15.2 mm needle had the risk of periosteal/intraosseous injection in 2 patients (0.1%), and subcutaneous injection in 44 (21%) patients. Forty-three of these 44 patients (99%) were female and had significantly higher BMI when compared (32.6 ± 5.6 vs. 27.2 ± 5.5 kg/m^2). Total injection failure risk did not differ with 14-16 mm needle lengths (3.3% injection failure risk) in men. In women with BMI >32 kg/m^2 insufficient muscle penetration risk was 0.8% and peri/intraosseous injection risk was 0% (total 0.8%) with 26 mm-needles. In women with BMI ≤ 32 kg/m^2 insufficient muscle penetration risk was 4.2%, peri/intraosseous injection risk was 1.7% (total 5.9%) with 20 mm-needles.

Conclusion: AAI has a low risk of periosteal /intraosseous administration in adults, but has significantly higher probability of subcutaneous administration in women with high BMI. Currently available needle lengths seem sufficient for male patients, however, for female patients, longer needles customized to BMI are needed.

PD0237 | Escuadra study: Spanish multicenter study about the use of epinephrine autoinjectors by allergic patients

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Background: Intramuscular epinephrine injection is the treatment of choice for anaphylaxis, reduces hospitalizations, morbidity, and mortality, and is safer than intravenous. More than 200 gaps have been pointed out in anaphylaxis management in doctors, patients and caregivers (1). The underutilization of epinephrine autoinjectors (AAI) has been previously described (2). We want to know the factors that influence the use of AAI in a new episode of anaphylaxis.

Method: An observational and multicenter study (18 hospitals) was designed in Spain. Inclusion criteria were: patients previously diagnosed of "potentially anaphylactic allergy" (allergy to food, drugs, hymenoptera, idiopathic or latex);anaphylaxis reaction between January 2012 and December 2017;any age; any trigger; written informed Consent. Patients without previous allergy diagnose or participating in clinical trials were excluded.

Results: We collected 273 patients, excluded 13 patients, and analyzed the remaining 260. 90% of patients were under 18 years old, 60% were male,46% had asthma and 95% of them had a personal history of food allergy. Responsible food allergen varied with age: milk was the most relevant under 18 years old, egg decreased and nuts increased with age. In 17.4% of the reactions the AAI were used (only by 15% of patients, but 98% of them used it properly). We found no differences between sex, age, studies or oral treatment, and the use of AAI. Patients with food oral immunotherapy used more the AAI ($P < 0.01$), and they presented more anaphylactic reactions (AR) ($P < 0.05$). Patients with 2 or more previous AR use more the AAI ($P < 0.01$).The main reasons given for not using the AAI were: firstly, "AAI was not available at that moment"; secondly, "AR was not recognized"; and thirdly, "I was afraid of using the AAI". Other reasons given, but with lower percentages, were:"I did not buy it", "I did not know how to use it", "I had a hospital near", "It was expensive to buy", and "It was timed out".

Only 73.8% of patients had prescription of AAI, with an average of 3 years ago and a reminder of the use of the AAI with an average of 6-12 months. More than 90% of patients had at least one previous AR. Interestingly,58% of AR took place at home (specially in children under 12 years old), and only 4% at restaurants.

Conclusion: AAI are clearly infraused, mainly due to lack of availability during the AR, failure to recognize the AR, and patients' fears. Strategies should be designed to improve AAI use.

References: 1. Sicherer SH, Simons FER. Epinephrine for First-aid Management of Anaphylaxis. Pediatrics 2017; 139.

2. Kastner M, Harada L, Waserman S. Gaps in anaphylaxis management at the level of physicians, patients, and the community: a systematic review of the literature. Allergy 2010; 65:435-444.

3. Mu´gica-Garci´a MV, Tejedor-Alonso MA, Moro-Moro M, Esteban-Herna´ndez J, Rojas-Perez-Ezquerra PE, et al. Self-Management of anaphylaxis is not optimal. J Investig Allergol Clin Immunol 2015; 25:408-415.

PD0238 | Real world data of Canadians living with hereditary angioedema: Part 3-treatment utilization

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Background: Hereditary Angioedema (HAE) is a complex debilitating disease that is often misdiagnosed and under treated. Our study objective was to gain insight into which treatments Canadians are using for their acute attacks, prophylactic treatments, and the frequency of administration.

Method: In 2017-2018, the first National Canadian HAE survey was electronically sent to all HAE Canada members. The following data were based solely on adult participants.

Results: Participants are treating with: C1 esterase Inhibitor (Berinert)-61%, C1 esterase Inhibitor (Cinryze)-3%, Icatibant (Firazyr)-10%, Androgen (Danazol)-5%, Tranexamic acid-3%, No pharmaceutical treatment-3%, and Other-15%.

Berinert is being used: On demand (36%), Chronic Prophylaxis only (9%), Chronic Prophylaxis and on demand (55%). The majority of participants use Berinert weekly or twice weekly.

Cinryze is being administered for: Chronic Prophylaxis only (33%), and for both Chronic Prophylaxis and on demand (67%).

Firazyr is being administered: On demand (89%), and for both Chronic Prophylaxis and on demand (11%).

Danazol is being used for: On demand (25%), Chronic Prophylaxis only (25%), Chronic Prophylaxis and on demand (50%).

Tranexamic acid is taken for Chronic Prophylaxis and on demand (100%) by all respondents.

Conclusion: The data collected demonstrates that treatments are being used interchangeably for acute and prophylaxis treatment despite the indications listed on the product monographs. These results validate that patients in consultation with their HAE specialists have determined an individualized treatment schedule. All results are limited to the respondents and may not represent the broader Canadian HAE population.

PD0239 | Multidisciplinary management of Brazilian patients with hereditary angioedema: Impact on quality of life

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Background: Hereditary angioedema (HAE) is an autosomal dominant disorder characterized by recurrent episodes of edema in subcutaneous tissues, gastrointestinal tract and upper airways. We investigated whether a comprehensive multidisciplinary intervention, addressing psychosocial aspects, adherence and assurance among HAE patients would have an added value to medical treatment in improvement quality of life.

Method: Thirty-three patients with HAE, belonging to a single family with mutation c.351delC inSERPING1, participate in a 14-month intervention. The program is coordinated by an allergist, with additional care provided by a psychiatrist, psychologist, nurse, social worker and nurse technician. The impact of the program was assessed through questionnaires administered at the beginning of the intervention, and results are presented for the 8-month evaluation. Quality of life was assessed by the Hereditary Angioedema Quality of Life (HAE-QoL) questionnaire, and by SF-36 and Pediatrics Quality of Life (PedsQL). Patients were also evaluated by Depression, Anxiety and Stress (DASS) questionnaire, Hospital Anxiety and Depression Scale (HADs), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Children's Depression Inventory (CDI), and Child Stress Symptoms Inventory (ISS). The Work Productivity and Activity Impairment Questionnaire: General Health (WPAI-GH) was applied to 20 patients employed during the study.

Results: Data were available for 30 patients (22 adults and 8 children). One adult presenting schizophrenia was unable to fill out questionnaires. 2/4asymptomaticpatients were infants (6 and 18 months-old). There was significant improvement in quality of life, with mean increase in HAE-QoL scores from 89.1 to 109.8 after 8 months of intervention, as compared to baseline ($P < 0.0001$). 9/22 and 1/22 adult patients presented severe/extremely severe stress at baseline and 8 months post-intervention by DASS, respectively ($P = 0.01$, compared to patients with mild/moderate stress). There was a significant reduction in activity impairment among adults, with WPAI-GH scores of 29 and 12, at baseline and 8 months post-intervention ($P = 0.02$). Children did not score for stress or depression on CDI and ISS questionnaires.

Conclusion: Our results showed that a multidisciplinary approach to patients with HAE, addressing psychosocial and mental health in addition to medical aspects, resulted in improvement in quality of life, which is critical for best practice in HAE.

PD0240 | Electronic registration of hereditary angioedema attacks unmask a higher severity of the disease

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Background: Angioedema due to C1-INH deficiency (C1-INH HAE) is a disabling disease characterized by sudden and localized swelling of the skin, mucosa and submucosa. The manifestation of the disease is variable during lifespan. To guarantee the best treatment option to the patients it is crucial to precisely register the characteristics of the attacks in order to define the severity of the disease over time.

Aim: To compare the characteristics of the attacks registered via electronic modality compared to paper support.

Method: From January to December 2016 and from January to December 2018 patients with C1-INH HAE followed in the Milan center were asked to fill-in attack reports that encompass duration, severity and treatment of each angioedema episode via paper support (2016) or using a Web form/mobile APP (2018). During 2018 there was a progressive enrollment of patients. Data about the attacks underwent physician validation before being