

FOOD ALLERGY IN SOUTH AFRICA

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SAFFA: The South African Food sensitisation and Food Allergy study

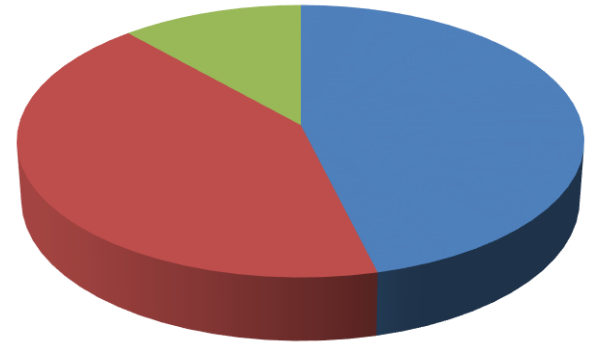
- Botha M, Basera W, Gray C, Facey-Thomas H, Levin ME.
 - The Prevalence of IgE mediated Food sensitisation and Food Allergy in unselected 12-36 month old urban South African Children. (abstract). CACI 2014; 27 (3): 230



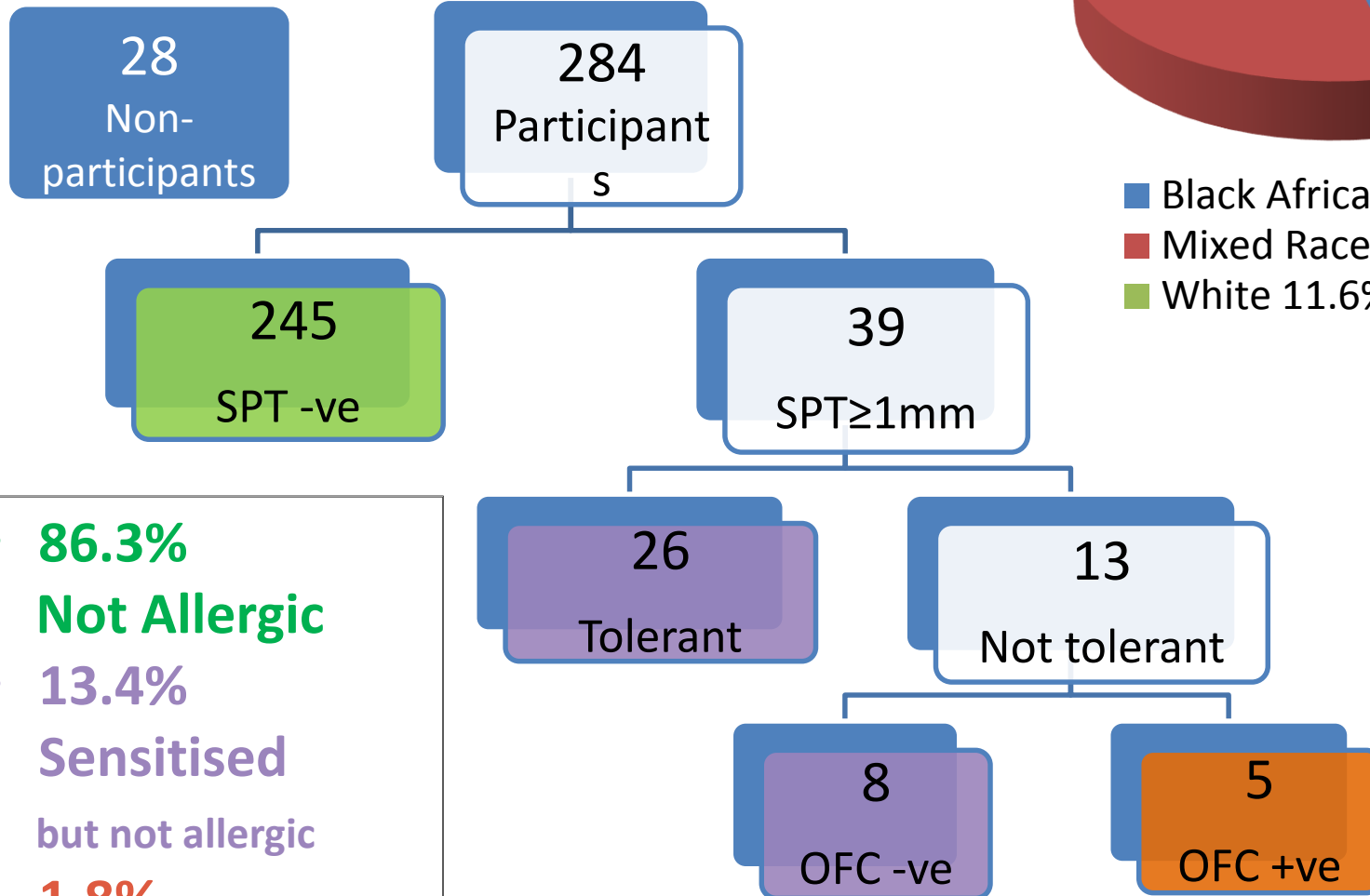
SAFFA study

Prevalence study (cross sectional)

- IgE mediated Food sensitisation + Food Allergy
- Unselected 12-36 month old children in Cape Town (recruited from crèches)
- Using questionnaire, SPT for screening
- OFC to confirm diagnosis in all children with SPT >1mm + NOT tolerant to age appropriate portion of that food
- Peanut, egg, cow's milk, soya, wheat, fish, hazelnut
- Non-participants



■ Black African 46%
■ Mixed Race/Coloured 42.4%
■ White 11.6%



- **86.3% Not Allergic**
- **13.4% Sensitised but not allergic**
- **1.8% Food Allergic**

Spectrum of sensitisation and Food Allergy

	Overall n 95% CI	Egg	Peanut	Cow's Milk	Hazelnut	Soya	Wheat	Fish
SPT ≥1mm	13.7% 39 9.7-17.8	9.5%	5.3%	3.5%	1.8%	1.8%	1.4%	1.1%
SPT ≥3mm	9.9% 28 6.4-13.3	7.8%	3.2%	1.8%	0.7%	0.7%	0	0
SPT ≥7mm	4.2% 12 1.9-6.6	3.9%	1.1%	0.4%	0.4	0	0	0
OFC positive	1.8% 5 0.6-4.1	1.4 4 0.4-3.6	1.1 3 0.2-3.1					5

Sensitisation and ethnicity (1)

SPT Any Food	Black African (n=131)	Mixed Race (n=118)	Caucasian (n=33)	<i>p-values</i>
≥1mm	9.9%	13.6%	12.1%	0.7
≥3mm	9.2%	10.2%	12.1%	0.8
≥7mm	2.3%	5.9%	6.0%	0.3

SAFFA study

- 1st food challenge proven FA prevalence in unselected children in Africa.
- A basis for further monitoring of a population possibly only at the beginning of the food allergy epidemic.
- High sensitisation rates in Black African and Mixed race children are similar to the high rates of aeroallergen sensitisation seen in unselected and allergic populations.
- Further expansion
 - Describe prevalence of socio-demographic, environmental and family related risk factors in study population
 - Compare prevalence of sensitisation and food allergy between urban Caucasian, Mixed race and black African children
 - between rural and urban Black African Xhosa children
 - Generate population-specific cut-off levels for SPT and Immunocaps with 95% positive predictive values.

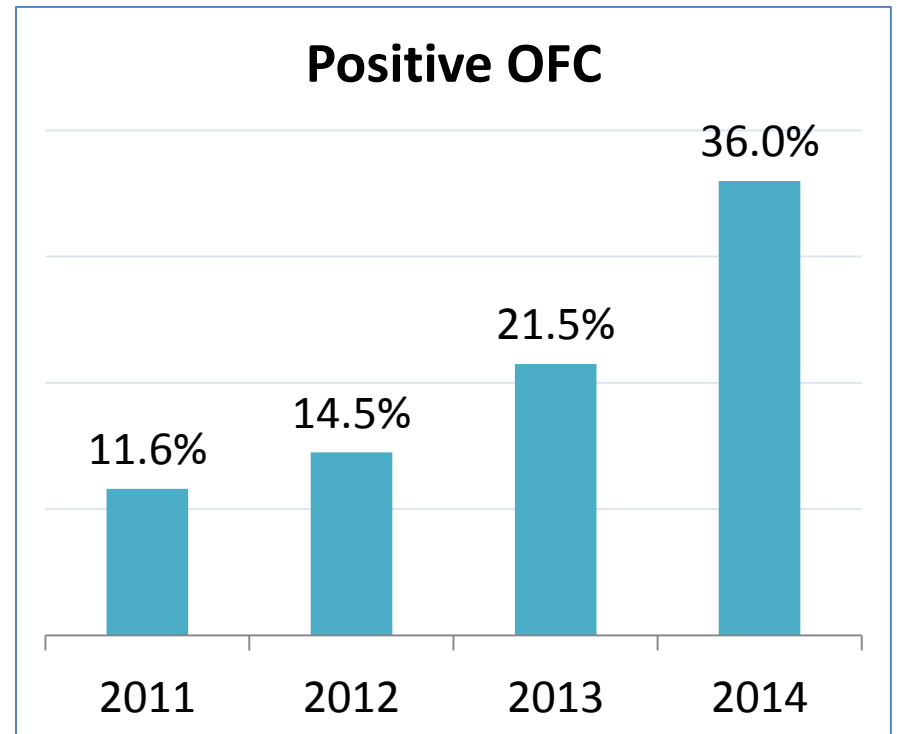
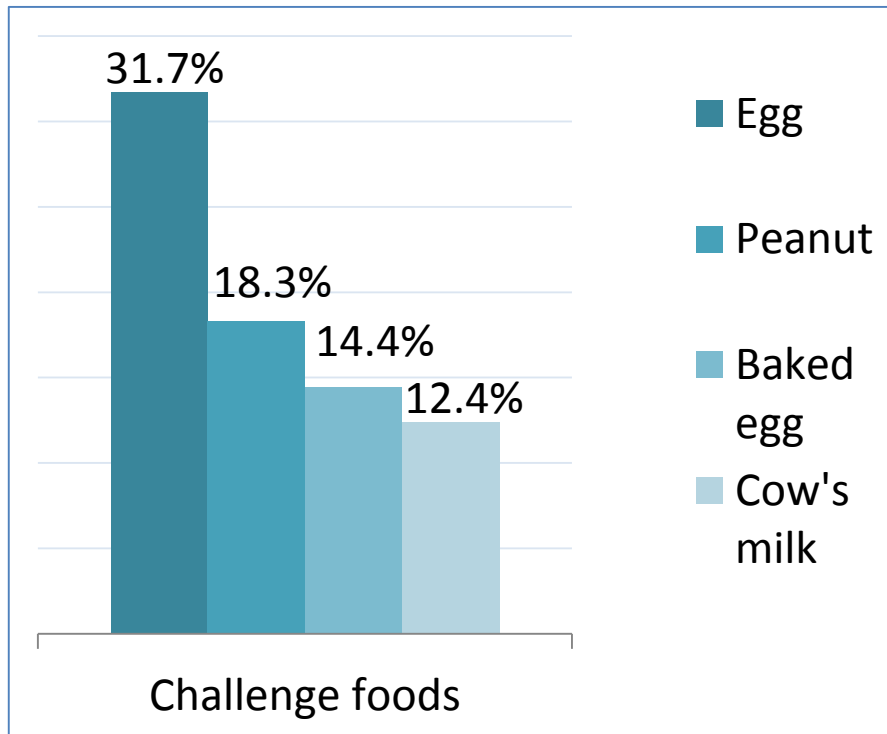
Description and outcomes of oral food challenges in a Tertiary Paediatric Allergy clinic in South Africa.

Talita Ferreira-van der Watt, Wisdom Basera, Michael Levin

Ferreira-Van Der Watt TA, Basera W, Gray C, Levin ME. Description and outcomes of 202 oral food challenges in a tertiary paediatric allergy clinic in South Africa. CACI 2014; 27 (3): 231

Results

- February 2011 to April 2014
- 202 OFC
- 142 children
- 9 months to 14 years
- 18 different foods
- 18.8% (n=38) OFC were positive
- Urticaria: 60.5% (n=23)
- Angioedema 28.9% (n=11)
- Wheeze 7.9% (n=3)



- Younger children = higher incidence of positive OFC
 - 33.3% in children below 2 years (n=14/42)
 - 9.2% (n=24/260) in children above 2 years (p=0.01)

	Egg	Peanut	Baked egg	Cow's milk	P value
Positive OFC	14% (n=9/64)	35.1% (n=13/37)	17.2% (n=5/29)	20% (n=5/25)	
Median age at challenge	53 months	67 months	38 months	29 months	p=0.01 (all 4 groups)

- Co-morbidities
 - atopic dermatitis 73.9% (n=105/202)
 - asthma 37.3% (n=53/202)
 - allergic rhinitis 45.8% (n=65/202)
 - allergy to multiple foods 62.7% (n=89/202)
- Co-morbidity prevalence was significantly different between groups with positive and negative OFC outcomes (p<0.01).

Conclusion

- OFC
 - Necessary to accurately diagnose children with food allergies
 - Assess development of tolerance
 - Majority of food challenges are negative
 - Positive OFC usually have mild reactions
 - Increased utilisation of OFC's → increased numbers of true food allergy diagnoses
- Prevalence of positive challenges and age at the time varies between different foods.
- Younger children had an increased risk of positive OFC outcome.
- Peanut allergy was the most common food allergy diagnosed.
- Those children with positive food challenges had a significantly higher degree of allergic co-morbidity.

Oral food challenges in children at a
tertiary allergy clinic in Africa:
Significance of specific IgE levels differs
from international standards and varies
with ethnicity.

Talita Ferreira-van der Watt, Wisdom Basera, Michael Levin

Van Der Watt TA, Basera W, Levin ME. Oral food challenges in children at a tertiary allergy clinic in Africa: Significance of specific IgE levels differs from international standards and varies with ethnicity. (abstract). CACI 2014; 27 (3): 23-2

Background

- Sampson¹ determined 95% PPV of specific IgE for food challenge outcome in children in a first world country.

Food	IgE (kU/l)
Egg > 2 years old	7
Egg < 2 years old	2
Cow's milk > 2 years old	15
Cow's milk < 2 years old	5
Peanut	14

- Predictive values for African children have not been determined.

Methods

- Retrospective, descriptive study
- Children 0 to 14 years
- Red Cross Children's Hospital's tertiary Allergy clinic
- Open OFC
- 39 month period from February 2011 to April 2014

Results

- 202 OFC
- 142 children
- 9 months to 14 years of age

Ethnicity	Number of patients
Mixed race	170 (84.1%)
Black African	26 (12.9%)
White	2 (3%)

	Mixed race	Black African	White	P-value
Median age at challenge	47 months	42 months	117 months	0.007 Kruskal Wallis
Positive OFC outcome	18.8% (32/170)	15.4% (4/26)	33.3% (2/6)	0.5 Fisher exact

Negative challenge with IgE above 95% PPV

Challenge food	Mixed Race	Black African
Egg	36.1% (17/47)	42.9% (3/7)
Cow's milk	40.0% (6/15)	80.0% (4/5)
Peanut	21.7% (5/23)	0% (0/1)

Conclusion

- Large numbers of patients have negative challenges despite IgE levels above the internationally derived 95% PPVs.
- A higher proportion of Black African children have
 - negative egg and milk challenges despite IgE levels above the internationally derived 95% PPVs
- Possible unknown mechanism of immune tolerance present in Black African children leading to higher levels of sensitization without clinically significant allergy.

Food allergy in children with eczema

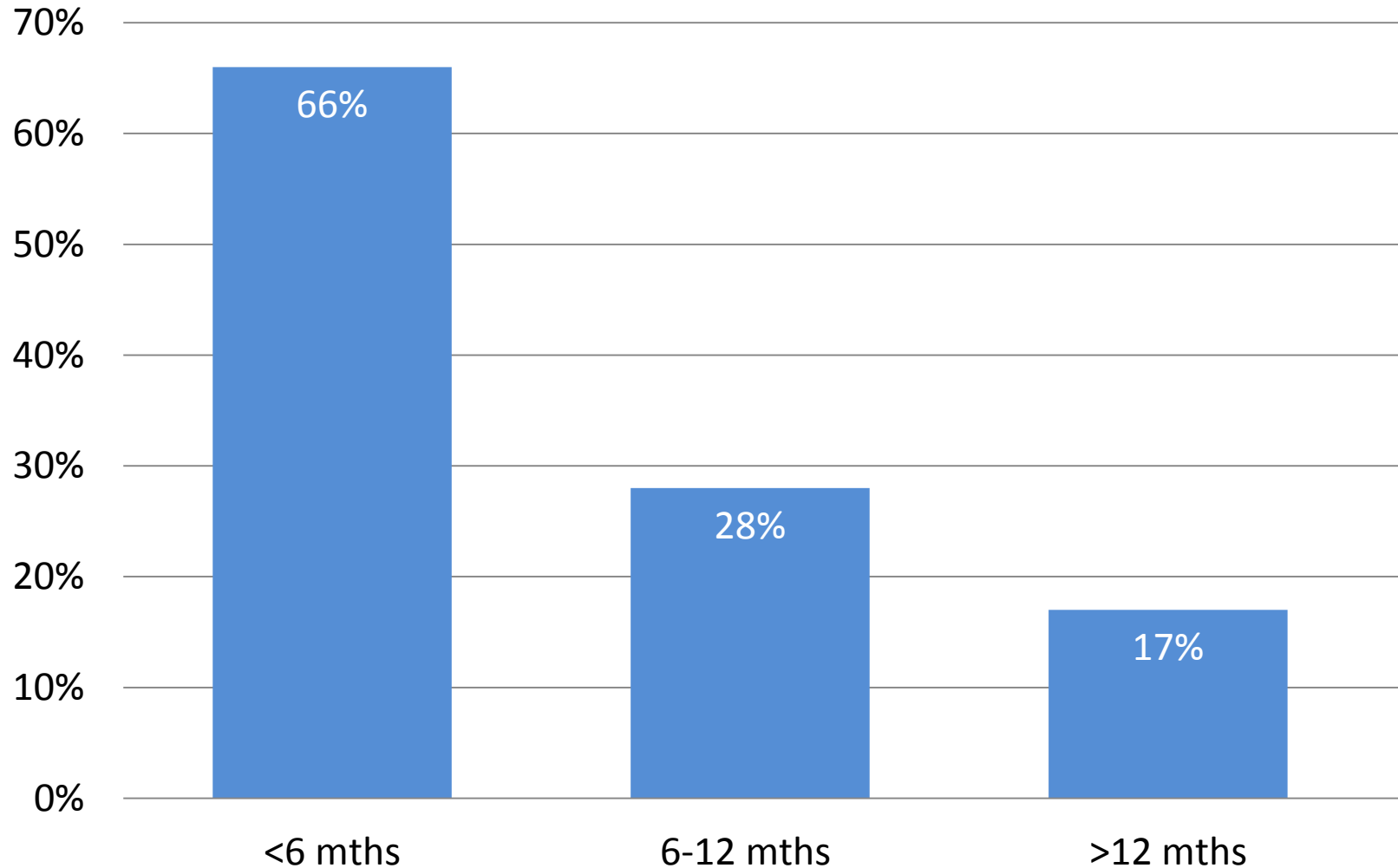
Claudia Gray, George Du Toit, Mike Levin

- Gray C. A prospective descriptive study to determine the prevalence of IgE-mediated food allergy in South African children with atopic dermatitis attending a tertiary medical centre. Abstract. South African Journal of Child Health 2011; 5 (3): 99
- Gray CL, Levin ME, Zar HJ, Potter PC, Khumalo NP, Volkwyn L, Fenemore B, du Toit G. Food allergy in South African children with atopic dermatitis. Pediatric Allergy and Immunology. In press
- Gray C, Levin ME, du Toit G. Ethnic differences in peanut sensitisation and peanut allergy patterns in South African children with atopic dermatitis. (abstract) CACI 2014; 27 (3): 232-3
- Gray CL, Levin ME, Zar HJ, Potter PC, Khumalo NP, Volkwyn L, Fenemore B, du Toit G. Ethnic differences In peanut allergy patterns in South African children with eczema. Submitted
- Du Toit G, Levin M, Motala C, Perkin M, Stephens A, Turcanu V, Lack G. Peanut Allergy and peanut-specific IgG4 characteristics among Xhosa children in Cape Town. J Allergy Clin Immunol 2007; 119 (1): S196

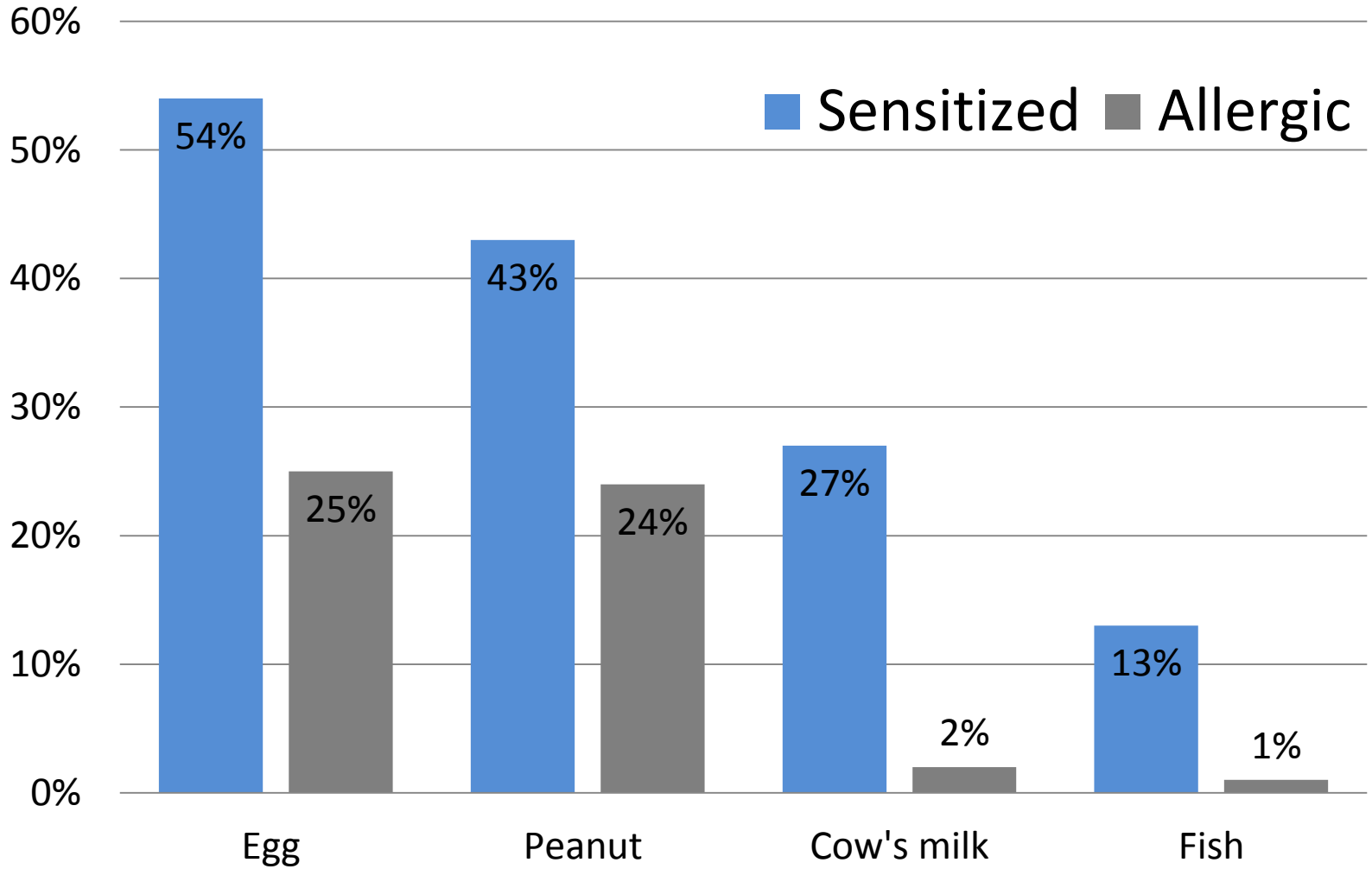
Food allergy in children with eczema

- 100 children
- 6 months to 10 years
- Moderate to severe AD
- Randomly selected from a dermatology clinic at the Red Cross Children's Hospital in Cape Town
- Food allergy screening
 - Questionnaire
 - skin prick tests
 - allergen specific IgE ISAC 103

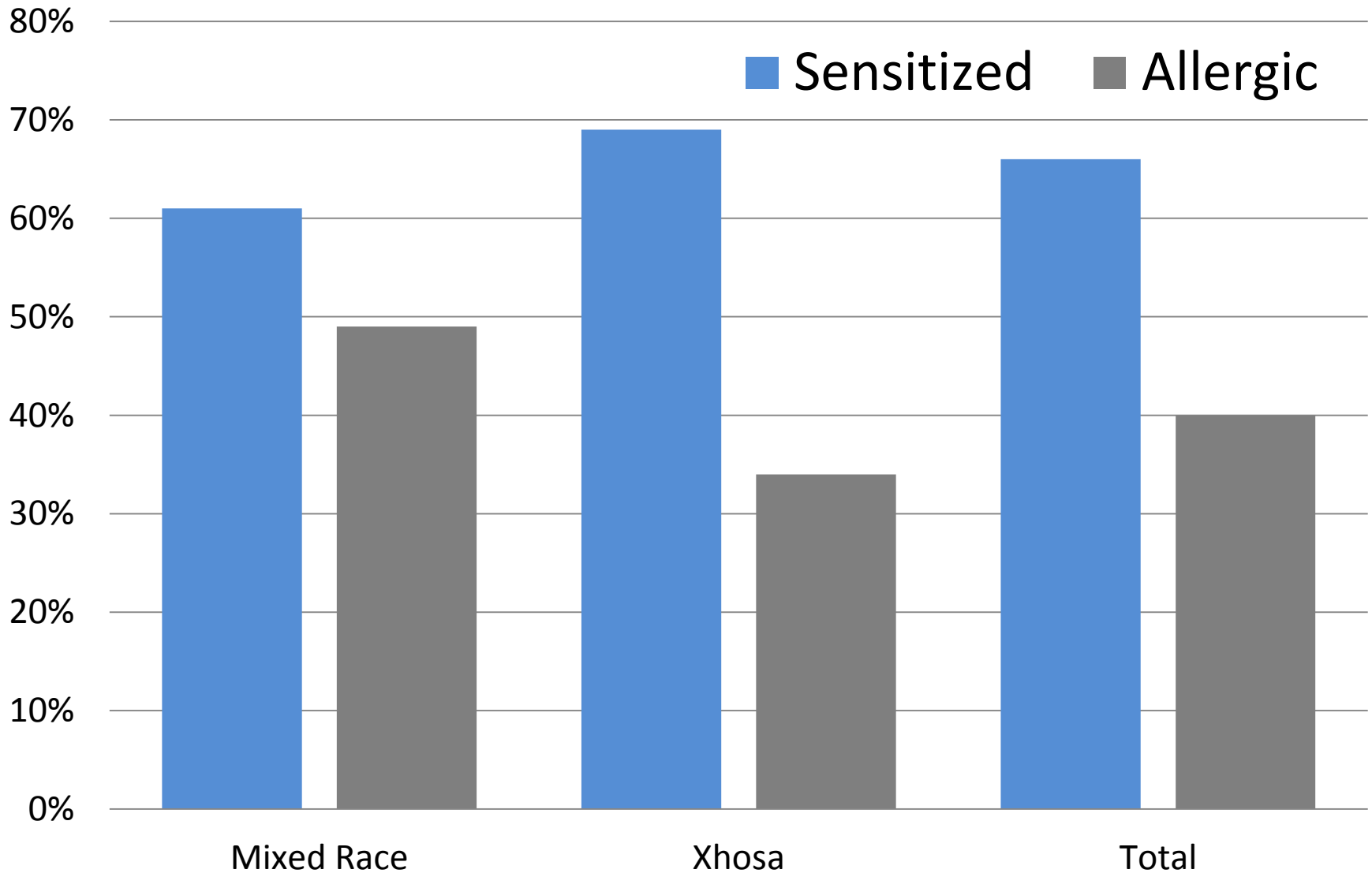
Age of onset and FA prevalence



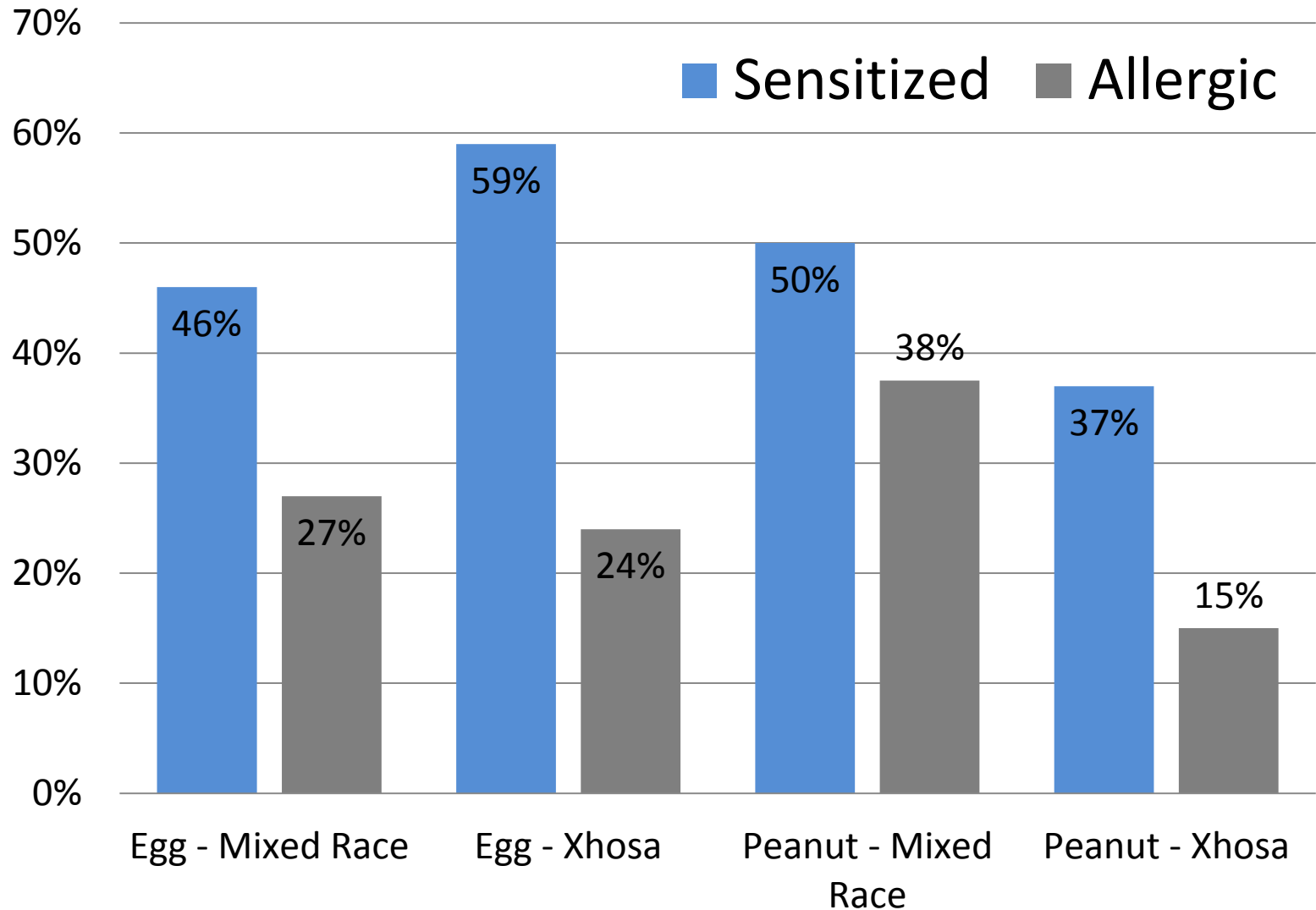
Sensitisation vs allergy



Ethnicity effects sensitisation vs allergy



Ethnicity effects sensitisation vs allergy



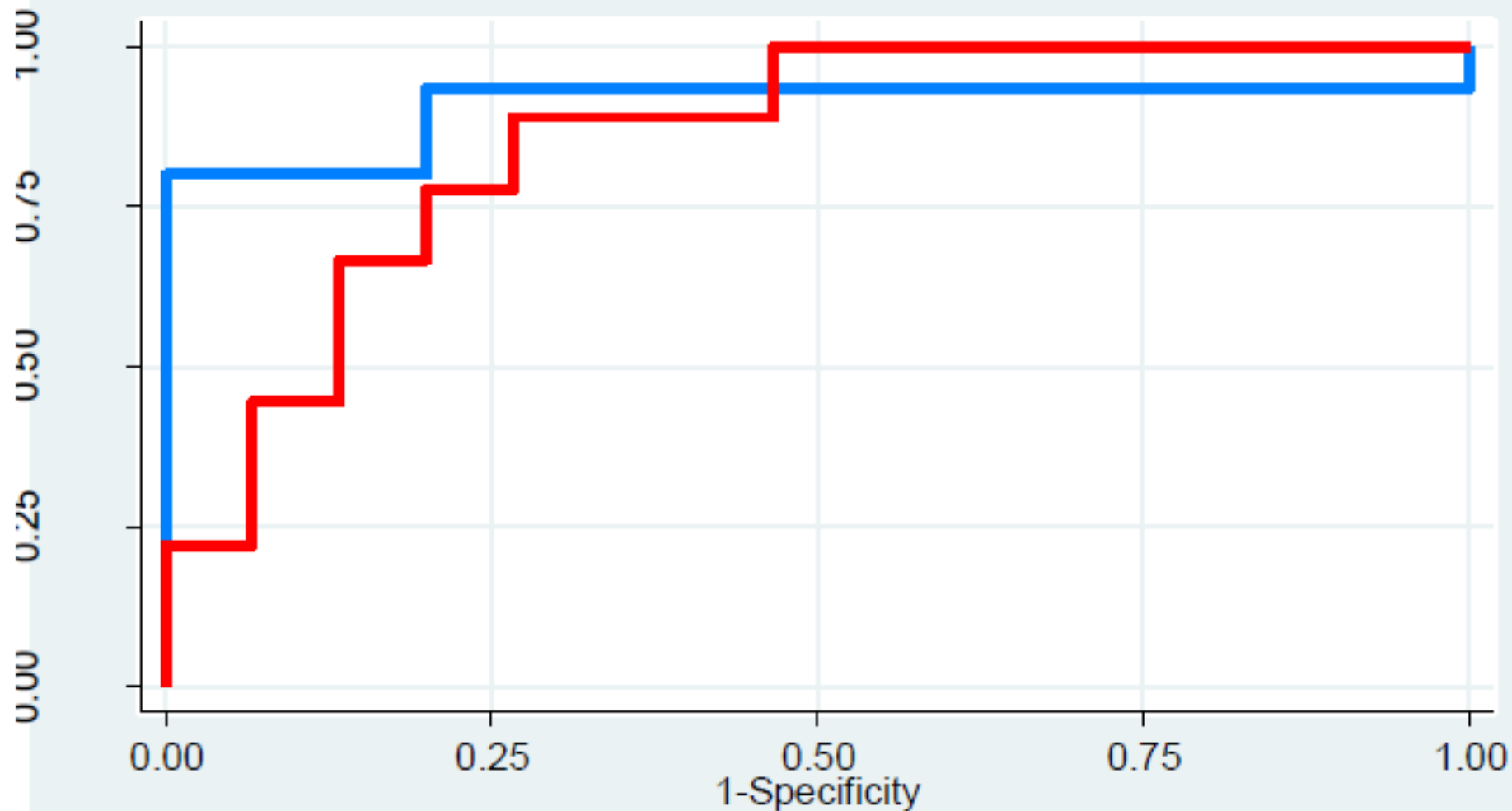
95% positive predictive values differ in their utility according to ethnicity

PPV	Mixed race	Black African
SPT>8	88	80
IgE>14	90	57
Arah2 >0.35	93	53

Component tests

- Component tests had a similar pattern in both
- Arah2 performs best in both
- Component tests differ in their utility according to ethnicity: ROC curves

ROC curve for ImmunoCAP rArah2 in peanut allergy diagnosis

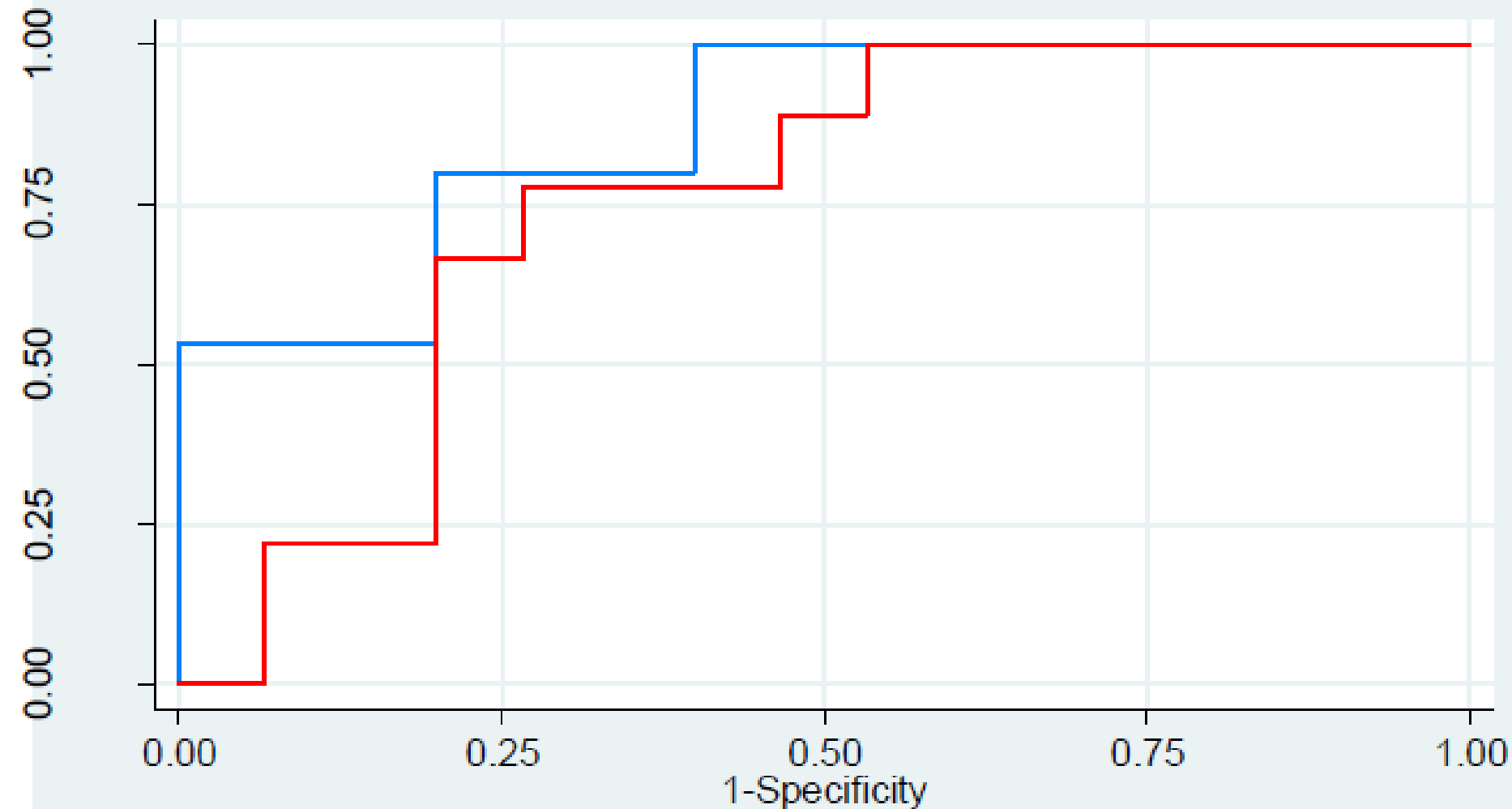


Mixed race patients ROC area: 0.91

Xhosa patients ROC area: 0.85

p= 0.6

ROC curve for ImmunoCAP Peanut in peanut allergy diagnosis



Mixed race ROC area: 0.87
Xhosa ROC area: 0.76
p=0.4

Food allergy in children with eczema

- Difference in household income
- No difference in peanut consumption patterns
- Difference in environment?
- Higher timothy grass sensitisation in mixed race
- Total IgE higher in mixed race

EoE in Cape Town, South Africa

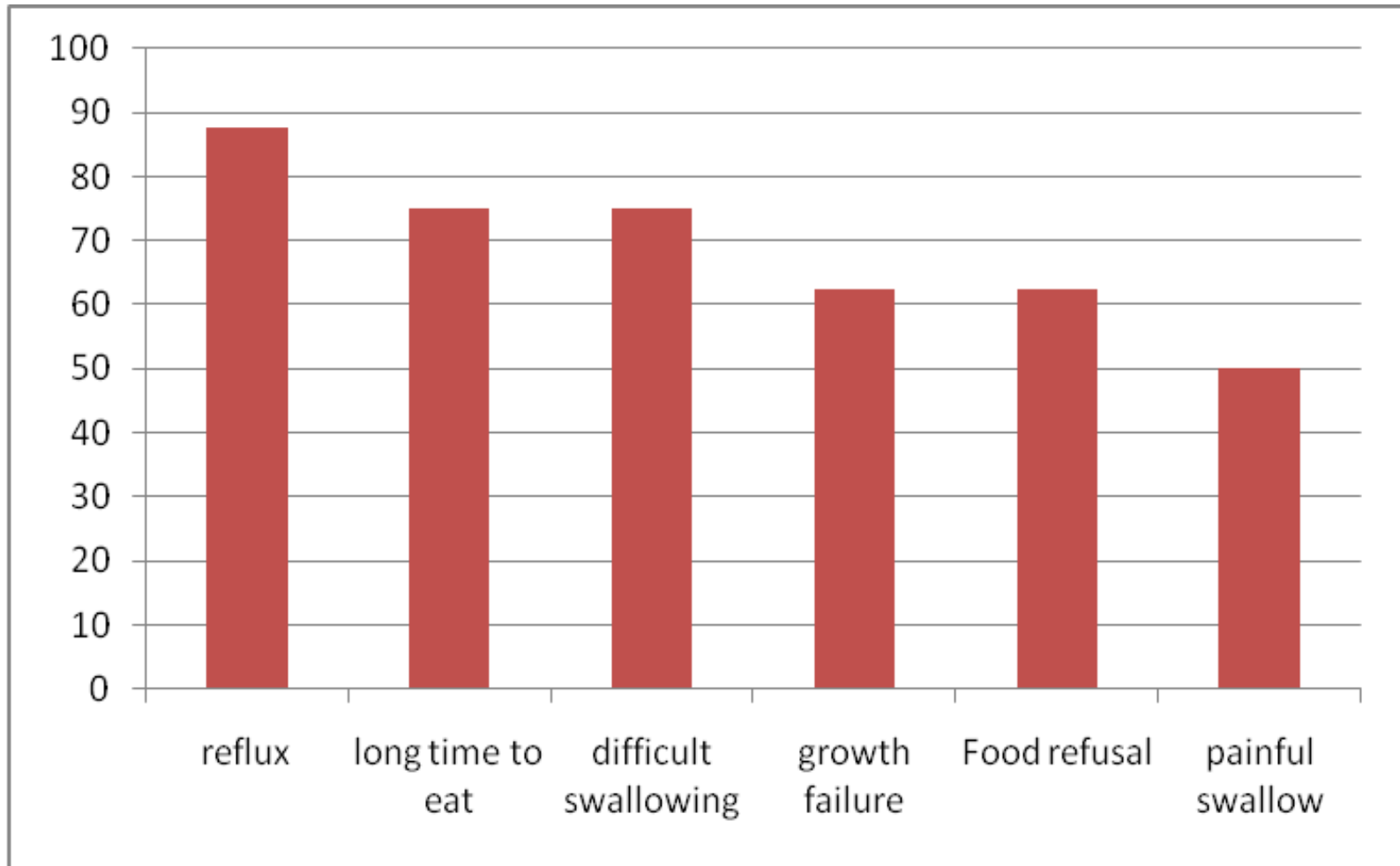
Michael Levin, Cassim Motala

Eosinophilic oesophagitis in Cape Town, South Africa. (abstract) Clinical and Translational Allergy 2011; 1(Suppl 1):26

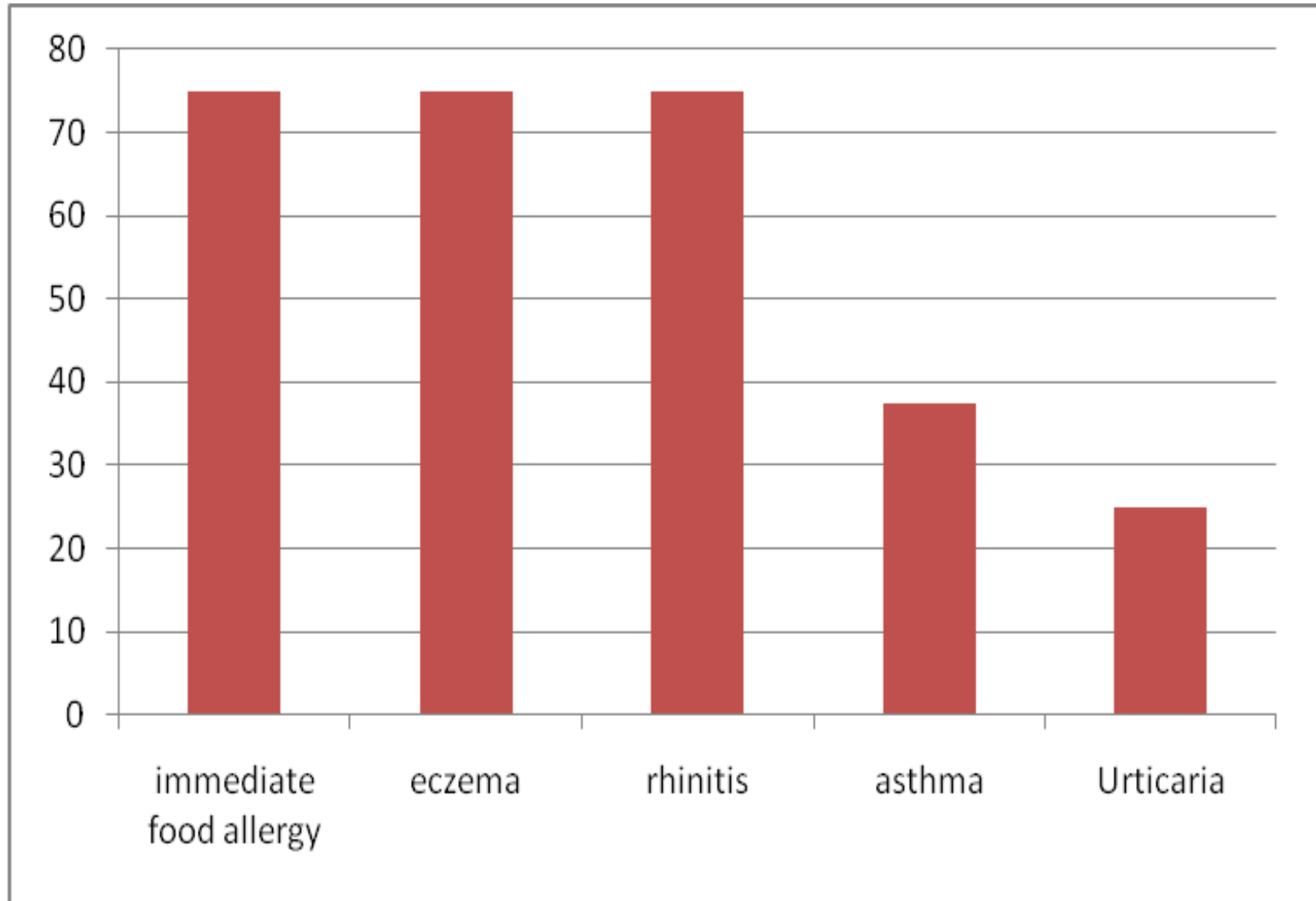
EoE in Cape Town, South Africa

- 8 children described between 2009 and 2010
- 3 boys, 5 girls
- Average age: 7 years (1yr 11 months to 15 years 10 months)
- Ethnicity: 2 caucasian, 5 mixed, 1 Black African
- Age of onset: median 1 year 4 months
- Age of diagnosis: median 3 years 9 months

EoE in Cape Town, South Africa



EoE in Cape Town, South Africa



EoE in Cape Town, South Africa

- 26 biopsy specimens, mean 3.25 per patient
- Only 4/8 confirmed peak eosinophil count >15/hpf, 7/8 had minor features present .
- Food skin prick tests 152 (19 per patient).
- Positive skin tests ≥ 1 mm 57 (13 per patient).
- Skin tests ≥ 3 mm 32 (7 per patient).
- Patch tests 167 (21 per patient). 30 positive, average of 4.3 per patient.

EoE in Cape Town, South Africa

- All were commenced on short course of oral steroids. All were commenced on a targeted elimination diet, excluding any food with positive skin or patch test. All had clinical improvement. 3 remain controlled with acceptable symptoms, 2 improved but have ongoing symptoms and significant difficulties, 2 very symptomatic with poor control, 1 defaulted.

ALLSA

- ALLSA is the national Allergy Society of South Africa representing all related allied health professionals.
- The purpose of ALLSA is to advance the knowledge and practice of allergy and immunology through publications, meetings, and conferences and to foster the education of both students and the public.

ALLSA

- Journal
- Handbook of allergy
- Patient advice pamphlets
- Talks
- Allergy diploma, EAACI exam, certificate
- Annual meetings

ALLSA

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