INTRODUCTION
The optimal timing of the introduction of solids to minimise the risk of food allergies is currently under study. Some immunological and epidemiological evidence has suggested that early exposure of the immune system to allergens, especially via the enteral route, may enhance immunological tolerance.1

Delaying the introduction of solids beyond 6 months has not been shown to have any significant effect on reduction in allergies; indeed, recent studies for wheat, egg, cow’s milk and fish allergy have shown that delayed introduction may lead to a higher incidence in allergies.2-5

Several large prospective studies are currently underway to investigate whether early or late exposure to highly allergenic foods such as peanut and egg results in a lower rate of allergies to those foods.6-8

This original research report explores the timing of introduction of solids and peanut dietary intake patterns of South African children with atopic dermatitis.

METHODOLOGY
This research formed part of a study investigating the prevalence of IgE-mediated food allergy in 100 South African children with atopic dermatitis (59 Xhosas and 41 children of mixed race).9 The children, aged 6 months to 10 years, were recruited from the dermatology clinic at Red Cross Children’s Hospital, a tertiary level children’s hospital in Cape Town. Food allergy was determined by a combination of history, sensitisation patterns (skin prick test and Immuno Solid Phase Allergen Chip test: Phadia® ImmunoCAP ISAC 103) and open incremental oral food challenges. As part of a study, parents were asked about dietary introduction patterns by questionnaire. They were asked about the timing of the first introduction of peanut, egg, cow’s milk or dairy, soya, wheat, fish, tree nuts and sesame seed. For peanut, there was an additional questionnaire to ascertain the average weekly consumption of peanut and peanut-containing foods.

RESULTS
PEANUT INTRODUCTION AND CONSUMPTION PATTERNS

Overall, 81 (81%) of patients in the study had consumed peanut: 78% (46/59) of Xhosa children and 85% (35/41) of mixed race children (p = 0.4). Overall, 62% of patients were still eating peanut on a regular basis, this was equal in both ethnic groups at 62% each. Despite a difference in monthly household income (median R2000 in Xhosa patients and R3500 in mixed race patients, p = 0.01 by Mann-Whiney test), there were no significant differences in peanut consumption patterns between Xhosa and mixed race groups. In those who had introduced peanut into their diets, the median age of introduction was 18 months overall: 24 months in the Xhosa group, and 12 months in the mixed race group (p = 0.08). The median number of peanut servings per week in those consuming peanut was 3 for both ethnic groups.

Only 7 of the Xhosa patients (12%) had introduced peanut before 12 months of age, and 8 of the mixed race patients (20%), p = 0.28.

The overall prevalence of peanut allergy was 24%: significantly higher in mixed race patients at 38% versus Xhosa patients at 15% (p = 0.01). The median age at the time of the first reaction to peanut was 24 months.

Age of Peanut Introduction and Allergy Risk
In those patients who had introduced peanut before the age of one year (n = 15), 5 were found to have a peanut allergy (33%), compared to those who introduced peanut butter after a year (n = 84), in whom 21 were found to be allergic (25%), p = 0.51. Therefore, in this cohort there was not an obvious protective effect of peanut introduction before a
year of age in comparison to after a year of age. However, with age of introduction of peanut below 8 months, the trend was towards a lower prevalence of peanut allergy: in those who introduced peanut below 8 months (n = 8), only 1 had an peanut allergy (12.5%), compared to those introducing peanut at or after 8 months (n = 92) in whom 23 were allergic (25%); however, this did not reach statistical significance (p = 0.42).

HEN’S EGG INTRODUCTION PATTERNS
Overall, 96 (96%) of patients had eaten egg before, this was 98% in Xhosa patients (58/59) and 93% (38/41) in mixed race patients, p = 0.21. The median age of egg introduction was 12 months in both ethnic groups. Overall, 25% of patients were allergic to egg, 27% in mixed race patients and 24% in Xhosa patients, p = 0.7. Of all the patients with an egg allergy, the median age of the first allergic reaction was 12 months.

Overall, 36 (36%) of patients introduced egg before a year of age: 34% (20/59) of Xhosas and 39% (16/41) of mixed race origin introduced egg before a year of age, p = 0.6.

In those patients who introduced egg before a year of age (n = 36), 11 were found to have an egg allergy (31%), compared to those who introduced egg after a year (n = 64), in whom 14 were found to be allergic (22%), p = 0.32. Therefore, in this cohort there was not an obvious protective effect of egg introduction before a year of age in comparison to after a year. However, with introduction of egg below the age of 8 months, the trend was towards lower prevalence of egg allergy: in those who introduced egg below 8 months (n = 12), only 1 had an egg allergy (8%), compared to those introducing egg at or after 8 months (n = 88) in whom 24 were allergic (27%). However, this did not reach statistical significance (p = 0.15).

COW’S MILK AND DAIRY PRODUCTS INTRODUCTION
Overall, 89 (89%) of patients had consumed a cow’s milk based formula: 92% (54/59) of Xhosas and 85% (35/41) of mixed race patients, p = 0.27. The median age of introduction of cow’s milk formula was 3 months in both ethnic groups.

Whole fresh cow’s milk had been introduced in 86 (86%) cases: in 89% (50/56) of Xhosas and 88% (36/41) of mixed race patients, p = 0.9. The median age of introduction of whole fresh cow’s milk was 18 months overall: 13.5 months in Xhosa patients and 18 months in mixed race patients.

Overall, 96 (96%) patients had consumed dairy products: 95% (56/59) of Xhosas and 98% (40/41) of mixed race patients, p = 0.44. These were introduced at a median age of 8 months overall, 8 months in Xhosa patients and 12 months in mixed race patients.

The median age at first reported reaction to cow’s milk was 12 months, and to dairy products 18 months. The prevalence of IgE-mediated allergy to cow’s milk was low in this cohort: 2% overall (5% in mixed race patients and 0% in Xhosa patients, p = 0.1).

SOYA INTRODUCTION
Overall, 26 patients (26%) had consumed a soya formula, 27% (16/59) in Xhosa patients and 24% (10/41) in mixed race patients, p = 0.77. The median age of soya introduction was 6 months overall: 6.5 months in Xhosa patients and 3 months in mixed race patients. The median age at the time of perceived soya allergy was 2.5 months, but none of the patients with perceived reactions were subsequently found to have an IgE-mediated allergy to soya at the time of the study. There were no cases of soya allergy in the cohort overall.

WHEAT INTRODUCTION
All 100 patients in this cohort had consumed wheat. The median age of wheat introduction was 6 months overall, 7 months in Xhosa patients and 6 months in mixed race patients. The median age at first perceived reaction to wheat was 7.5 months, but at the time of study no patients were found to have IgE-mediated wheat allergy.

FISH INTRODUCTION
Overall, 87 (87%) of patients had consumed fish at the time of the study: 83% (49/59) Xhosa patients and 93% (38/41) mixed race patients, p = 0.14. The median age at fish consumption was 24 months overall: 24 months in Xhosa patients and 15 months in mixed race patients. The median age at first reported reaction to fish was 24 months. Overall, 1% of patients were found to be fish allergic, 0% in mixed race patients and 1.6% in Xhosa patients, p = 0.7.

TREE NUT INTRODUCTION
Only 30 patients (30%) had knowingly consumed tree nuts. Tree nut consumption was significantly more common in the mixed race patients: 22% (13/59) of Xhosas and 41% (17/41) of mixed race patients had introduced tree nut into their diet, p = 0.04. Of those who consumed tree nuts the average age of introduction was 24 months in both ethnic groups. The average age at the time of first reaction to tree nuts was 42 months. Overall, 3% of patients were found to be tree nut allergic (all were peanut allergic too): this was significantly higher in mixed race patients at 7% versus 0% in Xhosas (p = 0.04).

SESAME INTRODUCTION
Overall, 16 (16%) of patients had knowingly consumed sesame. Sesame consumption was significantly higher in mixed race patients: 8% (5/59) of Xhosas had consumed sesame and 27% (11/41) of mixed race patients had consumed sesame, p = 0.01. The median age at introduction
of sesame was 24 months in both ethnic groups. There were no cases of reported sesame reaction and no cases of sesame sensitisation.

Complementary food introduction patterns are summarised in the Table 1.

**DISCUSSION**

In this cohort of patients with atopic dermatitis, consumption patterns of complementary feeding did not differ significantly between ethnic groups. The tendency was towards relatively late introduction of peanut (median 24 months), egg (median 12 months), tree nut (24 months) and fish (24 months). These foods are known to be allergenic; and caregivers of children with atopic dermatitis may well deliberately delay the introduction of such solids to try and minimise allergic reactions. This is despite the increasing evidence that a delay in introduction of allergenic foods does not reduce allergy risk. Despite the delayed introduction of these solids, the prevalence of egg and peanut allergy in this cohort was particularly high.

Of particular interest is a possible shift in peanut consumption patterns amongst the Xhosa group. In a dietetic study in 2006, mothers (n = 198) of Black infants aged 4-36 months in Cape Town were interviewed about their infants’ peanut intake using a peanut consumption questionnaire. In that study, the mean age of introduction of peanuts and peanut products was found to be 10 months, and 64% of subjects started eating peanuts before one year of age. The median total peanut intake was 12 g/day (1-2 portions per day). In comparison, in the 59 Xhosa patients from our study cohort, the median age of introduction of peanut was 24 months, and only 12% of children had consumed peanut before the age of one. Of those consuming peanut, the average consumption was 3 portions per week.

Caregivers of patients with eczema may deliberately delay the introduction of peanuts to the child’s diet because of a growing public knowledge about peanut allergy or because of the advice of a healthcare practitioner. This may lead to reverse causation, with the eczema actually leading to later introduction of peanut. However, the cautious introduction of allergenic solids is a potential concern with mounting evidence that delaying the introduction of allergenic solids is not beneficial in allergy prevention.

In our study, there was a trend towards lower allergy rates in those who had introduced egg and peanut earlier (younger than 8 months), however, this did not reach statistical significant and requires larger studies for accurate results.

Wheat products were consumed in all children at the time of study and were introduced relatively early at a median age of 6 months. There was no IgE-mediated wheat allergy in this cohort of children.

Cow’s milk formula had been consumed in a majority of the population (89%) at a median age of 3 months, once again relatively early. The prevalence of cow’s milk allergy in this population was lower than expected (2%). Although dairy products were introduced by 8 months in the majority, fresh whole cow’s milk was ingested at a reasonably late age, 18 months, suggesting prolonged formula or breastfeeding.

**Table I: Age of introduction of complementary feeds**

<table>
<thead>
<tr>
<th>Food</th>
<th>% of patients who had introduced the food into their diet</th>
<th>Median age of introduction overall (months)</th>
<th>Prevalence of allergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanut</td>
<td>81%</td>
<td>18</td>
<td>24%</td>
</tr>
<tr>
<td>Hen’s Egg</td>
<td>96%</td>
<td>12</td>
<td>25%</td>
</tr>
<tr>
<td>Cow’s Milk-based formula</td>
<td>89%</td>
<td>3</td>
<td>2% to cow’s milk</td>
</tr>
<tr>
<td>Whole Cow’s Milk</td>
<td>86%</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Dairy products</td>
<td>96%</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>100%</td>
<td>6</td>
<td>0%</td>
</tr>
<tr>
<td>Soya</td>
<td>26%</td>
<td>6</td>
<td>0%</td>
</tr>
<tr>
<td>Fish</td>
<td>87%</td>
<td>24</td>
<td>1%</td>
</tr>
<tr>
<td>Tree Nuts</td>
<td>30%</td>
<td>24</td>
<td>3%</td>
</tr>
<tr>
<td>Sesame</td>
<td>16%</td>
<td>24</td>
<td>0%</td>
</tr>
</tbody>
</table>
well past a year of age before switching to fresh whole cow’s milk.

The consumption of tree nuts (30%) and sesame (16%) was low, especially in Xhosa patients. Overall, this study suggests the trend towards late introduction of certain allergenic foods, particularly peanut. The outcome of studies investigating the ideal time of enteral introduction of allergenic foods such as peanut and egg is awaited and will help guide our patients as to the best strategy to try and minimise allergies. This is particularly important in children at high risk of food allergies, such as those with atopic dermatitis. The trend towards later introduction of solids does not seem to benefit allergy reduction.

REFERENCES
7. www.eatstudy.co.uk accessed 10 September 2014

product news

MSD (Pty) Ltd is proud to announce the introduction of SINGULAIR 4 mg. Studies have shown that asthma in children under the age of six is on the increase worldwide. SINGULAIR 4 mg is the first asthma controller therapy, that is not a steroid, to be approved in South Africa for children as young as 2 years old. Studies have shown improvements in symptom and activity scores from as early as day one, affirming the efficacy of SINGULAIR 4 mg in this age group. The current guidelines for treatment of asthma in children, as compiled by the Allergy Society of South Africa (ALLSA), call for the introduction of a leukotriene antagonist as a controller agent in this age group at step 2, after the use of short-acting reliever medication has proven to be inadequate in controlling asthma symptoms. In other words using leukotriene antagonist as a first line controller agent. At present, of the leukotriene receptor antagonists, only SINGULAIR is indicated for use in children under the age of 12.

SINGULAIR 4 mg is indicated for the prophylactic treatment of mild to moderate asthma in the 2-5 year old age group. SINGULAIR 4 mg is presented in a 28-day pack and one tablet should be taken once daily at bedtime. To date worldwide use is more than 2.2 million children in more than 90 countries. This puts SINGULAIR in the unique position of being the only controller therapy to be registered and indicated for asthmatic patients from 2 years old and up.

REFERENCES:
2. Data on File.