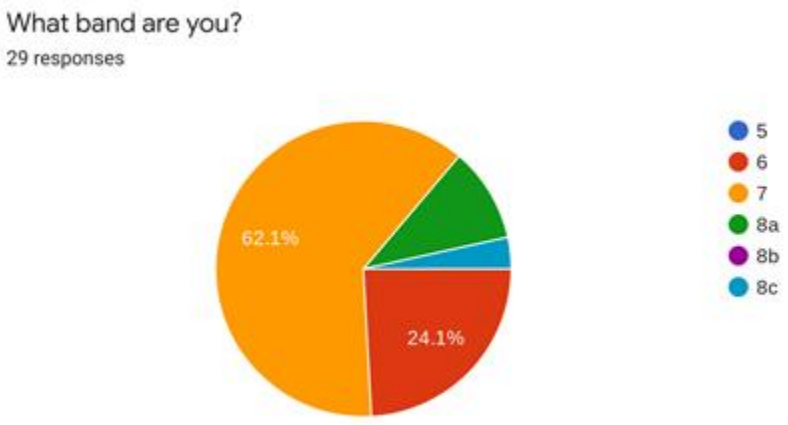
As the BSACI is currently proposing a national educational strategy including nursing, this is an important time to demonstrate how investment will enhance the knowledge and skill set of the nursing workforce.

Method

In June 2020, a survey monkey was set up to ask BSACI nurses several questions.

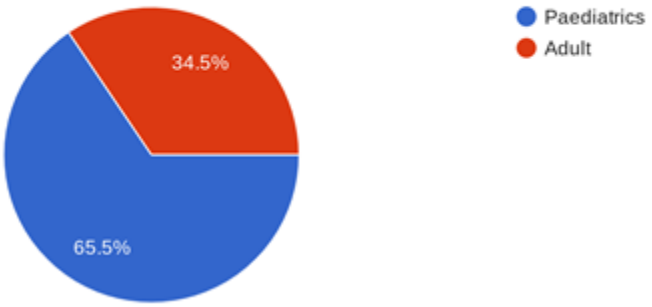
We sent out 77 email invites to take part in the survey monkey to the BSACI nurses and we received 29 responses.

Results



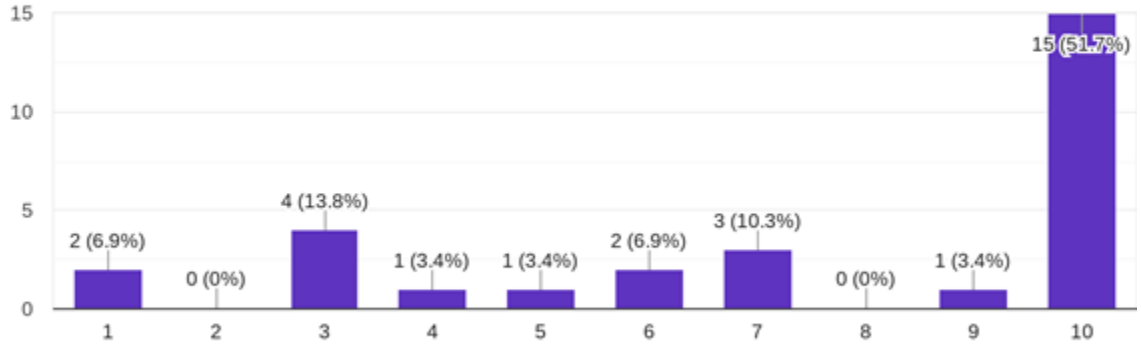
Paediatrics or Adult

29 responses



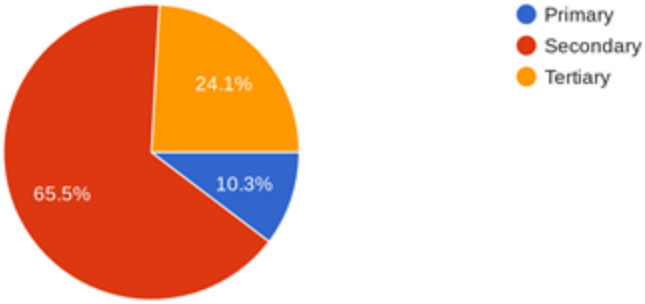
How many years in current specialty?

29 responses



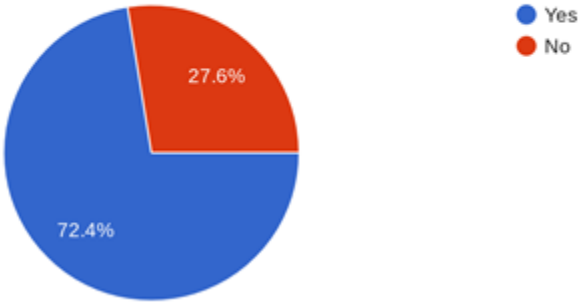
What is your Area of practice?

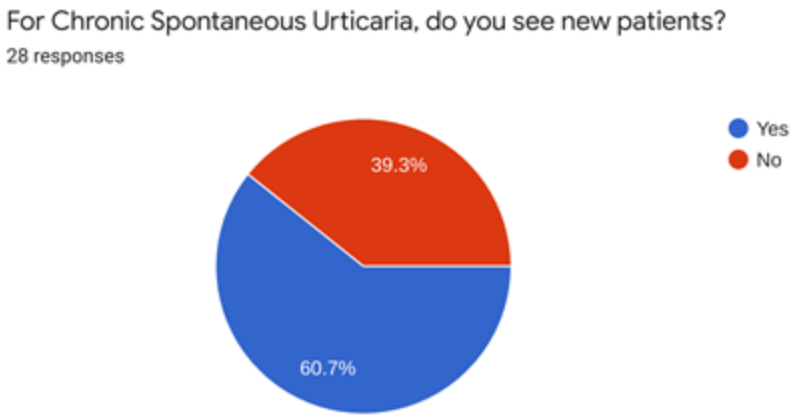
29 responses



For Food Allergy, do you see new patients?

29 responses





Conclusions

The majority of allergy nurses are a band 6 or 7 (86 %.) Nurses are working in both adult and paediatric services in diverse settings including primary and tertiary with the majority working within secondary care. Nurses make a substantial contribution to nurse led drug /food and chronic spontaneous clinics. 75 % of food challenges are nurse-led; this demonstrates the key role BSACI nurses play in delivering allergy services.

The survey provides examples of how nurses adapted during the pandemic and changed the way they communicated with patient and families' .This included signposting to online training and providing written information packs to support telephone consultations.

This survey will be conducted again in 2021.

P021

Impact of Anaphylaxis on Quality of Life and Mental Health in Adults

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Objectives

Objective. Anaphylaxis is a severe and potentially life threatening allergic reaction to allergens such as drugs, venom and food and can also be idiopathic (spontaneous). It has a detrimental impact on quality of life (QoL) however little is known abou the impact of anaphylaxis on adults. The aim of this study was to assess the impact of anaphylaxis on QoL and mental health in adults.

Method

Methods. Participants (n=142) were recruited from the allergy clinic in Birmingham, U.K. with ethical approval from the SouthCentral-BerkshireB NRES Committee. They completed measures of generic QoL (WHOQoL BREF), anaphylaxis specific QoL (A-QoL-A), anxiety and depression (HADS) and stress (PSS).

Results

Results. Adults reported anaphylaxis to food (n=33), venom (n=21), medication including general anaesthetic (n-33), unknown idiopathic (n=23) and multiple causes (n=17). Reported stress was significantly higher than norm values (mean 23.42, $p<0.001$). A total of 39% reported mild to severe anxiety and 20% reported moderate to severe depression. There were no differences in QoL across the different causes of anaphylaxis although those reacting to venom reported better overall health than those reporting medication, idiopathic or multiple causes ($p<0.05$). Those reacting to food reported better overall health than those reacting to medication ($p<0.05$). Those reacting to medication or multiple causes reported greater depression than those reacting to venom ($p<0.05$).

Conclusions

Conclusions. Anaphylaxis has an impact on the mental health of adults. Some triggers such as medication including general anaesthetic or multiple causes may suffer from greater mental distress however clinicians should be aware of the impact of this condition on adults and be prepared to refer for psychological support where needed.

P022

Nasal flu immunisation (fluenz tetra) in Leicestershire school aged children with egg allergy. A quality improvement project to improve education, and Immunisation in this population.

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Objectives

The SNIFFLE studies demonstrated the flu vaccine was safe in children with egg allergy (EA), except those who had an anaphylactic reaction to egg requiring an intensive care admission (excluded from trials). Many healthcare professionals are not aware of this research. The aim of the project was to conduct a survey of the Leicestershire School Immunisations team to determine their knowledge of the flu vaccine in relation to EA, and enhance it to improve immunisation.

Method

A surveymonkey was conducted in the summer/autumn of 2020. It explored whether the team wanted further teaching. Data was collected from consent forms to determine the number of children with parent reported EA that received the vaccine in 2020/21.

Results

93.75% of the immunisations team were confident in the contraindications for nasal flu immunisation and EA in children. Only 50% correctly answered that a child with anaphylaxis to egg that recovered quickly with treatment should receive the nasal flu immunisation. All were aware that children with anaphylaxis to egg requiring intensive care admission should not receive the vaccination, however only 25% felt a referral to specialist was required. 87.5% wanted further teaching on the topic. Data from parent consent forms revealed only 36% (37/104) of the children with EA received the vaccination in 2020/21.

Conclusions

Knowledge within the immunisation team regarding flu immunisation in children with EA was lacking. A teaching session was attended by 56% of the immunisations team, and distributed to all team members prior to the 2020-2021 nasal flu immunisation programme. Feedback from teaching was positive indicating that 100% felt it met the learning objectives. Despite this, immunisation of EA was low and therefore we plan to work with the immunisation team to improve uptake of the Flu vaccination by improving dissemination of this information to parents of egg allergic children.

P023

The Association of Orosomucoid 1-like 3 (ORMDL3) Gene Polymorphism (rs12603332) with Susceptibility to Allergic Asthma in Iranian Northwestern Azeri Population.

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Objectives

Orosomucoid 1-like 3 (ORMDL3) gene, located on chromosome 17q21, is an asthma candidate gene that encodes ORMDL3. This molecule has been reported to play a role in airway remodeling and bronchial hyper-responsiveness.

Method

In this study, we aimed to investigate the possible association of ORMDL3 single nucleotide polymorphism (SNP) (rs12603332) with susceptibility to allergic asthma in Iranian Northwestern Azeri population. 193 asthmatic patients and 185 normal individuals were included. Genomic DNA was extracted and genotyping was performed by standard restriction fragment length polymorphism-polymerase chain reaction RFLP-PCR method using BstUI restriction enzyme

Results

The results of this study showed dominant presence of TC genotype and C allele in both patients (49.2% and 59.8%, respectively) and controls (48.6% and 60%, respectively). Frequency of genotypes and alleles showed no significant difference between two groups (p=0.994 and p=1.00, respectively). None of alleles could be defined as risk allele for allergic asthma (OR=0.99, 0.88-1.12, 95% CI). We failed to show significant association between ORMDL3 rs12603332 with predisposition to allergic asthma in Iranian Northwestern Azeri population.

Conclusions

More studies with larger number of participants should be done to find more reliable results for such association.

P024

The effect of Ketotifen on Eosinophilic chemotactic factors in experientially allergic asthma

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Objectives

Ketotifen is a Histamin antagonist which inhibits the mast cells and has clinical use in treatment of allergic asthma. It's possible that one of the anti inflammatory mechanisms of Ketitifen is preventing the migration of Eosinophils to guinea pigs' bronchus. The aim of this study was to examine the effect of Ketotifen in preventing Eosinophils from migrating into the bronchus in the experientially allergic asthma patients.

Method

In this experiment; 16 guinea pigs were divided into 4 groups. In group 1 after sensitization by Ovalbumin they were challenged by Ovalbumin and buffer, then they received Ketotifen. The second group was sensitized and challenged by Ovalbumin without receiving any Ketotifen. The third group was challenged only by buffer, and the last group was challenged without sensitization.

Results

The comparison of statistical analysis among groups showed that the number of Eosinophils in groups which received Ketotifen, significantly decreased in comparison with the Control group ($P<0.05$). Comparison of the second and third groups showed that the second group had a significant increase in the number of Eosinophils.

Conclusions

The data showed that Ketotifen had an important effect in preventing the migration of Eosinophils into the air pathway.

P025

Food Allergy and Intolerance Research programme at the UK FSA

Ayah Wafi

Food Standards Agency, London, United Kingdom

Objectives

Since 1994, the Food Standards Agency (FSA) has invested more than £20 million in over 60 different research projects on food hypersensitivity, as part of its Food Allergy and Intolerance Research (FAIR) Programme. This research continues to have significant international impact on our understanding of food hypersensitivity and has provided the FSA with opportunities to address important clinical and patient needs. The programme has funded research in several areas, the prevalence and characteristics of infant food allergy and intolerance, the importance of the route and timing of exposure to food allergens in early life, risk factors associated with the development of food allergy, and the effects of extrinsic factors such as exercise and stress on the elicitation of allergic reactions to food.

Method

Current FSA-funded work aims to use NHS data to monitor trends in the occurrence of severe, food-induced allergic reactions by describing the incidence of healthcare encounters in the UK, and establishing a prospective UK Anaphylaxis Registry. Recent results show that hospital admissions for food-induced anaphylaxis have increased during the period from 1998 to 2018, but that the case fatality rate has decreased. It has reported that in children, cow's milk is now the most common single cause of fatal anaphylaxis.

Results

More education is needed to highlight the specific risks posed by cow's milk to people who are allergic to increase awareness among food businesses. The team at Imperial College is now looking to expand on these findings by investigating why some people may be more susceptible to severe allergic reactions than others.

Conclusions

FSA is funding a range of other studies, including an investigation of the Prevalence and Patterns of Adult Food Allergy (PAFA) and intolerances in the UK. The FSA recently undertook a Research Prioritisation Exercise with multiple stakeholders which will inform priorities for future research.

P026

The Effects of Air Pollution on The Salivary IgA Levels in Children

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Objectives

The effects of air pollution on the human health and morbidity and mortality are well demonstrated. Air pollution affects immune system and may have effect on immunoglobulins. In this study we aim to evaluated the effects of air pollution on the salivary IgA levels in children.

Method

In this descriptive study, 44 children from Tabriz industrial city in north west Iran (polluted city) and 44 children from Kaleibar (a suburban area near Tabriz city) with similar socioeconomic status were selected. Saliva samples were taken and analysed by ELISA test. Salivary IgA levels were compared between two groups. All statistical tests were performed using SPSS for windows Version 21. Independent t test was used to compare quantitative data between groups (P-Value= 0.001).

Results

The mean levels of the salivary IgA in Tabriz city was significantly lower than was significantly lower than Kaleibar (9.73±1.57 vs. 12.25±4.4 mg/dl, p= 0.001).

Conclusions

Similar to the literature, we observed that that the salivary IgA levels are decreased in areas with air pollutions.

P027

Patient reported experience measures in a paediatric allergy clinic in the West Midlands: a "Covid-safe" method.

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Objectives

The Care Quality Commission recommends that feedback is sought from patients and their families to improve services.[1] We devised a "Covid-safe" method of obtaining feedback from children, young people and their families on their experiences following both face-to-face and virtual visits to our multi-disciplinary paediatric allergy clinic.

Method

Between December 2020 and February 2021, after their appointment, patients and/or their parent/guardian were invited to complete a 20-question validated questionnaire. Delivery was initially trialled using an iPad, but WiFi connectivity was unreliable and cleaning between uses was inefficient and inconvenient. Additionally, respondents may have felt pressurised to participate and telephone and video appointments were not captured. To address these issues, we subsequently used the NHS-accredited AccuRx patient communication platform to send a link to the questionnaire via text message.

Results

Questionnaires were completed following 87/411 (21%) appointments. 85% were completed by the parent/guardian, 9% by the parent/guardian and patient and 6% by the patient. Notably, 100% of respondents said they would recommend our service, 98% felt they had enough time to discuss their concerns with the doctor, and 88% were seen within 30 minutes of their appointment time. 67% of respondents wished for better access to the allergy team by either email, phone or text message.

Conclusions

The AccuRx system is a successful "Covid-safe" method for disseminating a patient questionnaire. However, our findings are limited because the survey was sent in English only (our Trust is in a multicultural, multilingual region) and the response rate was only 21% (patients were only sent one text message invitation). Based on the results, we are now exploring ways of improving the timeliness of appointments and establishing patient access to the allergy team via email. We will re-audit in one year, with survey distribution in other languages.

P028

BeatAnaphylaxis – A regional quality improvement project to help reduce fatality through healthcare professional (HCP) education.

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Objectives

BeatAnaphylaxis is a region-wide programme seeking to improve quality of care provided to children and young people (CYP) presenting with anaphylaxis through an innovative online educational intervention.

OBJECTIVE

Co-design and evaluate an online resource to support HCPs manage CYP presenting with anaphylaxis.

Method

Evaluation draws on Kirkpatrick's Model. Data includes website analytics, user feedback, pre/post knowledge survey and audit.

14-question survey cascaded to HCPs considers respondent demographics, self-rated confidence and knowledge of anaphylaxis management.

Regional audit of anaphylaxis presentations over 12-months based on NICE-CG134.

Results

Baseline survey was completed by 300 HCPs (senior doctors, n=74; junior doctors, 177; nursing, 49). Self-rated confidence increased with experience: senior doctors/nurses mean 3.6/5.0; speciality trainees 3.2/5.0; foundation doctors 2.0/5.0. Few recognised key respiratory symptoms (10% identified 'persistent cough'; 29% 'hoarse voice'). 32% thought mast cell tryptase (MCT) should always be measured. Only 26% identified that anaphylaxis can be idiopathic. 90% felt that all children, irrespective of trigger, should receive adrenaline auto-injectors (AAI) at discharge.

Baseline audit identified 75-cases: Median age, 8.7-years; 31% female. Triggers were peanut (31%), tree nuts (12%), cow's milk (10%), egg (9%), unknown (12%). Reaction onset timing was not documented in 17.3%. MCT was not indicated in 42% of cases where measured. No discharge education was provided in 30.6% of cases. 49.3% received an allergy action plan. 18.6% received no AAI where indicated. 24%

received information on biphasic reactions, 14.6% were sign-posted to support groups. 57.3% received allergen avoidance advice.

Baseline data informed design of BeatAnaphylaxis.co.uk. Online resources were co-produced with HCPs across primary/secondary care along with patient representatives. The website launched in January 2021. Post-implementation data will be gathered in January 2022.

Conclusions

HCPs lack knowledge and skills in managing anaphylaxis. BeatAnaphylaxis.co.uk is an innovative online educational intervention that may address this practice need and improve patient care.

P029

Antibiotic drug challenges in children; a safe and effective secondary care protocol

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Objectives

Background: Presumed beta lactam antibiotic allergy, associated with the presentation of maculopapular or urticarial rash is commonly reported in children.

Objective: Retrospective reporting of our low risk Drug Provocation Challenge (DPC) outcomes describing a safe, time and cost effective protocol adapted from the BSACI 2015 guidelines.

Method

Primary care referrals for possible beta lactam antibiotic allergy were reviewed from 2015/2021. Triage was continued by telephone during Covid 2019. Children with a clinical history indicating an unknown or delayed hypersensitivity reaction underwent skin prick testing (SPT) for the major/ minor determinants of Penicillin (DAP PPL/ MDM), intravenous preparations of Amoxicillin, Co-amoxiclav, Flucloxacillin or macrolide. A single top dose DPC of the index antibiotic was performed on the same day followed by a further 5 day course. DPC were organised approximately x 3 per year, in clusters of 8 children per day.

Results

106 children (mean age 7.55, range 1-17 years) referred for suspected antibiotic allergy. 33% (35/106) consultations triaged by telephone. 5.7% (2/35) identified high risk and not suitable for low risk DPC. 3.0% (2/66) of SPTs performed were positive and did not proceed to challenge. 97% (64/66) DPC were performed and 96.9% (62/64) successfully passed. DPCs included Penicillin V 53.1% (34/64), Amoxicillin 28.1% (18/64), Co-Amoxiclav 7.8% (5/64), Flucloxacillin 4.7% (3/64) and macrolide 6.3% (4/64). 3.1% (2/64) patients had possible delayed reactions on completing courses of Amoxicillin and have not had further beta lactam antibiotics. 36.4% (16/44) patients successfully contacted have confirmed further use of the DPC antibiotic, all without adverse events.

Conclusions

The majority of children with presumed beta lactam antibiotic allergy do not have a confirmed allergy. This has important public health implications including preventing unnecessary avoidance of these antibiotics to treat infection. Our adapted protocol provides a safe, cost and time efficient method of managing these children.

P030

Review of Paediatric Food Challenges: could more Almond and Tuna challenges be safely performed at home?

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Objectives

1. To evaluate the reaction rate, and the severity of reactions, of tuna and almond challenges performed in our hospital.
2. To use results collected to examine whether the thresholds for home introduction of both tuna and almond should be reviewed.

Method

Retrospective data analysis of tuna and almond challenges performed in the Paediatric Allergy Service at St George's Hospital. Electronic medical records were reviewed of all patients who underwent an oral food challenge between April 2018 to October 2020 at St George's Hospital. Clinical history, results of SPT and specific IgE to tuna and almond and the outcome were extracted from the hospital database.

Results

Tuna

14 children underwent a tuna food challenge. None were observed to have a positive result. One child had an inconclusive challenge as the final sample was refused; prior to this the child did not experience any signs of an allergy reaction. All these children had a known allergy to other fish.

Almond

77 children underwent an almond only challenge; 8% (6) of these were supervised feeds, the other 92% (71) were food challenges. 8% (6) children were observed to have a positive almond challenge. One child had an inconclusive challenge as the final sample was refused; prior to this the child did not experience any signs of an allergy reaction.

50% (3) of children with a positive challenge were managed with cetirizine alone, at the correct dosage for age. The other 3 children had mild symptoms which required no intervention.

Conclusions

No children had a positive tuna challenge and the thresholds for home introduction of tuna could be relaxed. 96% of children who had an SPT less than 2mm tolerated the almond challenge. For those that reacted, all reactions observed were mild to moderate. The threshold for home introduction of almond could relaxed.

P031

One condition's treatment is another condition's poison: a troublesome case of chronic urticaria.

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Objectives

Background:

Chronic urticaria (CU) is condition of recurrent itchy weals to angio-oedema, lasting beyond 6 weeks. It usually presents to allergy or dermatology if high-dose antihistamines fail to control the quality-of-life impairing symptoms. Good management includes identifying triggers, where possible. Non-steroidal anti-inflammatories (NSAIDs) are a known association. We present a paediatric case with a history of Kawasaki disease (KD) on prophylactic aspirin (acetylsalicylic acid or ASA), demonstrating a management dilemma after developing CU and increasingly troublesome symptoms with ASA use.

Method

Case presentation: An atopic 13 year old girl, referred to our tertiary children's allergy CU clinic, had KD during infancy in India, complicated by a medium coronary artery aneurysm (caa) which had resolved in infancy. ASA was started in 2019 under cardiology in the UK. Over months, she developed itch and worsening weals; ultimately presenting to the CU clinic following an episode of unexplained anaphylaxis, new facial angio-oedema, prompting consideration for biological or immunosuppressive therapy. Drug allergy testing to ASA/NSAIDs was withheld due to symptom severity. She had previously tolerated Ibuprofen. As the history suggested a causal relationship between the CU flares and aspirin, we discussed the options with cardiology, resulting in a successful trial off ASA. Cardiology continues follow-up.

Results

Discussion: Currently, post-KD caa management recommends life-long thromboprophylaxis of low-dose ASA working as an anti-platelet. However, ASA is known to trigger or exacerbate CU. Studies regarding long-term management of KD in preventing caa in children are limited. As clopidogrel, potential anti-platelet alternative agent in ASA/NSAID allergy, has also been associated with CU, there is a need for long term follow-up exploring the efficacy of non-ASA/ NSAIDs alternatives.

Conclusions

This case uniquely identifies the limited management for KD, particularly when ASA is contraindicated, highlighting an opportunity for clearer evidence on the lifelong management of KD and thromboprophylaxis alternatives.

P032

Children and young Peoples' experience receiving immunotherapy in hospital during winter Covid19 surge (2020/2021)

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Objectives

The team wanted to capture the experience of Children and Young People (CYP) attending for subcutaneous immunotherapy during the Covid19 Pandemic in a North London Hospital.

We were successful in providing 31 courses of treatment for 21 CYP aged between 11 and 18 years old over winter 2020/2021 despite the allergy nursing team being redeployed and the medical team relocated to a different hospital site. The paediatric ward became required for adults thus location moved mid treatment.

Method

Initially the trust friends and family feedback forms were used however the responses were limited due to unstructured open questions and the age profile of our patients:

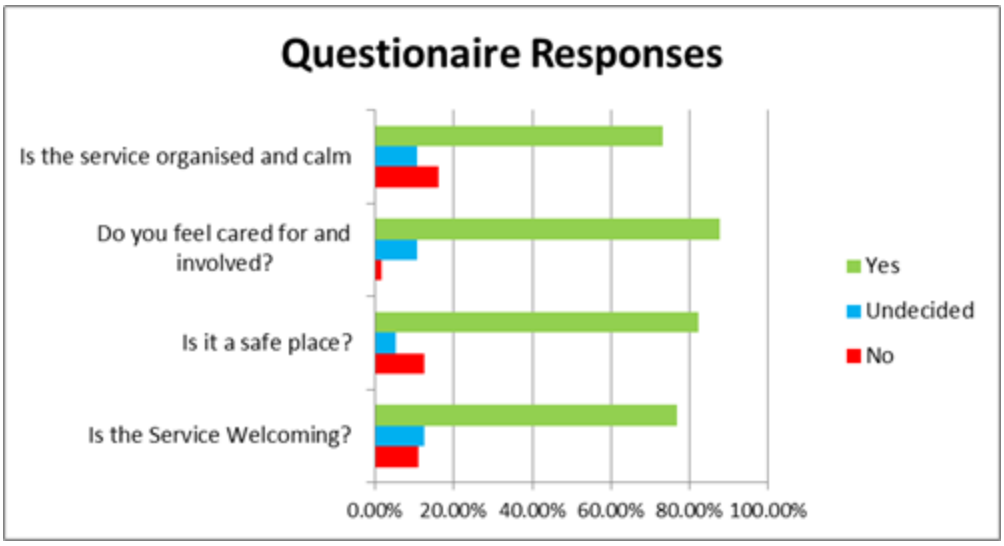
What was good? 'Everything', What was bad? 'Nothing'

In order to capture more meaningful details, the 15 Steps Challenge Toolkit was then used. This consisted of an anonymous written questionnaire of closed questions focusing on 4 areas based on the Care and Quality Commission domains: Is the service welcoming? Is it a safe place? Do you feel cared for and involved? Is the service organised and calm?

The information was collated by the allergy nurses and reviewed for emerging themes

Results

Out of 14 total responses the overarching theme that emerged was that 'Staff are friendly, welcoming, polite and flexible' and that CYP and their families were appreciative of the service still continuing despite pandemic.



Conclusions

Young people have an important contribution to make in terms of adding to decisions that impact on their lives and communities. Each young person has the potential to bring their own life experiences, needs and expectations to inform our future practice.

Individualised care is one of the five major, practical changes to the NHS that will take place over the next five years, as set out in Long Term Plan.

P033

Ten Tips for the Implementation of Oral Immunotherapy for Peanut Allergy in Clinical Practice in the United Kingdom

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Objectives
Shared learnings from the early use of novel therapies can aid clinicians in optimising their use. Defatted powder of *Arachis hypogaea* L., semen (PDAH; previously known as AR101) is an oral biologic drug for peanut oral immunotherapy (OIT). The drug was first approved in the United States (US) and recently approved by the European Commission as Palforzia® for the treatment of peanut allergic individuals aged 4-17 years. Several factors should be considered by prescribers and patients when considering implementation and treatment of peanut allergic individuals with PDAH. We provide a framework based on US real-world experience to facilitate successful treatment delivery for clinicians considering prescribing PDAH in the United Kingdom (UK).

Method
US clinicians with experience treating patients with PDAH participated in a series of qualitative semi-structured interviews to elicit tips and an advisory panel discussion to determine the most relevant, practical, and impactful recommendations, or tips, for successful implementation. These recommendations were then applied to learnings for UK clinical practice.

Results
Six clinicians from single-specialty clinics, academic settings, and multi-specialty health systems identified 10 tips for PDAH prescribers. These tips related to preparing and planning, assessing medical indication, shared decision making, educating support staff alongside patients/families, establishing processes, managing expectations, anticipating potential adverse events, and optimising adherence. Additional recommendations were to maintain flexibility with personalising treatment and to find ways to engage the patient and their families with peanut OIT. Supportive materials, including checklists of essential patient/family education and sample food allergy action plans, were also identified as important elements to assist prescribers.

Conclusions
The introduction of a novel therapy often requires healthcare providers to modify or adopt practices to effectively use the treatment. This guidance developed by clinicians with early real-world experience with PDAH can help inform adoption of PDAH in UK clinical practice.

P034

Barriers and challenges affecting parents use of adrenaline autoinjector for children in anaphylaxis. A single centre study

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Objectives

Many studies have shown that AAI is commonly underused by parents, this study was undertaken to elucidate the causes of its underutilization in our community.

Method

A cohort of parents attending the paediatric allergy clinic at Al Ain hospital, in the United Arab Emirates (UAE), completed a questionnaire survey aimed to assess their understanding and knowledge of their child's allergy management, including their aptitude with the use of the AAI, as well as their competence and comfort to provide this treatment in an emergency

Results

A total of 47 parents, 83% of whom were Emirati, including 66% of mothers, participated in the study. Food allergy was the main indication for AAI prescription, with tree nuts 62%) and peanuts (38%) being the main culprits. The majority (94%) of parents were trained by a doctor on using the AAI, with most (79%) demonstrating a good knowledge of indications for administering the AAI. Although all parents expressed satisfaction with the training that they had received, they still admitted to a remaining lack of confidence with using an AAI.

Conclusions

The continuous education and training of parents on how to use an AAI, still requires supplementary psychological support to overcome their fear and anxiety with using the device in an urgent situation. More research is needed to explore the reasons behind their fear and anxiety to plan effective interventions.

P035

Developing and validating a clinical prediction model to detect Severe Early Onset Chronic Paediatric Multi-system Allergy

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Objectives

Research alludes to an endotype that links a paediatric cohort who present with early onset, persistent, severe, multimorbid allergic disease; who display clear type 2 inflammation with high total IgE, eosinophilia and often respond to T-helper 2 axis targeted therapy[1-5]. There is currently no diagnostic score for objective identification of these patients.

Method

Patients with severe multisystem allergy (sMSA) were identified from Tertiary Allergy Clinics between 2019-2021. sMSA was defined as severe atopic dermatitis and ≥1: atopic asthma, allergic rhinitis and/or IgE-mediated food allergy. Investigation results were collated for the sMSA cohort and compared to a paediatric non-sMSA cohort. The prediction model consisted of variate z-scores with associated weightings. Five-fold cross validation was performed with ROC analysis.

Results

89 sMSA and 190 comparison patients were identified. Mean age 80.3 (SD=47.73) and 80.4 (SD=64.1) months with 36% and 46% female, respectively. When comparing sMSA to the comparison cohort: total IgE and eosinophil count was significantly higher ($p<0.001$), serum vitamin D and serum iron were non-significantly lower ($p=0.05$, 0.068, respectively) and height z-scores were significantly lower ($p<0.001$). Five-fold cross validation determined mean AUC=0.911 (range 0.893-0.934). Sensitivity and specificity were 77.8% and 92.5%. Mean age of onset of atopic dermatitis in the sMSA cohort was 3.43 months (SD=3.69).

Conclusions

These results add to mounting evidence towards a distinct endophenotype within this sMSA cohort, previously described as the ADAGIO Complex (Atopic Dermatitis with Allergic Gastrointestinal Inflammatory Origins)[7]. Despite non-significant associations, vitamin D and iron appeared to assist the discriminative index (AUC), indicating a potential effect greater than the sum of their parts. Objective identification of such patients is imperative for inclusion in clinical trials. Identification in this manner will allow better disease monitoring and communication between clinical teams[1, 6]. Future multi-centre, longitudinal studies should re-validate this prediction model and further define the cohort.

P036

Seafood Home Introduction in East London Paediatric Allergy Clinic - Are families adding seafood to the menu?

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Objectives

Home Introductions (HI) can be useful inexpensive tools allowing families to introduce new foods, if minimal allergic concerns. Data is limited as to whether such challenges are attempted. Our aim was to assess the level of home seafood introduction (HSI) in our service and explore influencing factors. HI safety and parameters around those who failed were assessed.

Method

28 paediatric participants were identified (food challenge database) - 0mm skin prick test to specific fish/shellfish, outpatient allergy review between April -November 2020, HI advice and protocol given. Data collection was through telephone calls.

Results

18/28 (64%) participants male, 21/28 (75%) Asian ethnicity, 3.4 years mean age when advice given, 1(4%) asthma and 4 (14%) viral induced wheeze (VIW). 48 HSIs advised; tuna (n=18, 38%), prawn (n=12, 25%), cod (n=12, 25%) and salmon (n=6, 13%). 31/48 (65%) challenges attempted. 5/31(16%) failed due to acute reactions (e.g. vomiting, skin reactions) or food refusal. 17/48 (35%) challenges never attempted due to anxiety, miscommunication and seafood type not part of family diet. HI protocols received by 41% (7/17) not attempting HSI compared with 61% (19/31) attempting HSI. All 5 failed challenges had other seafood allergy/sensitisation compared with only 42% (11/26) of those passing. VIW more likely in failed challenge participants (3/5, 60% vs 1/26, 4%) but no respiratory symptoms reported during reactions. Adrenaline-autoinjector (AAI) prescription was higher in those not attempting HI (n=17, 76% vs n=31, 32% respectively).

Conclusions

HSI had no serious adverse events, with 26 new foods added to patients' diets. Attempting HIs may be less likely where AAIs prescribed due to general anxiety around allergies. Improved compliance amongst those receiving HI protocol suggests the importance of delivering challenge leaflets. Further research is required around whether a history of wheeze (unrelated to reactions) or the presence other seafood allergies may predict challenge failure.

P037

Are they ready? A snapshot of patient/parent preparedness for allergic reactions.

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Objectives

The rising prevalence and complexity of paediatric food allergies, resulting in increasing service demand and coupled with clinic time constraints, can dilute clinicians' ability to focus on safety.[1]Previous data shows poor carriage rate of adrenaline autoinjectors (AAI).[2,3]

This survey attempts to understand gaps in preparedness for allergic reactions in our patient cohort.

Method

A hundred consecutive children attending food allergy service were surveyed regarding access to written plans, antihistamines, inhalers and AAI at point of contact. Techniques were checked for inhaler and AAI usage. Families with AAI rated confidence in their ability to deliver intramuscular adrenaline.

Five “Young Allergy Stars” who carried all medication and were proficient in administration techniques were sent a questionnaire to gain insight into successful strategies applied by them.

Results

Patients aged 11 months to 18 years, 59% identified as White British/ other White ethnicity, 26 % Asian/Asian British, 10% Black/Black British, 4% Chinese and 1% mixed. 80% considered English as their first language.

51% carried written allergy management plans; 56% carried antihistamines. Salbutamol inhaler was prescribed in 55% children, half of whom carried their inhalers and 69% of patients/carers demonstrated correct technique.

Of 61 patients prescribed AAI , only 70% carried them and worryingly 23% had autoinjectors that had expired.

62% felt completely/fairly confident in AAI technique but only 56% demonstrated correct use of the device.

Three “Young Allergy Stars” completed the questionnaire suggesting inconspicuous smart packs for medications followed by ease of carrying, peer support groups and reminders from health care professionals were the most useful strategies.

Conclusions

Significant number of children with food allergies may not have immediate access to written plans and emergency medications, including in-date AAI. There is considerable attrition in device training. “Young Allergy Stars” have highlighted need for 3 “P”s: practical solutions for carriage, peer support and patient partnership.

P038

Acute Generalised Exanthematous Pustulosis in a child secondary to cefuroxime

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Objectives

A six-year-old boy with a background of complex congenital cardiac disease, skeletal abnormalities, and bronchomalacia was admitted electively to hospital for pulmonary artery surgery.

Method

This boy was given prophylactic cefuroxime during his cardiac operation. He developed a red rash in the evening, which started around his groin and in between the thighs, rash then spread to the rest of his body. The following day he developed pinpoint pustules on top of the erythematous skin with no involvement of mucus membranes. Additionally, he developed a high temperature of 39°C two days later with associated rise in neutrophil count. Cefuroxime was stopped and topical steroids were prescribed for his rash by the dermatology team which promptly has resolved the rash within hours. A clinical diagnosis of Acute Generalised Exanthematous Pustulosis (AGEP) was made and his mother was advised to avoid cephalosporins.

Results

This case involved a child with classical presentation of AGEP, a severe cutaneous drug reaction. It responded well to discontinuing cefuroxime and administering topical steroids.

Conclusions

A definite diagnosis can be made clinically using the diagnostic score for AGEP from EuroSCAR Study. The main treatment is removal of the causative drug and symptomatic treatment. Histology is sometimes used to support the clinical diagnosis but is not essential.

P039

Trial of paediatric home allergy testing in response to COVID-19 pandemic

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Objectives

As a result of the COVID-19 pandemic, our paediatric allergy service was pushed to adapt to remote patient consultations. A reduction in patient capacity and staff availability for routine allergy diagnostic tests resulted in our department finding alternative solutions. We piloted the use of a home allergy testing kit to provide a way for parents to collect a blood sample from their children for allergy testing.

Method

Families were sent a testing kit for blood collection via finger prick sampling which was then posted to a named laboratory for analysis using ALEX^2 ®MacroArray Diagnostics. A guideline was developed to help clinicians with patient selection and interpretation of results.

Results

The kit was piloted in 82 children over a 9-month period from May 2020 to January 2021. Over half of the patients (52%) who were sent the testing kits were able to successfully collect a blood sample. The reasons for unsuccessful samples included: the child became distressed during collection (5%), insufficient blood was collected (16%) or the family/child changed their mind and did not perform the test despite receiving the kit (27%). Of the 22 families who provided feedback, 82% reported the instructions were easy to follow and they had no problems collecting the sample. They reported that the test was particularly helpful if they lived a long distance from the hospital and for avoiding travel during the pandemic.

Clinicians found the test helpful in confirming or excluding allergies. The main disadvantage was identification of additional sensitisations in some patients, as the test measures over 250 allergen extracts and molecules, although for many this was not clinically relevant.

Conclusions

Home allergy testing may be a suitable alternative for hospital based allergy diagnostics, but we would recommend judicious selection of patients, a thorough dietary history and a unified approach in the interpretation of results.

P040

Predicting childhood asthma using machine learning and data integration approaches

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Objectives

Identifying which children experiencing persistent wheeze in early life will subsequently develop asthma is difficult. Machine learning approaches may offer improved performance over existing regression-based childhood asthma prediction models. This study aimed to apply machine learning approaches to predict school-age asthma (age 10) in early life (Childhood Asthma Prediction in Early life, CAPE model) and at preschool age (Childhood Asthma Prediction at Preschool age, CAPP model).

Method

Data on clinical symptoms and environmental exposures were collected from children in the Isle of Wight Birth Cohort (n=1368). Recursive Feature Elimination (RFE) identified the optimal subset of predictors for each model. Seven machine learning classification algorithms were compared. Training was performed on complete datasets, applying 5-fold cross-validation, imputation and resampling for optimisation. Predictive performances were evaluated on the validation set and replicated in the Manchester Asthma and Allergy Study (MAAS) cohort at 8 and 11 years. A polygenic risk score (PRS) was also developed using a published list of 128 independent asthma SNPs and integrated into the models.

Results

RFE identified eight and 12 predictors for the CAPE and CAPP models, respectively. The best performance was demonstrated by support vector machine (SVM) algorithms for both the CAPE and CAPP models (area under the receiver operating curve, AUC=0.71 and 0.82, respectively). Both models demonstrated excellent sensitivity to predict a subgroup of persistent wheezers and replicated well in MAAS (CAPE 8YR=0.71, 11YR=0.71, CAPP 8YR=0.83, 11YR=0.79). The CAPP model also offered ~10% improvement to rule in asthma compared to existing regression-based models. The PRS offered moderate discriminative performance alone (AUC=0.64) but did not improve the performance of the CAPE and CAPP models upon inclusion (AUC=0.65 and 0.79, respectively).

Conclusions

Machine learning approaches showed improvement over existing regression-based asthma prediction models. However, the addition of genetic data did not improve childhood asthma predictions further.

P041

Non-milk ingredients in infant formulas: should we be worried about allergy or intolerance to these ingredients?

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Objectives

Cow's Milk Allergy is recognised as one of the more common presentations of food allergy seen in young children. It can be defined as an IgE-mediated allergy or non-IgE mediated. Following diagnosis, health professionals will prescribe milk alternatives in accordance to age and severity of the condition.

This study was performed to analyse the ingredients of various formulas. We looked at 7 extensively hydrolysed formulas (eHFs), 6 amino acid formulas (AAFs) and 9 other formula milks.

Method

Commonly prescribed hypo-allergenic formulas were identified using dietetic formularies, detailed below.

- **Extensively Hydrolysed Formulas (eHFs)**
  - Aptamil Pepti 1+2
  - Nutramigen 1 + 2 + 3
  - Cow and Gate (C&G) First
  - SMA Althera
  - Similac Alimentum

- **Amino Acid Formulas (AAFs)**
  - SMA Alfamino
  - Neocate Junior
  - Neocate Spoon
  - Neocate Syneo
  - Neocate LCP
  - Nutramigen Puramino

- **Other formulas**
  - Aptamil First Milk
  - Aptamil Comfort
  - C&G First Infant + Comfort + Anti-Reflux
  - Similac Advance + Pro-advance
  - HIPP Combiotic
  - SMA Lactose Free

A comprehensive ingredient list of each formula was compiled, and data was analysed using Microsoft Excel.

Results

Many formulas contain extra non-milk based additives, including commonly recognised allergens.

Most common ingredients are: Sunflower Oil (95.5%), Coconut Oil (77.3%), Mortiella Alpina Oil (77.3%), Palm Oil (68.2%) and Soy Oil/Lecithin (63.6%).

A large proportion of formulas are also supplemented with glucose syrup (40.9%).

Other notable non-milk ingredients include: Rapeseed Oil (50%), Caesin (18.2%) and skimmed milk (18.2%).

Numerous formulas are also fortified with vitamin/mineral supplements to increase their nutritional value. Common supplements include ascorbic acid (40.9%), vitamin D (54.6%) and folic acid (18.2%).

Conclusions

Children with confirmed food allergy have an increased likelihood of multiple allergies. Healthcare professionals should take careful consideration to note the limitations and full allergen profile, for hidden ingredients, when prescribing formula alternatives.

P042

Not all who wander are lost: A golden opportunity for a Mobile Allergy Clinic provided by the COVID-19 pandemic

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Objectives

In March 2020 at BRHC, Face-to-Face (F2F) allergy clinic appointments were converted to Attend Anywhere consultations. Children requiring allergy testing were added to an ever-growing waiting list which threatened to consume all appointments when F2F clinics resumed, further compromising a return to usual service provision. There was a clear need to identify alternative, temporary accommodation for our service and a Mobile Treatment Centre was sourced for hire, already validated as a workable clinical environment being previously used as an Alcohol Recovery Unit and a CV-19 testing pod.

Method

A proposal was accepted by hospital management and a risk assessment was completed. Children previously seen virtually were offered 30 minute appointments in the Mobile Allergy Clinic (MAC), led by two allergy nurses. The senior nurse was able to make clinical management decisions immediately following testing.

Clinic locations were sourced by the hospital charity. Children attended the MAC at an allotted time, entering the vehicle for testing when called by an Allergy Nurse and then leaving with results and a management plan. Patients were able to sit in their cars rather than in a waiting room in order to comply with social distancing and surfaces were wiped down between patients.

Results

Feedback was obtained from 110 parents. 96% of parents felt their journey was easier than attending the Children's Hospital and all parents would be happy to attend a mobile clinic in future. Only 9% would have preferred a hospital appointment. Parents also reported that parking was easier, waiting time was reduced, it was cheaper and they were pleased to avoid the hospital. The only negative comment was the lack of toilet facilities.

Conclusions

Restrictions enforced by the pandemic have prompted creative ways of working. Mobile clinics are an acceptable alternative to patients, worthy of future long-term consideration.

P043

S.T.A.A.R.T . As You Mean to Go On - Screening Tool to Assess Adolescents' with Allergies Readiness to Transition to Adult Services.

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Objectives

Objective

The objective was to develop an acceptable and sensitive online allergy specific transition questionnaire for 12 -16yr olds, to assess and support adolescents' readiness to transition to adult services. The author believes no other allergy specific transition questionnaire exists, despite the transition period being an essential time to support adolescents to manage their own care.

Method

Ensuring Face-to-Face and Construct Validity of the questionnaire was established working in collaboration with adolescents with allergies, their parents, allergy healthcare professionals and allergy charities. Suggestions were synthesised, trends highlighted, questions developed and peer reviewed. Ethical approval to trial the questionnaire with 6 adolescents was granted prior to piloting the tool.

Results

The questionnaire consists of 32 simple to read, quantitative and qualitative questions, taking approximately 7 minutes to complete. The questionnaire covers domains such as; recognition and management of allergic reactions, sharing information, label reading, eating out, emotional wellbeing and, where applicable, asthma management. The questionnaire is completed by the adolescent, at home or school, prior to their virtual allergy appointment, using either a mobile or P.C. The advantages of the questionnaire include its virtual, simple and paper free format. Travel costs and additional time from school/work to attend appointments are avoidable. Responses to the questionnaire facilitate the development of Individualised Transition Plans and often further education, support and signposting. After a successful trial, the questionnaire is now used as part of standard care and has helped 85 adolescents attending a Children's Allergy Transition Service to take ownership of their own care.

Conclusions

Face-to-face and content validity for the questionnaire has been established. It is a sensitive, acceptable and cost effective tool. Sufficient numbers of adolescents have used the questionnaire to establish its construct validity. The next stage must be publishing the data to encourage other Trusts to implement it within their practice.

P044

Audit of paediatric anaphylaxis management following an educational drive in a tertiary hospital.

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Objectives

Following an audit in 2018 regarding management of anaphylaxis in the emergency department (ED) we initiated an on-going programme of staff re-education via seminars and simulation sessions. This was unfortunately curtailed by the changes to departmental staff with the pandemic and other restrictions. We reaudited to interrogate whether despite the pandemic, the educational drive had been successful, whether we were applying the NICE CG134 guideline and how we could further improve management of anaphylaxis within our paediatric ED.

Method

We used a search of a hospital computer database to identify all paediatric patients presenting to the ED with symptoms of allergy or anaphylaxis from January 2019-September 2020. We identified 118 such patients aged <16 years. We gathered data regarding the symptoms displayed, causative agent, investigations, treatment, observation times, allergen avoidance, adrenaline auto-injector (AAI) prescription and training and referral to allergy clinic.

Results

Of the 118 patients <16 years who presented to the ED with allergic symptoms, 11 suffered anaphylaxis. Of those 45% received adrenaline, 27% had mast cell tryptase measured. Average time from reaction to discharge was 5 hours, 25 minutes (range 2.5-24 hours). Adrenaline-autoinjectors were prescribed for 63% of those who did not already have them and of these 57% had documented AAI training performed. 36% received a written treatment plan, 45% had documented allergen avoidance advice. Of those not known to allergy clinic 83% were referred.

Conclusions

In summary, performance compared to the NICE CG134 guidelines was suboptimal although there were improved rates in referral compared to 2018 levels. We suspect poor performance is due to lack of documentation, for example for allergen avoidance. Also, during the pandemic large numbers of staff were redeployed leading to a change in staff caring for patients in ED, and there were reduced educational opportunities such as simulation.

P045

Anaphylaxis to transcutaneous triggers; a case report of gram chickpea flour on eczematous skin.

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Objectives

Anaphylaxis is a severe IgE-mediated reaction that is life threatening. In the United Kingdom, all cause anaphylaxis admissions rose from 4.1 to 11.5 per 100 000 population per year from 1998 to 2018. Proportionally, anaphylaxis to transcutaneous triggers is a rarely reported phenomenon. We present a case of anaphylaxis to gram flour applied to severely eczematous skin.

Method

A 16-year-old adolescent with a significant history of severe atopic dermatitis had an extensive topical application of gram flour and water paste at home. This was performed as part of cultural practices based on purported soothing properties of this mixture for eczema.

Within minutes she developed a pruritic, erythematous and diffuse skin eruption. After washing off the mixture, she felt syncopal. Therein, she complained of significant dyspnoea, chest tightness and wheeze. Ambulance services were called and on arrival oxygen saturations were found to be 85%. Hypotension and tachycardia were also noted. A clinical diagnosis of anaphylaxis was made and intramuscular adrenaline was administered. She also received nebulised salbutamol and intravenous fluids and corticosteroids.

Regarding other pertinent background medical history, she had seasonal allergic rhino-conjunctivitis, asthma and IgE-mediated food allergies (peanut, hazelnut and shellfish). Prior to the above episode, she described symptoms of oral tingling only when consuming chickpeas.

Results

Key co-factors to consider that may have reduced the anaphylactic threshold include uncontrolled airways disease and severity of skin barrier deficiency.

This case also highlights the importance of healthcare professionals' cultural inquisivity in order to encourage open and supportive discussions with patients and families.

Conclusions

The transcutaneous route of allergenic epitope delivery to the primed immune system resulting in anaphylaxis is recognised in the literature however is rare overall. This case adds to the growing number of recognised cases of anaphylaxis caused by transcutaneous allergen exposure.

P046

Review of patients with Chronic Urticaria presenting to a Tertiary Paediatric Allergy clinic

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Objectives

Urticaria is common in childhood, affecting up to 15% of children in the UK. Chronic urticaria is defined as symptoms lasting longer than 6 weeks.

The aim of this project was to review presentations of chronic urticaria to a tertiary allergy clinic over a yearlong period.

Objectives:

- To ascertain number of patients presenting with chronic urticaria
- To determine triggering factors
- To determine how patients were investigated
- To review which treatments patients were on

Method

All patients presenting to the paediatric allergy clinic with a diagnosis of urticaria presenting over a year were identified. Patient records were reviewed for the following:

- Associated atopic conditions
- Triggering factors
- Investigations carried out
- Treatment administered

Results

40 children had a diagnosis of urticaria. Age ranged between 11 months - 17 years. 22/40 (55%) had chronic urticaria.

In the chronic urticaria patients, triggers were identified as follows:

Trigger	%
Spontaneous	32
Cold temperatures	22
Exercise	14

Dust	14
Pollen	14
Stress	4
Pressure on the skin	4

Patients had undergone the following investigations:

Investigation	%
Specific IgE bloods	59
Skin prick tests	9
ISAC test	18
Autoimmune screen (TFT/ immunoglobulins/ inflammatory markers)	45
None	14

6/22 (27%) patients had been prescribed an adrenaline device and 5/6 of these had co-existing food allergies.

Patients were on the following treatments:

Treatment	%
Cetirizine	68
Fexofenadine	23
Rupatidine	4
Montelukast	0
Steroids (rescue for significant episodes)	14
Omalizumab	4

Conclusions

55% of those patients referred with urticaria had chronic symptoms. Of these, 32% experienced symptoms spontaneously and 44% had inducible urticaria from physical stimuli. Almost half the patients had a basic immunology work-up and the majority had undergone allergy testing through SPT, sIgE or ISAC. Almost all patients were treated with anti-histamines. 1 patient was on treatment with Omalizumab but others may meet criteria to be offered this treatment.

P047

Characteristics and outcomes of drug hypersensitivity reactions in paediatric cystic fibrosis patients

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Objectives

To determine the demographic and clinical characteristics of Drug Hypersensitivity Reactions (DHR) with subsequent outcomes and treatment recommendations for patients with Cystic Fibrosis (CF)

Method

Patients with DHR were found from consultant, hospital, drug allergy, datix and previous research records (Clinical Effectiveness Audit 10873). Demographic and clinical characteristics, drug reaction data, outcomes with management suggestions from investigation were obtained.

Results

154 children found to have DHRs (2013-2021); 8 (5.2%) patients found to have CF. 5 (62.5%) were female. All patients had a white ethnic background. Age at first reaction ranged from 9-15 years (mean = 12.4 years). Distance travelled for drug allergy specialist opinion has been mapped within the North East and Cumbria. Four (50.0%) patients had allergic co-morbidities: all 4 (50.0%) allergic rhinitis; 1 (12.5 %) asthma and IgE food allergy; 1 (12.5%) atopic dermatitis. Eight antibiotics were suspected trigger medications. Seven (87.5%) patients reported a possible reaction to ceftazidime; 2 (25.0%) meropenem; 2 (25.0%) voriconazole; and 1 (12.5%) doxycycline, amoxicillin, tazocin, tobramycin, and flucloxacillin. Four (50.0%) had multiple suspected trigger drugs. Gell and Coombes categorisations for ceftazidime reactions included: 2 (28.6%) Type 1 Hypersensitivity IgE mediated (acute) but after multiple drug exposures; 3 (42.9%) Type 4 Hypersensitivity (delayed) Non IgE T cell mediated; and 2 (28.6%) unknown. 6 of 7 patients reacting to ceftazidime (85.7%) had concurrent sputum cultures for pseudomonas aeruginosa, and 4 (57.1%) non-tuberculous mycobacteria. All 7 (100.0%) were on regular antibiotics. Outcomes: 2 (25.0%) patients confirmed drug allergic, after failed desensitisation programmes. 2 (25.0%) had allergy excluded after negative drug provocation testing. 4 (50.0%) patients awaiting further investigation.

Conclusions

Risk factors include chronic infection, long-term antibiotics (ceftazidime) presenting with Type 1 or 4 DHR. Our recommendations include a referral form with relevant documentation to be submitted to an allergy service, with drug provocation testing, outcome, and desensitisation protocols initiated.

P048

Food Matters: A multidisciplinary initiative to raise food allergy awareness and safety on a paediatric ward

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Objectives Background:
Increasing numbers of children and young people (CYP) presenting to hospital have co-existing food allergies whilst the incidence of food allergies worldwide continues to rise. Anxiety and confusion, about food allergy awareness, exists amongst CYP, carers and staff in healthcare settings . No local or national universal training programmes exist, for staff who come into contact with CYP with food allergies.

Objectives:
In the healthcare setting

- Improve the safety of CYP with food allergies
- Develop a structured training tool and implement a universal training programme for staff

Method
Quality improvement project with multidisciplinary team (MDT) of nurses, dieticians, housekeepers, teachers , physicians assistants and doctors. Targeted learning objectives : Raise awareness of food allergens; identification and labelling laws; Highlight when and how food allergies present ; Provide training on use of adrenaline autoinjectors. Facilitation through microteach sessions conducted face to face ensuring maximum staff uptake on the 'shop floor'. Pre and post-teaching evaluation undertaken.

Results
44 MDT members of staff trained . Prior to training 14/44 (31.8%) did not feel knowledgeable about food allergens and food allergen labelling, 14/21 (66.7%) did not feel confident giving food to food allergic CYP, 38/44(86.4%) guessed food allergens in packaged food, without checking for labels and 16/44 (36.4%) did not accurately identify potential food allergens on reading labels. 20/44 (45.5%) accurately identified when and how food allergy may present. Following training 26/44 (59.1%) felt more knowledgeable about food allergens and labelling 4/21 (21.1%) did not feel confident providing food to a child with allergies. 43/44 (97.7%) felt confident in when and how to use an adrenaline autoinjector. Common misconceptions were addressed during training using practical examples

Conclusions
CYP should be able to enjoy food safely in the healthcare setting. Implementing a universal food allergy awareness programme is an important step towards safeguarding children with food allergies.

P049

Dupilumab treatment leads to mild transient increases in eosinophil levels without clinical relevance in children aged 6–11 years with severe atopic dermatitis

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Objectives

Atopic dermatitis (AD) is a chronic systemic disease predominantly driven by dysregulated type 2 immunity. In previous clinical trials of dupilumab in adults and adolescents with moderate-to-severe AD, a transient increase in eosinophils was observed in a subset of patients in early treatment without clinical significance. We report the effect of dupilumab on eosinophil counts in children (aged 6–11 years) with severe AD.

Method

In LIBERTY AD PEDS (NCT03345914), children were randomized 1:1:1 to dupilumab 300mg every 4 weeks (q4w; loading dose 600mg), 100mg/200mg q2w (loading dose 200mg/400mg), or placebo, with concomitant medium-potency topical corticosteroids (TCS). Mean eosinophils counts were evaluated at baseline and Week (Wk) 4/8/16. Only data for the EMA-approved 300mg-q4w+TCS dosing regimen are shown.

Results

This analysis included 240 patients treated with dupilumab 300mg-q4w+TCS/placebo+TCS. At baseline, mean eosinophil counts were elevated and similar in both groups (**Table**). A transient increase in mean eosinophils was observed in all groups up to Wk8, returning to near baseline values by Wk16 (**Table**). Five dupilumab+TCS-treated and 1 placebo+TCS-treated patients had eosinophil counts >5.0×10^9/L at ≥1 timepoint and a reported medical history of ≥1 other type 2 inflammatory comorbidity. In those patients, no treatment-emergent adverse events or treatment modification were reported during the period when they had eosinophil counts >5.0×10^9/L. The safety profile was acceptable and consistent with the known dupilumab safety profile.

Mean eosinophil counts (±SD) (NR: 0–0.5×10^9/L),×10^9/L	Dupilumab 300mg-q4w+TCS (n=120)	Placebo+TCS (n=120)

Baseline	0.83 (0.57)	0.85 (0.66)
Wk4	0.91 (0.83)	0.81 (0.64)
Wk8	0.96 (1.03)	0.95 (0.98)
Wk16	0.92 (1.00)	0.85 (0.65)

NR: normal range; SD, standard deviation

Conclusions

Children (6–11 years) with severe AD treated with dupilumab 300mg-q4W+TCS experienced small, transient, and clinically inconsequential increases in mean eosinophils returning to near baseline values by Wk16, consistent with previously published dupilumab laboratory safety data.

P050

Dupilumab Efficacy in Children With Uncontrolled, Moderate-to-Severe Type 2 Asthma, With and Without Evidence of Allergy, in the Phase 3 VOYAGE Study

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Objectives

Most paediatric asthma patients have type 2 asthma, which includes the allergic phenotype. Dupilumab, a fully human mAb, blocks the shared receptor component for interleukin-4/interleukin-13, key and central drivers of type 2 inflammation in multiple diseases. In VOYAGE (NCT02948959), add-on dupilumab 100/200mg (body weight ≤30kg/>30kg) every 2 weeks vs placebo significantly reduced annualized severe asthma exacerbations (AER) and improved pre-bronchodilator (BD) FEV1 % predicted (FEV1 pp) in children aged 6 to <12 years with uncontrolled moderate-to-severe type 2 asthma (baseline blood eosinophils ≥150cells/µl or FeNO ≥20ppb). We evaluated dupilumab efficacy in paediatric patients with type 2 asthma with/without evidence of allergic phenotype (serum total IgE ≥30IU/mL and ≥1 perennial aeroallergen-specific IgE ≥0.35kU/L at baseline).

Method

This analysis assessed AER over the treatment period, and change from baseline to Week 52 in pre-BD-FEV1 (L) and pre-BD FEV1 pp (%).

Results

261/350 paediatric patients with type 2 asthma had evidence of allergic phenotype. Baseline characteristics were similar between subgroups; blood eosinophils, FeNO, serum total IgE, and ongoing atopic comorbidities were higher in patients with compared with those without allergic phenotype. Dupilumab vs placebo reduced AER in patients with/without evidence of allergic phenotype by 62% (P<0.0001)/51% (P=0.0494). Dupilumab also improved pre-BD FEV1/pre-BD FEV1 pp [least square mean difference of 0.20 L (P<0.0001)/9.27% (P<0.0001)] in patients with evidence of allergic phenotype; improvements observed in patients without evidence of allergic phenotype were not statistically significant. In the overall safety population, TEAE incidence was similar across treatment groups; the most common TEAE occurring more frequently in the dupilumab group was injection-site erythema (12.9% dupilumab vs 9.7% placebo).

Conclusions

A high proportion of paediatric type 2 patients enrolled in VOYAGE had evidence of allergic asthma phenotype. Dupilumab demonstrated efficacy in reducing asthma exacerbations in children with type 2 asthma, with/without evidence of allergic asthma phenotype.

P051

Oral Food Challenges in secondary care, a retrospective audit -Could food challenges take place safely at home? Something that warrants serious consideration!

Konstantina Papadopoulou, Emilia Wawrzkowicz, Alison Pearson

Objectives

The prevalence of food allergies in children is increasing. Food allergies in childhood are mainly managed with allergen avoidance. Oral food challenges (OFC) are considered to be the gold standard for confirming a diagnosis of food allergy. The aim of our project was to assess compliance of the local practice in performing OFC, benchmarking against the regional set standards.

Method

A retrospective audit was conducted to look into the OFC performed in a District General Hospital over 1 year (2018), against the regional standards (Paediatric Allergy Network East Anglia, PANEA).

Results

67 challenges were performed over 12 months. Peanut was the commonest food to challenge (32/67). Only one quarter (16/67) of the challenges were positive with mild to moderate symptoms, and 62.5% of the positive challenges (10/16) were peanut challenges. There was no need for IM adrenaline to any of the positive challenges or need for prolonged hospital observation. The dominant issue identified was the difficulty to perform the OFC within a timely manner, mainly due to inadequate nursing resources and clinical space.

Conclusions

This audit shows that only a small number of the patients having an oral food challenge develop symptoms which are normally mild. This outcome provokes consideration of performing OFC at home and discussion regarding development of universal criteria to decide which patients could have an OFC safely at home. The decision about performing an OFC at home should take into consideration any history of ongoing asthma, nature of symptoms secondary to significant or minimal exposure to suspected allergen, previous anaphylactic reactions, and positive diagnostic test results. Home food challenges would relieve the pressure on the secondary care services and allow hospital-based OFCs for high risk patients, to happen in a more timely manner.

P052

Food challenges; safe, increasingly liberating diets and appreciated

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Objectives

Food challenges are the gold standard in diagnosing food allergy. Negative challenges should lead to food reintroduction. We found previously in 2010 (75%) and 2015 (67%) of families introduced them and now stress the importance of this to families. Our aims were to evaluate food challenges, outcomes, family's food reintroduction and satisfaction.

Method

All food challenge results between January 2016 – March 2021 were obtained. Demographic data, allergens tested, outcomes and medications were collated. Adverse reactions in all positive challenges were grouped using the PRACTALL scoring system. Families of all negative challenges in 2020 were telephoned about reintroduction attempts and satisfaction.

Results

305 potential food challenges were available; 30 did not attend, 9 results were unknown yielding 266; 198 passed, 60 failed and 8 inconclusive. 101 were aged 1-5 years, 83 aged 6-10 and 81 aged 11-17. There were 169 boys/97 girls.

Allergen	Number of Food Challenges	Negative = Passed	Reacted
Milk	5	2	2
Baked Milk	13	10	2
Egg	4	1	3
Baked Egg	19	11	8
Peanut	62	36	23
Treenut(s)	81	72	8
Mixed Nut	52	45	6
Sesame	7	3	4

Soya	3	3	0
Fish	4	1	3
Shellfish	4	3	0
Other	12	11	1
Total	**266**	**198**	**60**

Reactions were urticaria (24), gastrointestinal (15) and angioedema (14). Two children had anaphylaxis and adrenaline whilst 34 received antihistamines.

In 2020, 40 food challenge cases were negative, of whom 28 families responded: 26 reintroduced and 2 had not tried. From these 24/26 children successfully reintroduced the food into their diet whilst 2 'failed' (parental anxiety and child refusal); an 86% success rate. All 28 families praised the food challenge service.

Conclusions

Local food challenges provide a safe assessment with low rates of anaphylaxis. Families appear to liberate children's diets more frequently now and value the service.

P053

Living with Cold Urticaria during a Global Pandemic

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Objectives

Background

Cold urticaria is a rare condition. Urticaria (and angioedema) are triggered by exposure to cold. The severity of symptoms will differ between individuals. Cold urticaria can lead to life threatening anaphylaxis.

Method

Case Presentation

A thirteen year old girl presented to the paediatric allergy clinic in June 2020 with a history of widespread urticarial rash on exposure to cold weather, air conditioning, after swimming in the sea and after eating cold food. She was diagnosed with cold urticaria and commenced on high dose antihistamines and montelukast which managed her symptoms.

Due to the implementation of Covid secure measures at school including greater periods outdoors and open windows in the class, she continued to experience severe symptoms leading to her need to increasingly home educating and disengaging in sport. In November 2020, she presented to ED with anaphylaxis, which occurred while she was playing netball outside. She self-administered her own AAI.

In view of the significant impact on her education and mental health, Xolair was commenced and improvement in symptoms was reported after the first dose

Results

Discussion

Cold urticaria has had a huge impact on this patient's life which was further exacerbated by the measures implemented during the global pandemic at school. Xolair is recognised as effective treatment for chronic spontaneous urticaria but its use for management of cold urticaria enabled this young person to access education and all associated benefits.

Conclusions

Cold urticaria can be a life threatening condition that can have a huge impact on a patient's quality of life. Xolair can be an effective treatment.

P054

A Delphi consensus project to guide the safe detection and management of cow's milk allergy in infants and children.

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Objectives

Overdiagnosis of cow's milk allergy (CMA) is associated with unnecessary prescription of costly specialised infant formula. Existing guidelines are controversial, in part due to conflicts of interest with the breastmilk substitute (BMS) industry. This study recruited an international, multidisciplinary, non-conflicted expert panel to produce guidance for the safe detection and management of CMA, using the Delphi consensus method. The guidance aimed to prevent over or underdiagnosis, promote breastfeeding and prevent inappropriate use of specialised infant formula.

Method

This study reports on the initial two rounds of consensus building. Round 1 comprised a questionnaire of statements devised from literature review of CMA diagnosis and management, focussing on areas of inconsistency and controversy, modified following external consultation with existing guideline authors and a patient panel. An expert panel of 17 participants with a range of expertise (general paediatrics, paediatric allergy, paediatric gastroenterology, paediatric dermatology, general practice, midwifery, lactation support, infant feeding networks, nutrition and dietetics) anonymously scored Round 1 statements and then a modified Round 2.

Results

Preliminary recommendations emphasise breastfeeding support and differential diagnosis more than existing, conflicted guidelines. Breastfeeding support recommendations included signposting to lactation consultants and advice for safe maternal elimination diets. Recommendations for considering differential diagnoses focus on symptoms or signs which suggest an alternative cause for symptoms, such as bile-stained vomiting or faltering growth. These preliminary recommendations indicate a higher threshold for considering CMA diagnosis than existing, conflicted guidelines.

Conclusions

Preliminary findings from this Delphi consensus study suggest that inclusion of diverse perspectives and exclusion of BMS industry conflicts of interest results in guidance which is more supportive of breastfeeding and less likely to promote overdiagnosis than existing milk allergy guidelines.

P055

Assessing the clinical need for a joint paediatric allergy and respiratory clinic at Cambridge University Hospitals NHS Trust.

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Objectives

There is an increasing drive for patient centred care in those patients with chronic conditions being managed by multiple specialties within a hospital. By combining patient's speciality appointments, benefits can be sought through access to a multi-specialty, multi-disciplinary team. We sought to undertake a preliminary assessment regarding the need for, and the best composition of, a combined paediatric allergy and respiratory clinic in our trust.

Method

We undertook a retrospective electronic notes review of patients who were referred between the allergy and respiratory services (1/4/19 to 31/3/20), and a separate review of patients who were concurrently being seen by both specialties (1/4/18 – 31/3/20). Data was collected to evaluate the number of patients in these groups, the conditions they were reviewed with, investigations undertaken and the treatment prescribed.

Results

The number of patients referred between services (15 in a one year period) was smaller than the number of patients being concurrently seen by both specialties (98 patients in two years). The most frequent reasons for referral between teams were asthma and food allergy. The most common diagnoses in those being seen concurrently were food allergy and allergic rhinitis, and asthma and preschool wheeze. Patients were seen more frequently in the respiratory clinic than in the allergy clinic. There was minimal duplication of investigations for example of the 92 patients who had skin prick tests, 11 had this investigation in both respiratory and allergy clinics.

Conclusions

A joint clinic would be most appropriate where it was targeted to address asthma or preschool wheeze and food allergy and allergic rhinitis in particular. Patients are likely to need additional respiratory reviews in between the joint clinic. Providing a joint clinic would reduce the number of times the patient needs to travel to the hospital and enable access to multi-specialty input in one appointment.

P056

Joining forces for good: multi-disciplinary, multi-specialty simulation and part-task training in anaphylaxis

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Objectives

To address under-recognition and delays in management of anaphylaxis, we (the paediatric allergy and simulation teams) have undertaken a teaching programme encompassing lecture-based teaching and simulation. A recurring theme in ongoing management of patients with anaphylaxis particularly out of hours, is the lack of health care professionals who are able to train patients and their families in the use of adrenaline auto-injectors. An obstacle to learning practical tasks such as these is the time needed away from a busy ward. We sought to improve multi-disciplinary management of anaphylaxis including training in the use of adrenaline auto-injectors.

Method

We undertook a parallel training session in simulation of a patient with anaphylaxis led by the paediatric allergy registrar and simulation team in the emergency department, and part-task training in adrenaline auto-injectors led by the allergy clinical nurse specialists. The training was conducted in a drop-in fashion over 2 hours so that attendees could access the training within their working day at a time suited to their commitments that day. Training was advertised on paediatric wards and the paediatric emergency department. We sought feedback by questionnaire on this training approach.

Results

There were 21 participants who attended the adrenaline auto-injector training (10 minutes) and 5 participants who attended simulation (30 minutes). The participants included medical and nursing students, paediatric trainees, paediatric nurses, a healthcare assistant and a play specialist. Half of attendees had had previous training in anaphylaxis. The themes regarding feedback were that this was an efficient way to train, convenient, and opportunistic learning which fit around patient care. Identified learning points included doses of adrenaline, method of administration, practicalities particular directed at teenagers and length of observation required in hospital.

Conclusions

The provision of a short, focused part-task of adrenaline auto-injector training, in addition to simulation training enabled wider participation in learning about anaphylaxis.

P057

Patient, family and healthcare provider satisfaction with telemedicine in the COVID-19 era

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Objectives

Despite the potential opportunities, before the COVID-19 pandemic telemedicine practice was an exception for most allergy physicians. With the announcement of COVID-19 related measures, most healthcare providers switched to telemedicine encounters. We wanted to assess the impact of the change in our service on our patients and their families and present here the results of our anonymous survey.

Method

During the COVID-19 pandemic our service has changed to an initial telephone clinic, followed by face to face skin prick test appointment and then a further telephone call. In conjunction with the Trust patient survey team, we invited patients and their families to complete an online survey regarding their initial paediatric allergy telephone appointment. For patients aged 12 years or over patients could complete a survey in addition to their parents. We also sought the opinion of medical staff conducting telephone reviews.

Results

There were 32 completed surveys for patients 0-18 years of age, completed by patients in 4 cases and parents in 28 cases. 31/32 of the consultations included food allergy. 5/32 wanted only telephone or video consultations in the future, 13/32 only face to face and the remainder a mix of modalities. Reported benefits of telephone consultations included reduction in travel, cost, time spent off work and school and that both parents could be present. The disadvantages included that this was less personal and the consultation and skin prick test appointment felt more disjointed, and that the patient couldn't be examined e.g. to assess eczema severity. Medical staff were overall satisfied with the appointment rating these on average 7.7/10 and agreed that some remote consultations should continue.

Conclusions

Telephone consultations do have some advantages, and after the pandemic a flexible, hybrid service of remote and face to face reviews is likely to be of greatest benefit to patients and their families.

P058

Paediatric dietary inclusion following supervised feed - what happens once they get home?

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Objectives

Oral food challenges (OFCs) are often used to confirm tolerance of foods previously considered to be allergic. Despite such a definitive test, many who pass do not introduce them into the diet. Supervised feeds (SF) are shorter OFCs and used where the clinician considers there to be a very low risk of an adverse reaction occurring during challenge. The success rate of dietary inclusion (after negative SF) and contributing factors were reviewed.

Method

31 patients (03/01/20 - 08/12/20) passed 33 SFs from the challenge database (two had 2 SF's - different foods). Each had a follow-up clinic consultation within 9-12 months. Additionally 11 patients (13/04/21 – 19/04/21) passing SFs had follow-up arranged 2 weeks after. Participants were telephoned in April 2021 to ascertain if the challenged food was regularly included in the diet and the reasons if not.

Results

Median age at SF - 3 yrs (1-13yr). Atopic history (eczema/asthma/hayfever) in 78%. 61% (20/33) of the 2020 cohort had been successfully included the food in their diet. Reasons given for continued avoidance (39%, 13/33): lack of reassurance for regular consumption, anxiety around potential anaphylaxis necessitating hospital attendance during pandemic, the food was not part of the family's diet. 2021 cohort - 81% (9/11) had introduced the challenged food into the diet on a regular basis. 18% (2/11) had not because of abdominal distension and vomiting 48 hours following SF.

Conclusions

We found lower inclusion rates compared to our full OFCs in a similar time frame. Possibly the younger participant age results in a lower likelihood to consume new foods due to patient/family apprehension (particularly if not part of the family's regular diet). Review of SF patient selection and targeting resources post challenge to those more likely to continue avoidance (eg. follow up review within a few weeks of challenge) may improve success rates.

P059

Persistent gut symptoms in infants with non-IgE cow's milk allergy

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Objectives

Cow's milk allergy (CMA) is common in infants, often with the primary presentation of upper gut symptoms. We undertook a retrospective service evaluation to find out if delays to referral or treatment influenced the prevalence of ongoing gut symptoms in infants with CMA despite the removal of cow's milk (CM) from their diet.

Method

We reviewed 157 medical records of infants with challenge-proven non-IgE CMA seen at Southampton Children's Hospital, from May 2017 to April 2019, identified by keyword search. Parent-reported symptoms of reflux, diarrhoea, constipation, unsettledness, or colic displayed at an intensity of that whilst on CM diet, more than 8 weeks post-CM removal were recorded as persistent gut symptoms (PGS).

Results

32% (25/78) of infants with 2 months follow-up data had PGS. 9/25 (36%) infants who presented with back arching had PGS at 2 months, compared to 5/53 (9%) infants without PGS at 2 months (p= 0.007). Infants with PGS at 2 months follow-up were seen more quickly for their first appointment (median 4 weeks (Interquartile range (IQR) 6)) compared to infants without (median 7 weeks (IQR 7) (p= 0.098). Age at onset of symptoms was not related to PGS. At 6 months follow-up, 7/12 (58%) infants on amino acid formula (AAF) had PGS, whereas 7/51 (14%) infants on hydrolysed formula / maternal dairy exclusion breast feed had PGS (p= 0.005).

Conclusions

PGS is common in CMA and can present both before and after 6 weeks of age. Infants with PGS may be seen more quickly after referral. Infants with PGS often have back arching at presentation suggesting more severe gastro-oesophageal reflux disease; its presence could be used to start additional therapies earlier. PGS can complicate the diagnosis and management of CMA and because of this is associated with an increased use of AAF as treatment.

P060

Atopic wheeze detectives: a case of inhalant wheat allergy from an unexpected source.

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Objectives

Background:

Inhalant wheat allergy is rare in paediatrics and clinical suspicion is often low. We present a case with an unexpected trigger for wheeze.

Method

Case presentation:

A 10 year old with multiple food allergies (wheat, oat, barley, rye and sesame) and viral-induced wheeze history, presented with troublesome asthma over 9 months. The family owned a cat for 2 years, however the asthma symptoms were reportedly unrelated. His mother suspected the cat litter; both the GP and allergy team were sceptical as these are usually mineral-based. However, a modified SPT using a fresh sample and cat dander testing were positive only for the former in an otherwise well child. Investigation of the ingredients of the 'organic' cat litter- used because their usual brand was unavailable- showed it contained by-product of the wheat-milling process. Importantly, the product labels did not clearly highlight the allergen. We informed the company of this issue. On follow-up, his wheeze cleared after switching back to their usual cat litter, despite continued exposure to the cat.

Results

Discussion:
Inhalant wheat allergy is a well-known cause of occupational asthma in adults, however there is little paediatric data. The contribution of hidden allergens and the concerns of a parent are not to be underestimated in paediatric care; the observant mother noted the association between the child's wheeze and the new cat litter. The company's response to our request for clearer allergen labels highlighted the need for allergy advocacy and regulation concerning food allergens in unsuspected products.

Conclusions:

The need for a clear, detailed history and for face-to-face review with testing in certain cases was evident, despite the pandemic and beyond need for increased virtual consultations. This case also highlights the importance of clear allergen labelling on all products and counselling for awareness of food allergens in non-food products.

P061

Educational needs of allergists in the United Kingdom: Results from a questionnaire focused on physicians managing patients with peanut allergy

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Objectives

Approaches to allergy diagnosis and treatment may differ geographically. We administered a survey to evaluate practices of allergists caring for individuals with peanut allergy (PA) in France, Germany, the United Kingdom (UK), and the United States. Results from the UK are presented herein.

Method

The 25-question field-tested, case-based survey was developed to investigate allergists' approaches to diagnosis and management of individuals aged <18 years with PA. The survey, involving two case vignettes, was conducted via an online platform and distributed to 1,915 UK-based allergists in July 2019.

Results

A total of 35 UK-based allergists completed the survey. At initial diagnosis, 66% of respondents used a skin prick test and 49% performed an allergen-specific-IgE test to confirm diagnosis; in children aged <2 years, 69% indicated they would retest later to check for PA resolution. Oral food challenge was used in individuals with long-standing PA by 17% of respondents. At initial diagnosis for a child with a history of developing "hives" and pruritus, 86% of respondents discussed how to recognize acute reactions with patients/families, 77% discussed adrenaline autoinjector use, and 86% discussed allergen avoidance. For patients frustrated with managing their allergy and difficulty avoiding peanut, 71% of respondents renewed/revised the emergency action plan and 60% conducted quality of life assessments. After patients/families were comfortable managing PA, 14%, 46%, and 14% of respondents suggested follow-up appointments every 6 months, yearly, or as needed, respectively. If PA resolved, 54% of respondents recommended ingesting peanut regularly, whereas 25% recommended continued avoidance when possible. Regarding multidisciplinary management, 77% involve other healthcare professionals. For final treatment decisions, 46% of respondents preferred shared responsibility with patients/families.

Conclusions

Survey results provided insights into British allergists' clinical experience with PA treatment and point toward areas that might benefit from focused education, particularly surrounding patient/family education and follow-up visits.

P062

Review of Management of Cow's Milk Protein Allergy (CMPA) in Secondary Care during the Second Wave of the COVID Pandemic

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Objectives

To evaluate the management of CMPA in secondary care and to identify reasons for presentation to hospital rather than primary care during the second wave of the Covid pandemic

Method

Data was retrospectively collected from September 2020 to January 2021.

28 patients were identified, but only 25 were included due to unavailable notes. Compliance of management of these cases was analysed against Trust guidelines.

Results

56% of cases were female and 44% were male.

Majority of patients were <6 months, with onset of symptoms noted before 3-4 months of age. 48% of children had positive family history of atopy. 56% presented with non-IgE-mediated symptoms as compared to 24% with IgE-mediated symptoms.

20/25 had mild symptoms; 5/25 moderate and none presented with severe immediate symptoms. 52% were prescribed eHF (extensively hydrolysed formula), 8% breastfed babies were advised maternal exclusion diet; and 40% were prescribed AAF (amino acid formula).

In 84%, allergy-focused history was taken in secondary care, and dietetic referral done in 48%.

Conclusions

There was an increase in number of children presenting to secondary care with CMPA during restrictions re-imposed in September 2020 and second lock-down in November 2020, which could be attributed to limited face-to-face primary care and community services.

Management of CMPA, was mostly consistent with local and national guidelines. However, relative increase AAF prescriptions needs to be reviewed.

The data highlighted importance of allergy-focussed history which plays a crucial role in diagnosing and appropriately managing children with allergies, including CMPA. Majority of mild Non-IgE-mediated CMPA can be appropriately managed at primary care with dietetic support.

There remains a need to continue with educational events such as paediatric allergy study days for primary care, which the Lister Allergy Team biannually ran in collaboration with BSACI, as these were successful in optimising management of allergies and providing support for primary care colleagues.

P063

Is it just Cow's Milk Protein Allergy?

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Objectives

Background

Lactose intolerance (LI) has a prevalence ranging from 0-18% in age 1-5 years. [(1)] LI can be Congenital with absence of lactase and presents on first day with diarrhoeal stools. Primary lactose intolerance can be a consequence of lactase non-persistence-characterized by a progressive decline in lactase activity [(2)]. It has variable worldwide prevalence ranging from 5 to 95% [(3)] Secondary lactose intolerance can follow gut infection, inflammation or surgery leading to destruction or removal of lactase containing epithelia.

Method

Case presentation:

An 18 month old boy was admitted with recurrent diarrhoea and failure to thrive. He was exclusively breast fed till 6 months but developed diarrhoeal stools and eczema with introduction of formula milk. He was diagnosed as non-IgE type cow's milk protein allergy (CMPA) and managed with extensively hydrolysed formula (EHF) milk. His diarrhoea continued, and IV antibiotics were stopped as cultures (both bacterial and viral) were negative. A **faecal sugar chromatography** revealed moderate amounts of glucose, galactose and lactose. He responded to lactose free amino acid formula within 3 days and was discharged home.

Results

Discussion:
A deficiency of *intestinal lactase* prevents hydrolysis of ingested lactose. Undigested lactose causes volume overload and accelerates intestinal transit. This lactose is fermented by colonic bacteria into short-chain fatty acids and hydrogen gas. [4] The combined increase in faecal water, intestinal transit, and generated hydrogen accounts for the gastrointestinal symptoms. In our case, diagnosis of LI was considered on day 5 of admission when a simple stool test for pH and reducing substances pointed towards it.

Conclusions

It is important to recognise that both CMPA and LI can occur together in a child. In a secondary care, a simple test (faecal sugar chromatography) can provide clues for diagnosis of LI. A breath hydrogen test in a tertiary setup can further aid in confirming this diagnosis.

P064

Collaborative Working Amongst Education and Health to Implement Spare AAI Pens in Schools

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Objectives

The Leicester children's allergy service was keen to implement "spare" AAI devices in schools for use in emergencies within the region following the Human Medicines (Amendment) Regulation 2017. The initial aim of the project was to gain funding by individual primary schools following and unsuccessful bid via the local CCGs.

Method

The allergy team set up a series of meeting with key stakeholders from health, education and industry. A survey was performed to identify barriers bridged by the project & improvements in spare AAI implementation following the first 6 months of the project..

Results

The Leicester children's allergy service successfully implemented spare AAIs in 70 primary schools. An infrastructure was developed where spare AAIs had the same expiry date with at least 12 months and 7 lead schools invoiced the remainder schools to minimise the demands on pharmacy. The survey revealed the key barriers bridged by the project were: (i) health professional support, (ii)local authority support for implementation, (iii) cheaper cost of AAIs and (iv) awareness of the change in law. 74% & 65% respectively who responded to the survey felt an elearning training resource and a trainer AAI would further enhance the programme

Conclusions

Collaborative working and engagement with education has led to successfully implementing spare AAIs in primary schools within Leicester City. We are currently developing an elearning training resource to enhance training & education and aid implementation. Following a successful bid from The Vichai Srivaddhanaprabha Foundation, we will be distributing free AAIs amongst signed up Leicestershire secondary schools in the 2021/2022 academic year and plan to embed this project regionally over the next 3-5 years.

P065

Trends in food allergy prevalence in the UK between 2010-2019

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Objectives

- To estimate the trends in annual lifetime point prevalence estimates of General Practitioner (GP) diagnosed FA between 2010 and 2019 amongst
    1. Adults
    2. Children
- To assess odds of FA prevalence based on age, gender ,ethnicity and other allergic conditions

Method

We obtained a longitudinal cohort of all patients included in The Health Improvement Network (THIN) database between 1st January 2010 and 1st January 2019. Participants were considered eligible one year after registration with an eligible general practice.

Annual point prevalence of FA was estimated for each year. Using age categories, sex, ethnicity , underlying allergies as independent variables, a logistic regression analysis was carried out separately for children and adults for the year 2018.

Results

There were an average of 808,098 (±153,775) children (aged <18 years) and 3,358,338 (± 679,041) adults per year between the years 2010-2019 included in the database. There was a year on year increase in FA prevalence in children from 1.51% (95%CI: 1.48-1.53) in 2010 to 2.3% (95%CI: 2.26-2.34) in 2019. Amongst adults, the prevalence increased from 0.6% (95%CI: 0.59-0.60) in 2010 to 1.03% (95%CI: 1.02-1.05) in 2019.

Boys were less likely to have FA compared with girls whereas men had more food allergies compared with women. Individuals identified as Black/ Afro Caribbean, South Asian or Chinese/Middle eastern/Others were found to have significantly higher odds of having FA compared with their Caucasian counterparts irrespective of age.

The odds of having underlying allergic conditions (eczema, asthma, urticaria, food allergy, allergic rhinoconjunctivitis) were significantly higher in individuals with FA. The odds of having anaphylaxis was much higher in children with FA [OR 54.6(45.7-65.2) p<0.001]compared with adults [OR 18.1(16.8-19.5) p<0.001].

Conclusions: FA prevalence in the UK is increasing. Prevalence appears higher in individuals from certain ethnic minorities and those with underlying allergies.

P066

A pediatric case of eosinophilic otitis media treated by a monoclonal antibody.

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Objectives

Background

Eosinophilic otitis media (EOM) is a condition characterized by highly viscous secretions containing eosinophils in the middle ear. Since it responds hardly to surgery and conventional medication. Anti-IgE monoclonal antibodies are now considered as a safe and effective option refractory to conventional treatments.

Method

Case presentation

A 9-year-old boy was referred to the paediatric allergy clinic in Seoul National University Hospital for the recurred middle ear effusion for both ears. At his age of 4, he underwent bilateral ventilating tube insertion for recurrent otitis media with hearing difficulties. Then he took tonsillectomy and adenoidectomy at the age of 5, and re-insertion of ventilating tube insertion repeatedly at his age of 6,7, and 10. He is suffering from bronchial asthma and allergic rhinitis. Biopsy specimen from middle ear effusion at his age of 7 revealed mucus with eosinophilic inflammation up to 20 per high power field. At his age of 9, an anti-IgE monoclonal antibody was injected subcutaneously up to 8 times monthly and discontinued due to the improvement at the follow-up exploration. Disease severity has gradually worsened during its discontinuation. Now he is in good condition after 3 cycles of reinjection.

Results

Discussion
This is the first case that shows an anti-IgE monoclonal antibody can be used in a child with confirmed EOM as well as adult ones. Based on the mechanism of anti-IgE treatment and the extended one-airway concept, this case is proof of the concept that EOM as an allergic airway disease can be controlled by medication that depletes IgE. Although we have succeeded only in controlling rather than curing EOM, anti-IgE can be considered for the refractory otitis media when it is confirmed as an eosinophilic disease.

Conclusions

EOM is a rare but hard-to-control disease entity. Omalizumab can be an effective alternative to a subject with refractory and complicated EOM.

P067

Dietary inclusion following negative paediatric food challenge – was it all worth it?

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Objectives

A positive outcome after passing an oral food challenge (OFC) is the ending of associated allergen avoidance measures. Hospital OFC provision is limited, they are time consuming (for both patients/carers and healthcare services), with inherent risks but have potentially significant benefits around nutrition and quality of life. Despite passing challenges many do not include the food in the diet. We examined dietary inclusion rates post-OFC and the reasons for continued avoidance.

Method

Paediatric negative OFCs (01/01/20 – 31/12/20) were identified via a food challenge database (additional information from hospital records). Participants were contacted by telephone to establish whether the challenged food was included in the diet (≥ once every 2 weeks) and any specific reasons if still avoided.

Results

77 patients underwent 87 negative OFCs with 20 different foods in 2020. 8 families (equalling 10 OFC) did not answer. Mean age at challenge 4.8 years (7m-14yr). Top 3 most common foods challenged – cooked egg (14/77), baked egg (11/77), fresh milk (8/77). Atopic comorbidities – 80% eczema (55/69), 29% asthma (20/69). All were provided with verbal and written information around dietary inclusion. Mean time from challenge to telephone query – 9 months (2-15 months). 11 (14%) challenged foods was not included in the diet corresponding to 9 patients. Avoidance reasons: food aversion (6/9), eczema flare (1/9), gastrointestinal symptoms (1/9), red lips with two separate allergens (1/9) and difficulty buying sufficient peanut-rich products due to pandemic (1/9).

Conclusions

Good quality information (verbal/written) for patients/families about re-introduction and its importance is essential. Patient/family self-selection during the pandemic could reflect the high success rate. Potential factors associated with continued avoidance (e.g. general food aversion, peanut OFC, etc.) should be considered when deciding which groups to target for additional support (e.g. telephone review 2 weeks post challenge) to improve successful introduction

P068

Impact of a successful hospital food challenge on dietary avoidance behaviour in children

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Objectives

Hospital oral food challenges (OFCs) are the gold standard for the diagnosis of food allergies. After passing an OFC, patients should be advised to reintroduce the food into their diet on a regular basis. Reintroduction is rarely completely successful. This study prospectively investigated food reintroduction rates after successful OFCs at a single centre to determine their effectiveness in changing dietary avoidance behaviour.

Method

Parents of children who had a successful hospital OFC at a tertiary paediatric allergy centre over a ten-month period to May 2021 were telephoned after challenge. They were asked if the child had successfully reintroduced the food, and if so, how frequently the food was eaten.

Results

Eighty-nine children, 50% of whom were White European, 53% female, median age 6 years, were included in the study. Follow-up calls were made to the families a median (IQR) of 15 (12 – 19) days after the challenge. Foods challenged were peanut (24%), tree nut (24%), egg (18%), milk (17%) and other foods (18%). All but four children (96%) successfully reintroduced the food back into their diet and 75% of children consumed the food at least twice per week. Failure to reintroduce the food back into the diet was usually because the child did not like the taste (2 peanut, 1 egg, 1 salmon). Age, gender, ethnicity and food type were not significant factors determining success of reintroduction (all $p > 0.3$).

Conclusions

OFCs are highly effective in changing previous dietary avoidance behaviour, irrespective of age, gender and ethnicity and food group.

P069

Patient experience of a home Omalizumab service in a paediatric tertiary referral for chronic urticaria (CU) setting – a pilot study.

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Objectives

The Evelina Children's Hospital, London, runs a tertiary referral centre for Omalizumab treatment of severe paediatric CU. To minimise hospital visits during the COVID-19 pandemic, we accelerated the introduction of home biological therapy. This pilot study aims to assess the initial patient experience of clinical management, safety, convenience and quality of life of this home omalizumab service, with a view to validating a questionnaire and develop a patient co-designed service.

Method

A survey was developed by the CU multidisciplinary team. A combination of previously validated questions and new questions were used to design the patient feedback questionnaire. The survey link was emailed to all 5 patients who received home Omalizumab training. Data was synthesized and electronically analysed using Qualtrics. Qualitative data was thematically analysed.

Results

Of 10 eligible patients, 5 received training for home Omalizumab in our service between June 2020 and June 2021 and completed the survey. Of these 5, one has not yet taken up home administration . Of these, (M-2, F-3, age range: 14-16 years), 4/5 (80%) felt safe having it administered at home and [5/5] would recommend the service to others. 2 (40%) experienced mild adverse events (mainly headache and soreness at the injection site) that resolved. Thematic analysis of individual comments identified positive themes including convenience and positive/helpful clinical experience. Areas for development identified included timely medication delivery, accessibility and clinical limitations in not undertaking a physical examination.

Conclusions

The overall patient experience assessed using a pilot questionnaire, indicates a positive patient experience of the home Omalizumab service, especially during the COVID-19 pandemic. It is expected that this service will continue to grow after the pandemic has ended. To the best of the authors' knowledge this is the first study assessing patient experience of home Omalizumab for CU in a paediatric allergy service.

P070

Adrenaline autoinjector prescription in primary care in the UK: a review of longitudinal data 2015-2020

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Objectives

Adrenaline is the first line treatment for anaphylaxis and an adrenaline autoinjector (AAI) should be prescribed for those at risk of anaphylaxis. Regulatory advice recommends that two adrenaline autoinjectors per patient should be prescribed. Training on the use of AAIs is critical and should be device specific. The aim of this study was to review data on AAI prescriptions in primary care.

Method

Longitudinal patient data from anonymous electronic prescription records from general practitioners in the UK were examined retrospectively from August 2020 to October 2015.

Results

Only one AAI device was prescribed in 8% patients. The average interval between renewing prescriptions was 240.7 days (approximately 8 months). The proportion of patients who were carrying expired devices was 29%. There has been a threefold increase in the number of patients being prescribed generic adrenaline over 5 years from 5098 to 15,119; 10,635 prescriptions occurred between March 2020 and Sept 2020. Until February 2018, 95% of patients carried one brand of AAI, however between March 2018 and February 2019, 22.5% patients were carrying more than one brand at one time. There were 23,122 prescriptions written in primary care for a specific AAI brand even after it had been withdrawn from the market.

Conclusions

Prescription of AAIs in primary care is suboptimal. An increase in generic prescribing, likely driven by AAI stock issues and recalls, and a high number of prescriptions for a withdrawn AAI brand suggests that device specific training may not be taking place against prescribing guidance. Furthermore, a considerable number of patients are carrying expired devices and carrying multiple brands with different administration techniques. These factors place anaphylaxis patients at risk. Patients renew prescriptions every 8 months which provides an opportunity for device training. Education programmes are needed to ensure that prescribing guidance is adhered to in primary care.