ASCARIS INFECTION AND SENSITISATION IN RURAL AND URBAN XHOSA CHILDREN WITH AND WITHOUT ATOPIC DERMATITIS

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INTRODUCTION
Helminth infestation has been associated with a reduced risk of allergic disease with hypotheses suggesting that decreasing parasitic infections associated with rising affluence contributes to the increase in immune-mediated diseases including allergies.1 Moving from association to causality has been difficult, though, as interactions between parasite and host immunology are more complex than previously thought.2 Interim results from the South African food sensitisation and food allergy (SAFFA)3 study shows significant differences in allergy prevalence between rural and urban children with atopic dermatitis (AD) (24.4% and 2%, respectively) and challenge-proven food allergy (2.7% vs 0.5%). Rural participants were more likely to be dewormed regularly (74.8% vs 46%). We report on a nested case-control study (SOSALL) in participants with and without AD. The aim is to compare the prevalence of Ascaris infestation and sensitisation in children with and without AD in urban and rural settings.

METHODS
In this case-control study, 12- to 36-month-old Xhosa case participants were recruited from dermatology clinics of the Red Cross War Memorial Children’s Hospital in Cape Town and the Nelson Mandela Academic Hospital in Mthatha. The diagnosis of AD was made using the United Kingdom working-party criteria and the severity of disease assessed using scoring atopic dermatitis (SCORAD). Age-matched control participants were recruited from the urban and rural cohorts of the SAFFA study. These participants had negative skin prick test to seven food allergens and four aeroallergens with no evidence of atopy on history or examination. Stool samples were analysed for presence of worm ova and burden of infestation (Kato Katz examination kit, Vestergaard-Frandsen). Ascaris sensitisation was determined measuring Ascaris-specific IgE (ImmunoCAP, ThermoFisher). Anti-Ascaris IgE levels of >0.35 kU/l were considered positive.

RESULTS
Two hundred and twenty participants were recruited. Stool and serum samples were available from 158 and 129 participants, respectively – 6.7% urban and 10.5% rural non-atopic controls had KatoKatz positive stools with 5.1% and 9.7%, respectively, positive anti-Ascaris IgE. No urban or rural case participants had Ascaris in their stools – 21.4% urban and 9.7% rural cases had positive anti-Ascaris IgE.

CONCLUSION
Markedly different Ascaris infestation rates between children with AD and their non-atopic controls were found across the urban-rural divide. Despite no evidence of infestation, both urban and rural case participants with AD had high levels of Ascaris sensitisation. One possibility is that children with AD have an upregulated Th2 response, clearing parasites effectively, whereas low-grade infestation may continue asymptomatically in non-atopic controls. The modulating effects of helminth exposure are complex and these results will direct further investigation including IgG4 and cytokine responses in this cohort.

REFERENCES

CASE REPORT: ALLERGY TO APPLE SEEDS IN A PEANUT-ALLERGIC CHILD

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INTRODUCTION
Allergic reactions to fruits are commonly described. The flesh or pulp of the fruit is most commonly the cause of such
reactions. Less commonly described are allergic reactions to the seeds of fruits. They are reported in a handful of case reports only, but probably under-recognised. This case study describes the unusual situation of a reaction to a fruit seed but not the pulp. Such a reaction to fruit seed may be of broader relevance to children with nut allergy.

CASE STUDY

We report the case of an eight-year-old boy with a known allergy to peanuts (urticarial and oral itching in response to peanut butter), who experiences an allergic reaction when biting into seeds of both apples and watermelons, but is tolerant of the fruit pulp. The history is that, on several occasions, he had reacted with facial urticaria after biting into apple seeds and watermelon seeds. There was no respiratory difficulty. He definitely did not react to the pulp or flesh of the apple and continued to eat apples though carefully avoiding the pits. The same reaction occurred with watermelon seeds but not with the flesh. Results of a skin-prick test (SPT) were 1 mm to apple’s pulp and 4 mm to apple’s seed. A diagnosis of allergy to apple seed was made (but not pulp) and probably watermelon seed. He was told to carefully avoid such seeds and to continue with peanut avoidance. A tree-nut challenge with cashew, almond and hazelnut was passed. An allergy to fruit seeds has been described in only a few case reports thus far. The majority of the case reports on fruit-seed allergy describe a citrus-seed allergy in patients with a concomitant nut allergy, most commonly cashew nut but in some cases peanut. Cross-reactivity between citrus seed and cashew nut has been demonstrated, but the prevalence of co-sensitisation between nuts and fruit seeds and the identification of cross-reactive allergens have both not been fully elucidated. Allergy to fruit seeds is probably under-recognised and should be considered in the work up of fruit allergy, especially if the flesh of the fruit has been previously tolerated. Clinicians should be aware of the possible association between allergy to fruit seeds and nuts, particularly to peanut, cashew and pistachio nut. Fruit seeds should also be considered as a potential cause of unexplained anaphylaxis in patients with nut allergy. It seems reasonable to counsel nut-allergic patients to avoid chewing fruit seeds (especially citrus seeds in cashew-allergic patients) and to take care with freshly squeezed juices and some commercial baby food which may contain crushed seeds.

REFERENCES


URTICARIA MYSTERY CASES – NOT JUST SCRATCHING ON THE SURFACE

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BACKGROUND

Chronic spontaneous urticaria (CSU) is incompletely understood and challenging to manage.1,3,7 The cases below illustrate the heterogeneity of associated conditions and highlights the need to look more than just skin deep.

CASES

Ms XA, a 27-year-old student, presented with severe urticaria and angioedema unresponsive to older antihistamines. There was partial response to prednisone and slow-release ketotifen. Food-allergy tests were negative and Helicobacter pylori eradication not helpful. She was successfully managed with fexofenadine and ranitidine, later switched to cetirizine and slowly weaned off other medications. Emotional stress may have been a contributing factor, as the symptoms resolved after graduation.

Mr SM is 59 years old with prolonged history of urticaria and severe facial angioedema. He suspected association with non-steroidal anti-inflammatory drugs, processed meats and sauces. Cellular antigen stimulation (CAST) tests were strongly reactive to sodium nitrate and moderately reactive to sodium benzoate and diclofenac, but negative for aspirin and sulphites. Full blood count (FBC) and erythrocyte sedimentation rate (ESR) was normal. He responded to avoidance advice and second-generation H1 receptor blockers.

Mrs SW, a 34-year-old female with a history of atopy, allergic rhinitis and asthma, presented with urticaria for six weeks. She was thin with increased heart rate, insomnia and prominent thyroid. SPT were negative for foods but positive for inhalant allergens. A clinical diagnosis of hyperthyroidism was confirmed with elevated blood T4 levels, undetectable thyroid stimulating hormone and elevated thyroid antibodies. Carbimazole was prescribed and a scintigraphic nuclear medicine thyroid scan confirmed Graves’ disease.
Ms DF is a 42-year-old female with a three-month history of urticaria and angioedema responding partially to fexofenadine and prednisone. She suspected caffeinated beverages and stress to be the triggers. Her personal history included childhood AD and Hodgkin’s lymphoma 12 years previously. There was a family history of scleroderma and asthma. On examination she was well with dermatographism, mild eczema and features of allergic rhinitis. SPT was positive for house-dust mites. Haematological, inflammatory, auto-immune and thyroid investigations were requested. Based on her history and markedly elevated ESR and CRP, she was advised to follow up with oncology. Imaging revealed a mass adjacent to the liver, which on laparoscopic biopsy was confirmed to be a recurrence of Hodgkin’s lymphoma. She successfully received chemotherapy.

**DISCUSSION**

The majority of CSU cases require little investigation and are managed symptomatically. Thorough clinical evaluation may alert the physician to instances where urticaria is presenting as a symptom of a more serious underlying disorder or an avoidable trigger. Physical factors, emotional stress, food additives and medications are potentially modifiable. Associations exist with thyroid and auto-immune pathology and, occasionally, with malignancy or haematological conditions. Food allergy tests are seldom indicated.

**REFERENCES:**


**INTRODUCTION**

Benzalkonium chloride (BAC) is a preservative commonly found in different medications and disinfectants used in clinical practice. Allergic and pseudo-allergic adverse reactions have been reported in both patients and healthcare workers and are supported by data in various studies.

**CASE REPORT**

We present a case of a 15-year-old female with well-controlled asthma admitted with a severe asthma exacerbation and treated with 40 mg oral prednisone and three doses of nebulised salbutamol 10 mg and ipratropium bromide 250 mcgs during the first hour of admission. A single dose of 50% magnesium sulphate was administered intravenously as she did not appear to respond to initial treatment and an intensive care unit (ICU) bed was sought for continued management. On arrival in ICU she was commenced on intravenous salbutamol infusion and high-flow oxygen in addition to the continuous salbutamol nebulisation. Despite this she developed confusion and decreased level of consciousness necessitating intubation and mechanical ventilation. While on the ventilator she developed two discrete and severe episodes of worsening bronchospasm lasting about 20 minutes. During the second episode of bronchospasm it was noted that the deterioration occurred during nebulisation with salbutamol and improved once this was stopped. Further investigation revealed that the salbutamol used since admission came from a multidose vial that contained benzalkonium chloride (BAC) as a preservative. A presumptive diagnosis of BAC sensitivity was made. Preservative-free salbutamol (IV solution) was used for subsequent nebulisation resulting in improvement in her bronchoconstriction and she was successfully weaned of the ventilator. Plans for a basophil activation test (BAT) and possible drug provocation challenge have been made to confirm the diagnosis of BAC hypersensitivity.

**DISCUSSION**

BAC or N-Alkyl-N-benzyl-N N-dimethyl ammonium chloride is a mixture of quaternary benzyl dimethyl alkyl ammonium chlorides. It is one of many quaternary ammonium chloride compounds (QACs) used as preservatives. Though BAC has been deemed safe since its introduction as a preservative in 1935, it has been implicated in a wide array of hypersensitivity reactions including paradoxical bronchoconstriction, allergic and irritant contact

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**A CASE OF PARADOXICAL BRONCHOCONSTRICTION DUE TO BENZALKONIUM CHLORIDE**

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**INTERALLERGIC & CLINICAL IMMUNOLOGY | SEPTEMBER 2016 | VOLUME 29, ISSUE 3**
ALLSA CONGRESS 2016 ABSTRACT

INTRODUCTION

Asthma and allergic disease are the result of a complex interaction between genetic predisposition and environmental exposure, although the precise nature of the genetic basis for allergic disease remains to be elucidated. The developed world has yielded several promising candidate polymorphisms involved in the development of asthma and allergies, however, there is a paucity of literature from the developing world, and for people of African origin in particular. It is possible that evolutionary adaptation of inflammatory immune responses may increase the genetic predisposition to allergic disease among people of black African origin. This study aims to provide prevalence data for 27 proposed pro-inflammatory alleles in a group of isiXhosa-speaking adolescents, and to correlate this data with clinical and laboratory markers of allergy.

METHODS

A convenience sample of 300 Xhosa school children provided phenotypic data via a symptom questionnaire, blood samples for total IgE and IgE to Ascaris lumbricoides, SPT to food and aeroallergens, and a methacholine challenge to assess for bronchial hyper-reactivity (BHR). Twenty-seven single nucleotide polymorphisms (SNPs) were genotyped. The results of association modelling between genotypes and clinical and laboratory markers of allergy are presented, along with effect sizes from the best-fitting inheritance model. All results have been corrected for known and suspected confounders.

RESULTS

From the genes that influence immune tolerance, IL10 592A>G was associated with eczema, as well as positive house-dust mite (HDM) SPTs. IL10 1082A>G was associated with wheeze, rhinitis, BHR, positive HDM SPT, and any positive aeroallergen SPT. The T<sub>h2</sub> polymorphism IL-4 SNP 589C>T was associated with wheeze, eczema, having any positive SPT, having any positive aeroallergen SPT, and having a positive cockroach SPT. In addition, IL-13 SNP 130A>G was associated with eczema, and having any positive food-allergen SPT. The IL4RA polymorphisms 478T>C and 551A>G were associated with wheeze. The STAT6 polymorphism 2964A>G was associated with eczema. Of the T<sub>h1</sub> polymorphisms, the IL-12 polymorphism 6408delCTCTAAinsGC was associated with wheeze, eczema, and having any positive food-allergen SPT. The IL2RA polymorphisms 478T>C and 551A>G were associated with wheeze. The STAT6 polymorphism 2964A>G was associated with eczema. Of the T<sub>h1</sub> polymorphisms, the IL-12 polymorphism 6408delCTCTAAinsGC was associated with wheeze, eczema, and having any positive food-allergen SPT. The IFNGR 156T>C was associated with serum IgE levels, and having any positive SPT.

CONCLUSION

This is the first trial of its kind among the Xhosa population and, indeed, in South Africa. Despite some limitations, we report several associations between SNPs and allergy phenotypes across several different gene classes including those related to the formation of immune tolerance, as well as traditional T<sub>h1</sub> and T<sub>h2</sub> genes. We would encourage further research in this population to duplicate or refute our findings.

REFERENCE

6. Zhang YS, Ngan SS, Lam LL, Hirst S, et al. Contact dermatitis, ciliostasis with reduced transport and, last but not least, anaphylaxis with BAC-containing eye and nasal medications. The prevalence of paradoxical bronchoconstriction with inhalation of nebulizer solutions is unknown but case reports have been documented and are supported by clinical studies in stable asthmatic patients.

CORRELATION BETWEEN PRO-INFLAMMATORY ALLELES AND CLINICAL AND LABORATORY MARKERS OF ALLERGY IN XHOSAN SOUTH AFRICANS

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INTRODUCTION

Asthma and allergic disease are the result of a complex interaction between genetic predisposition and environmental exposure, although the precise nature of the genetic
INTRODUCTION
Sodium benzoate is a preservative used widely to prevent yeast spoilage of acidic foods. It is ubiquitous across South Africa, found in bottled soft drinks, fruit juices, jams, pickles, condiments and baked goods. The causative link and benefit of benzoate elimination diets for idiopathic angioedema and urticaria remains controversial.

AIM
An audit elimination diet was evaluated as an effective therapeutic tool in treating angioedema caused by the preservative sodium benzoate.

METHODOLOGY
A clinical review was conducted of 100 patients with angioedema and/or urticaria in whom a preservative association was suspected and CAST testing to sodium benzoate (and other preservatives) was performed as part of the diagnostic work-up. A sample size of 100 patients was reviewed using an extraction data form which included:

i. demographics;
ii. angioedema history and associated clinical features;
iii. atopy background and other chronic conditions associated with angioedema;
iv. chronic medical history;
v. relevant blood tests and treatment provided.

A questionnaire was administered telephonically, within a year to follow up on the efficacy of elimination diet.

RESULTS
A total of 100 folders from the years 2013 to 2015 were reviewed: 70% of female and 30% male. The age range was:

- 10% between 11 and 20 years;
- 18% between 21 and 30 years;
- 25% between 31 and 40 years;
- 24% between 41 and 50 years;
- 13% between 51 and 60 years, and
- 10% above 60 years.

Fifty percent of the patients had associated urticaria, 30% had other associated allergies (asthma, allergic rhinitis).
rhinitis, eczema, food and drug allergies) and 20% had angioedema without other symptoms. All the patients had angioedema at two or more sites, 76% had periorbital and oral and 24% in other body parts. Eighteen percent of patients had associated chronic medical conditions. Forty-six percent of the patients gave a history of diet that consisted of canned food, sauces or drinks. Seventy-four percent of the patients tested positive to sodium benzoate. Seventy-four percent of the patients were managed with elimination diets, and follow-up appointments at between two and six months.

CONCLUSION
Angioedema due to preservatives is increasing in South Africa. Patients with unknown angioedema aetiology need to be investigated for preservatives, especially sodium benzoate for effective management. Antihistamines are prescribed but an elimination diet is the most essential and effective therapy tool.

INTRODUCTION
The prevalence of childhood leukaemia is increasing worldwide and in resource-poor areas of sub-Saharan Africa. L-asparaginase is an important chemotherapeutic agent in the treatment of childhood leukaemia. Allergic hypersensitivity reactions include wheals, angioedema, wheezing, chest tightness, hypotension and anaphylaxis following the administration of L-asparaginase. Although there are newer formulations of asparaginase associated with less adverse reactions, these are not readily affordable and accessible in many resource-poor countries.

METHODS
Two children with prior severe allergic reactions (anaphylaxis) to L-asparaginase were referred to the Allergy Division, Department of Paediatrics and Child Health of Red Cross War Memorial Children’s Hospital. They were premedicated with H1 and H2 antihistamines, and received L-asparaginase administered using a desensitisation protocol devised by the authors based on modifying a generic drug desensitisation protocol comprising 13 steps of dose increments comprising 1/1 000 000, 3/1 000 000, 1/100 000, 3/100 000, 1/10 000, 3/10 000, 1/1 000, 3/1 000, 1/100, 3/100, 1/10, 3/10 and ½ of the total dose administered. Because these do not add up to exactly 100% of the total dose, modification was made using an Excel spreadsheet to calculate individual doses of 1/1 000 000, 4/1 000 000, 11/1 000 000, 36/1 000 000, 109/1 000 000, 363/1 000 000, 1 080/1 000 000, 3 600/1 000 000, 10 800/1 000 000, 35 000/1 000 000, 104 000/1 000 000, 340 000/1 000 000 and 505 000/1 000 000 of the total cumulative dose.

The protocols were commenced in individual patients with each step lasting 30 minutes for a total duration of 6.5 hours, but with subsequent successful infusions on a single subject, subjects were tried on sequentially faster protocols by increasing the infusion rates of steps to reach a lower duration of time and/or omitting the first 3 to 6 steps of this protocol. This was particularly successful in children on the lower-dose (6 000 U/m²) infusions and for those with short delays between subsequent infusions. Where subjects received 3 × 6 000 U/m² doses in one week, these were done preferably on subsequent days to allow immunological memory to persist and allow more rapid infusion protocols.

RESULTS
We performed 34 desensitisation procedures over a seven-month period (from 30 December 2015 to 18 July 2016). One subject had no adverse reactions, the other had five adverse reactions comprising non-allergic side-effects (three), one minor reaction (urticaria) and one major reaction (urticaria, stridor and behaviour change) requiring a single dose of IM adrenaline. The major reaction occurred when the higher dose of asparaginase (15 000/ m²) was given via a shorter duration of administration after a two-week period intervening period since the last prior infusion.

CONCLUSION
With premedication and desensitisation, L-asparaginase can be successfully administered to children with prior severe allergic reactions.

REFERENCES

INTRODUCTION

Food additives are substances that are added to food to enhance preservation, palatability and appearance or to alter and stabilise form. Although reactions to food additives are thought to be relatively uncommon, their ubiquitous use and ability to cause a wide spectrum of clinical reactions necessitates their consideration when managing reactions to food.

CASE

Twelve-year-old TD first developed angioedema, urticaria and a cough two hours after ingesting processed watermelon. During the same month she experienced similar symptoms following the ingestion of tinned tuna mixed with mayonnaise. She recovered spontaneously in both episodes within an hour. TD continued to experience episodes of urticaria and angioedema without systemic symptoms and consulted paediatric outpatients. She was referred to the Red Cross Allergy Clinic where a detailed history revealed that these reactions closely followed the ingestion of certain fruit juices, condiments and cooldrinks. She had previously eaten watermelon and tuna without a reaction. An assessment of a severe hypersensitivity to sodium benzoate was made and the following investigations were performed:

- Specific IgE to watermelon and tuna both <0.1 kU/l.
- CAST for sodium benzoate 23 pg/ml.

She followed a benzoate-free diet and at her review appointment two months later she had had no further reactions, including no further urticaria. TD was provided with an adrenalin auto-injector and action plan, and an application for a Medic Alert bracelet was made.

DISCUSSION

Interest in adverse reactions to food additives remains an area of public concern. Current literature estimates the prevalence to be between 0.01–2%, but may be up to 7% in children with allergies. Identifying a reaction to a food additive can be difficult and relies on comprehensive history. Explicit questioning enables the revelation of ‘hidden ingredients’. A physical examination is required to exclude an underlying medical condition.

No definitive diagnostic test is available and the relevance of skin or specific IgE testing in these patients is to exclude an allergy to the main food components. A cellular activation stimulation test can be useful if positive but lacks specificity to fully exclude clinical reactions if negative. Elimination diets may be useful to strengthen the diagnosis. Oral-food challenge with the additive in question is confirmatory.

Treatment comprises avoidance. Patients require education regarding the common foods where the additive may be found and the nomenclature used in food labelling. In those whom severe reactions are anticipated, a Medic-Alert disc should be provided and an adrenalin auto-injector supplied.

CONCLUSION

Although uncommon, reactions to food additives incorporate...
a wide spectrum of clinical manifestations, which may include anaphylaxis. Awareness of their relevance enables accurate diagnosis through meticulous history taking and the provision of appropriate management, without unnecessary dietary restrictions.

REFERENCES

INTRODUCTION
We present the case of a nine-year-old girl with convincing objective features of the syndrome, despite negative yield on genetic studies to commonly described mutations. Miss LN is a well-known patient at the Division of Allergy at the Red Cross War Memorial Children’s Hospital in Cape Town. She is of black ethnic origin and presents with no significant family history.

Our patient tested negative to the commonly associated STAT3, DOCK (depressor of factor 8) and TYK2 (tyrosine kinase 2) mutations, which are identified as major culprits in the white Caucasian population.

Many European studies have demonstrated different variants in the STAT3 gene. The fascination in this case is the fact that we have an overlap of clinical symptoms, between the AR (autosomal recessive) and AD (autosomal dominant) groups. Studies in Asia have demonstrated similar results, suggesting ethnic differences in the HIES genotype. One study conducted in Europe, investigating recurrent and novel mutations among a cross-ethnic cohort found novel mutations in the STAT3 gene. There are no studies looking at this disease in children of black ethnic origin in Africa. Currently, we have two patients within the South African Allergy Service presenting with this phenotype.

We performed genetic sequencing on her to identify the anatomical defect in her genetic make-up in order to lead the way in diagnosing this syndrome in our own population. The results are still pending.

Early diagnosis is imperative to initiate appropriate therapy, which would invariably improve outcomes by aiding in sourcing curative modalities such as stem-cell transplants in a particular population.

REFERENCES
INTRODUCTION
Health outcomes are known to be influenced by socio-economic status (SES); however, data to explore the relationship between SES and food sensitisation (FS) or food allergy (FA) in children is limited. The objective was to describe the prevalence and explore the associations of FS and FA to SES – measured using household size, parental education, household income and employment status – in urban Cape Town children.

METHODS
The prevalence of FS and FA was assessed in the South African Food Sensitisation and Food Allergy study 2012 in 739 of 764 eligible one- to three-year-old children (96.7% participation rate) attending randomly selected crèches in the Cape Town metropole. Skin-prick tests (SPT) were used to examine seven commonly allergenic foods (egg, milk, peanut, wheat, soy, fish and hazelnut) and food allergy was confirmed by an open food challenge. Associations between SES and FS/FA were assessed using the Z-test, Chi-square/Fisher's exact and Wilcoxon Ranksum tests.

RESULTS
In a group of 739 participants, 91 were sensitised at any degree of reactivity to one or more foods and 648 were sensitised negative for all foods (87.7%). FS prevalence at SPT≥1 mm to any food was 12.3%, at SPT≥3 mm 9.6% and at SPT≥7 mm 4.5%. Challenge-proven IgE-mediated FA was 2.4%.

A statistically significantly higher prevalence of FS was seen in children with employed (or student) parents rather than unemployed parents (none unemployed 13.5%, one unemployed 8.2%, both unemployed 0%; p = 0.03). Parents of children with sensitisation had a significantly higher total monthly household income. The disparity in household income in those with and without sensitisation increased, with increasing cut-off levels of sensitisation from R2 000/month at SPT≥1 mm to any food (p = 0.06), to R3 500/month at SPT≥3 mm (p = 0.02) and R6 000/month at SPT≥7 mm (p = 0.02).

A higher prevalence of sensitisation was apparent in children with parents who attained tertiary education compared to those whose parents had attained primary/secondary education; however, these results did not achieve statistical significance.

Total cumulative skin tests did not show any significant associations with any SES measure. Differences in FA patterns were evident but low numbers preclude meaningful assessment of significance. Household size showed no association with FS and FA. No significant differences in sensitisation patterns were noted between ethnic groups.

CONCLUSION
Certain markers of SES are associated with food sensitisation in young children in Cape Town. Enlargement of the cohort may allow the effect of SES on food allergy to be assessed.

FACTORS HAVING AN IMPACT ON ASTHMA CONTROL IN CHILDREN IN A LOW- TO MEDIUM INCOME COUNTRY STUDY: A RETROSPECTIVE STUDY
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BACKGROUND
Asthma is a well-known and well-researched condition, but few studies of the factors that have an impact on asthma are done in low- and middle-income countries (LMIC).

OBJECTIVES
First, to assess asthma control and the evolution of asthma control over time in asthmatic children in an LMIC setting. Secondly, to explore whether demographics, type of asthma medication, co-morbidities or exacerbations had an impact on asthma control.
INTRODUCTION
Allergic respiratory disease has been reported in workers exposed to flour allergens. Common flour exposures found in bakeries and milling companies include soybean, wheat, rye, rice, maize (corn) and oats. The aim of this study was to determine the sensitisation profiles of workers tested with the six bakery flours and ten common inhalant allergens using a skin-prick test (SPT) at the National Institute for Occupational Health (NIOH).

METHODS
Sensitisation profiles to commercial flours and common inhalant allergens were determined among 129 bakery and milling workers seen at the NIOH clinic with respiratory tract symptoms between 2002 and June 2016 using SPT. Atopy was defined as three or more positive common inhalants. Statistical analysis was performed using Stata 11 computer software (StataCorp, Tx, United States). Frequencies were calculated for sensitisation to different allergens. Pearson χ² was used to compare sensitisation to flour allergens between atopic and non-atopic workers.

RESULTS
Among this population, two-thirds (67.7%) were males with an average age of 39.9 (±9) years and one-third (34.8%) of them were atopic. The common determinants for atopy was house-dust mite (D. pteronyssinus) at 37.8%, Bermuda grass (29.5%), corn pollen (25.5%) and grass mix (24.1%). Forty-two (42.5%) of the workers tested were sensitised to one or more bakery flour allergens. The flour allergens that most workers were sensitised to were rye (44.1%), followed by wheat (28.1%), corn pollen (24.7%) and rice (24.1%). Sixteen (16.5%) of the workers were sensitised to oats and 14.0% to soybean flours. Sensitisation was significantly associated with atopic status for all the allergens tested (p<0.05).

CONCLUSION
Asthma control was not achieved in the majority of children. The choice of step-up therapy did not influence the levels of asthma control or lung functions.

REFERENCES

SENSITISATION PROFILES OF WORKERS TESTED WITH BAKERY FLOUR ALLERGENS
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INTRODUCTION
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REFERENCES
COMPONENT RESOLVED DIAGNOSTICS AND PEANUT ALLERGY

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INTRODUCTION
Genuine peanut allergy has the potential to cause life threatening anaphylaxis in patients following ingestion. It is important to determine whether a patient with IgE antibodies to peanut extract is allergic or sensitised but tolerant. This ongoing pilot study used component resolved diagnostics (CRD) to determine:
• true peanut allergy;
• potential severity of the reaction;
• cross reactivity.

METHODS
The ImmunoCAP 250 (ThermoFisher Scientific, Uppsala, Sweden) was used to identify patients with IgE antibodies to the peanut extract. Results were expressed in kU/l of antigen-specific IgE antibodies. The measuring range is 0.10 to 100 kU/l. Results >0.35 kU/l were considered positive. Twenty-four patients sensitised to peanut were further tested against various peanut components. These components included the storage proteins Ara h1, Ara h2 and Ara h3 which indicate primary peanut allergy are associated with increased risk for systemic and more severe reaction; Ara h8, a marker of cross-reactivity in patients with combined birch pollen and peanut allergy; the stable lipid-transfer protein Ara h9 associated with systemic and more severe reactions, as well as Oral Allergy Syndrome; and the cross-reactive carbohydrate determinant (CCD), o214.

RESULTS
The mean age of patients was 7.65 years and the majority were male (67%). The level of IgE antibodies to peanut extract ranged from 0.60 to ≥100 kU/l with a mean of 33.21 kU/l. Eighty-eight percent of patients were positive for Ara h2. Three patients were negative for antibodies to Ara h2, two of whom are clearly sensitised to peanut extract but tolerant. Seventy-one percent of patients were positive to Ara h2 and at least one or more of the other storage proteins. Four patients were positive to Ara h8, but these levels were low. In addition, these patients were positive to three or more storage proteins. Reactions in these Ara h8 positive patients may vary from mild to severe. In ten patients, antibodies to CCD were detected, however, levels were low. One patient is clearly cross reactive; however, eight of these patients had antibodies to storage proteins which indicates primary peanut allergy.

CONCLUSION
From these results, patients at risk of anaphylaxis can be identified. While oral food challenge (OFC) is considered the gold standard for determination of peanut allergy, it is clear from the data that some patients are extremely allergic and the OFC would be too dangerous to perform. Our laboratory routinely performs a test for antibodies to the storage protein Ara h2 on all patients sensitised to peanut extract. In some patients potentially at risk for anaphylaxis, it may be useful to measure antibodies to additional components so that a more informed decision can be made prior to OFC.

DE-LABELLING PENICILLIN ALLERGIC PATIENTS: A TOOL FOR ANTIBIOTIC STEWARDSHIP

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BACKGROUND
Allergic reactions to beta-lactam antibiotics are the most common reported antibiotic allergies, with up to 20% of patients admitted to hospital carrying a penicillin allergy label. However, diagnosis is often based on a vague recollection of childhood reactions; in fact, only 1 out of 20 patients reporting penicillin allergy have proven IgE-mediated hypersensitivity necessitating penicillin avoidance. The public and individual health impacts of using alternative non-beta lactam antibiotics are significant and include: cost, prolonged hospital stay, recurrent infections and other adverse drug reactions.

AIM
To raise awareness among allergists of the impact of incorrect penicillin allergy labelling and to provide simple and effective strategies for de-labelling patients with possible penicillin allergy.