

(#716) Differences in the Evaluation of Skin Prick Testing Results For Food Allergy Diagnosis Between US and UK Physicians.



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Introduction

Food Allergies and Testing

- 1. Associated with considerable medical, emotional, and socioeconomic burden
- 2. Standardized diagnostic tools:

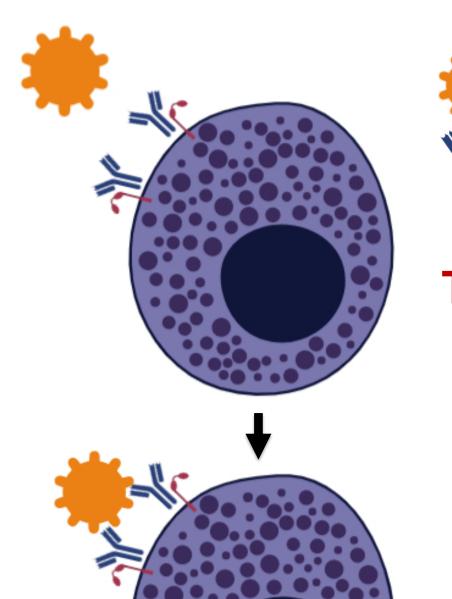
Quantitative: ImmunoCAP Testing

Qualitative/Functional: Skin Prick Testing (SPT)

Gold Standard: Oral food challenge

3. "Sacrification" tools and interpretation: Mueller device, Hagerdorn cutting needle, Multitest Read-out: wheal (hive) and flare (erythema)

4. SPT confounders: age, medication, technique









Temporal release of cell mediators:

Immediate:

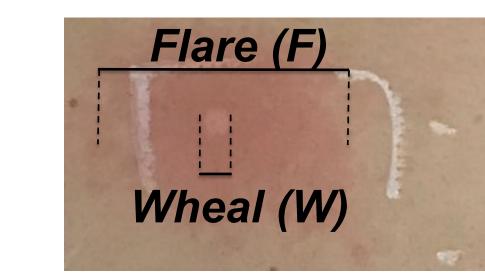
- Histamine, dopamine, serotonin
- Tryptase, chymase, CP-A3
- Chemokines: TNF α

Minutes:

- Leukotrienes (Cys-LT)
- Prostaglandins (PGD₂)

Hours:

- Cytokines: IL-4, -5, -6, -13, -17
- Chemokines: TNF α
- Growth factors: VEGF



Skin Prick Test Interpretation

US: AAAAI and ACAAI



Objective wheal-and-flare responses be recorded in millimeters (diameter or area) because cutoff levels (in millimeters) may obviate the necessity for confirmatory respiratory and food allergen challenge test



All negative controls should be < 3-mm wheals and <10-mm flares

UK: EAACI and BSACI



The largest diameter of the wheal of each particular test is measured, a positive being a wheal of ≥ 3 mm.



Measure the longest extent of the wheal (not including the flare) and the extent 90° to the first measurement.

Question:

guidelines for universal interpretation?

Goal:

Use a brief, four-question survey to evaluate differences in how allergists in the United States (US) and the United Kingdom (UK) evaluate the SPT result for food allergy

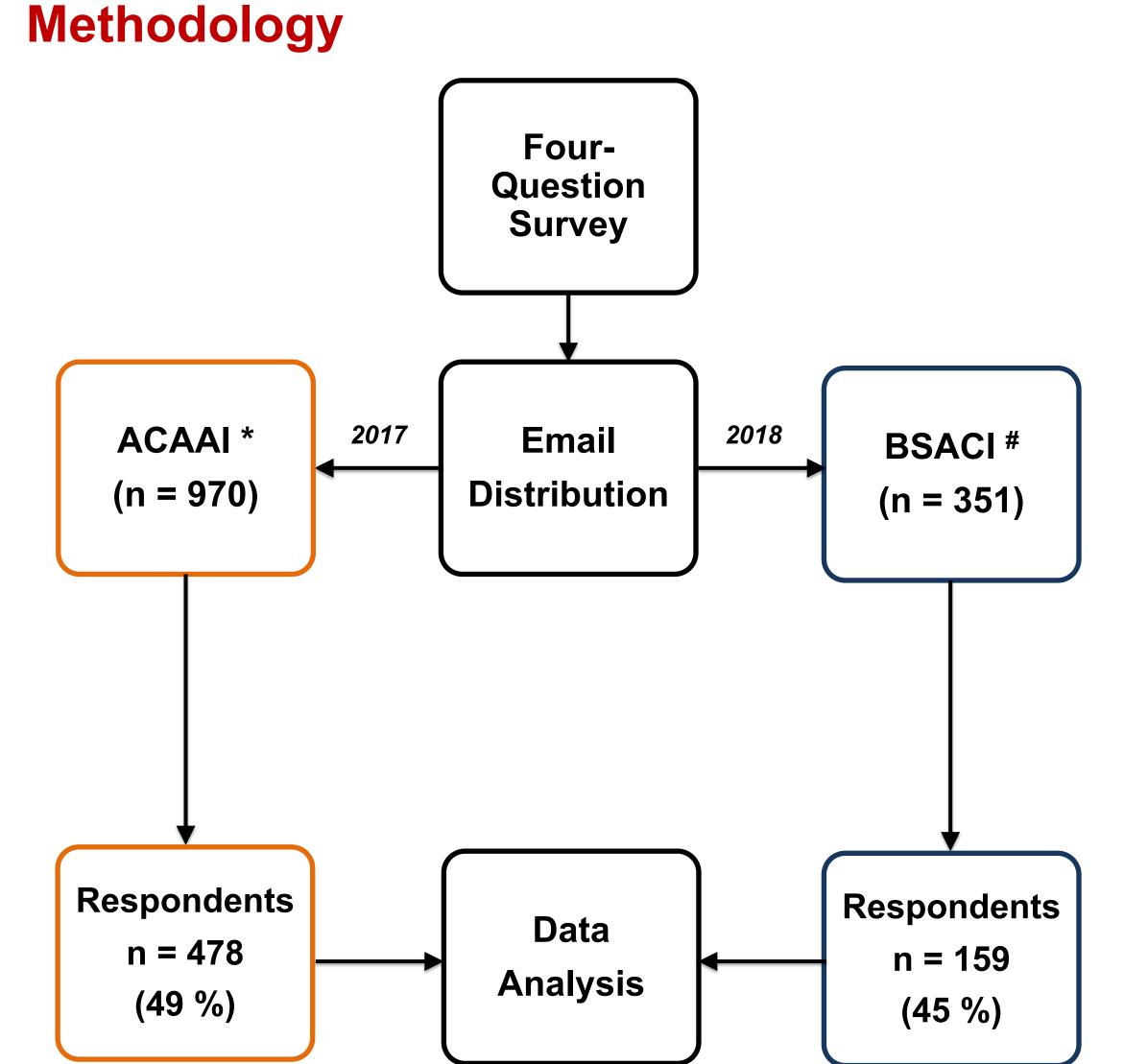
diagnosis.

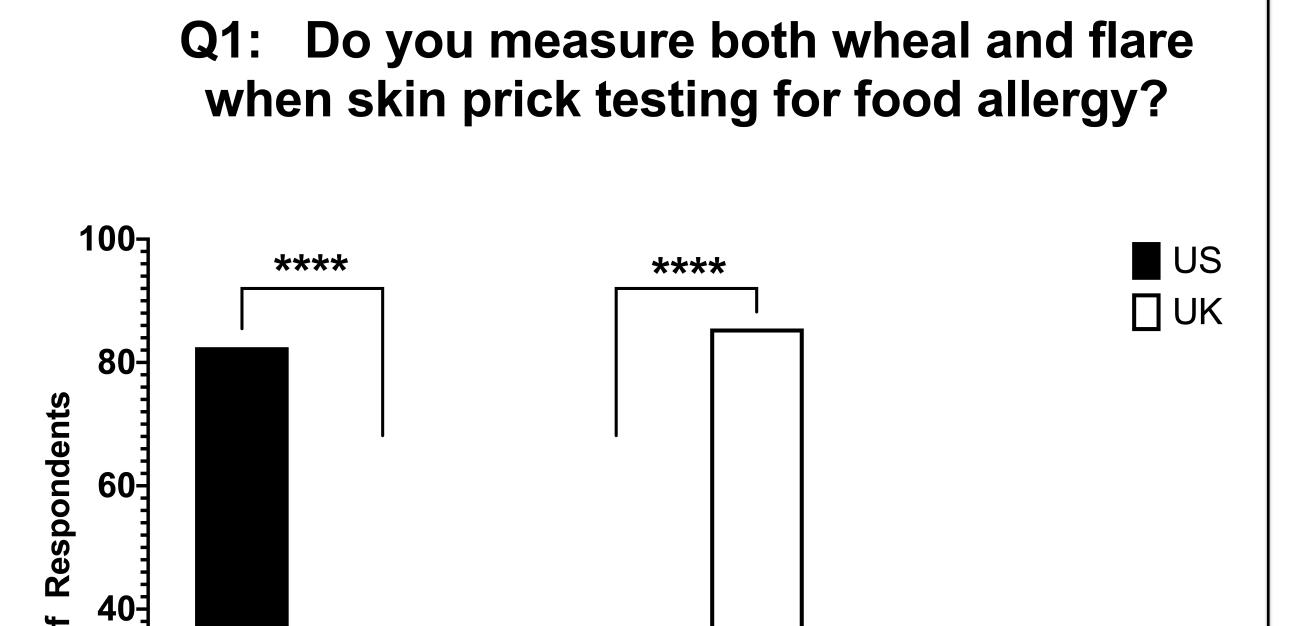
Results

Figure 1

Wheal + flare

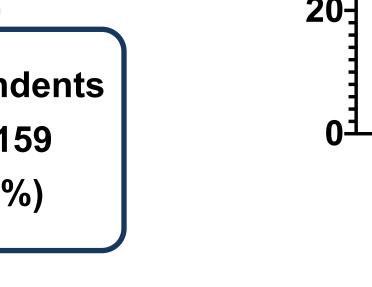
Figure 3





Wheal only

Flare only

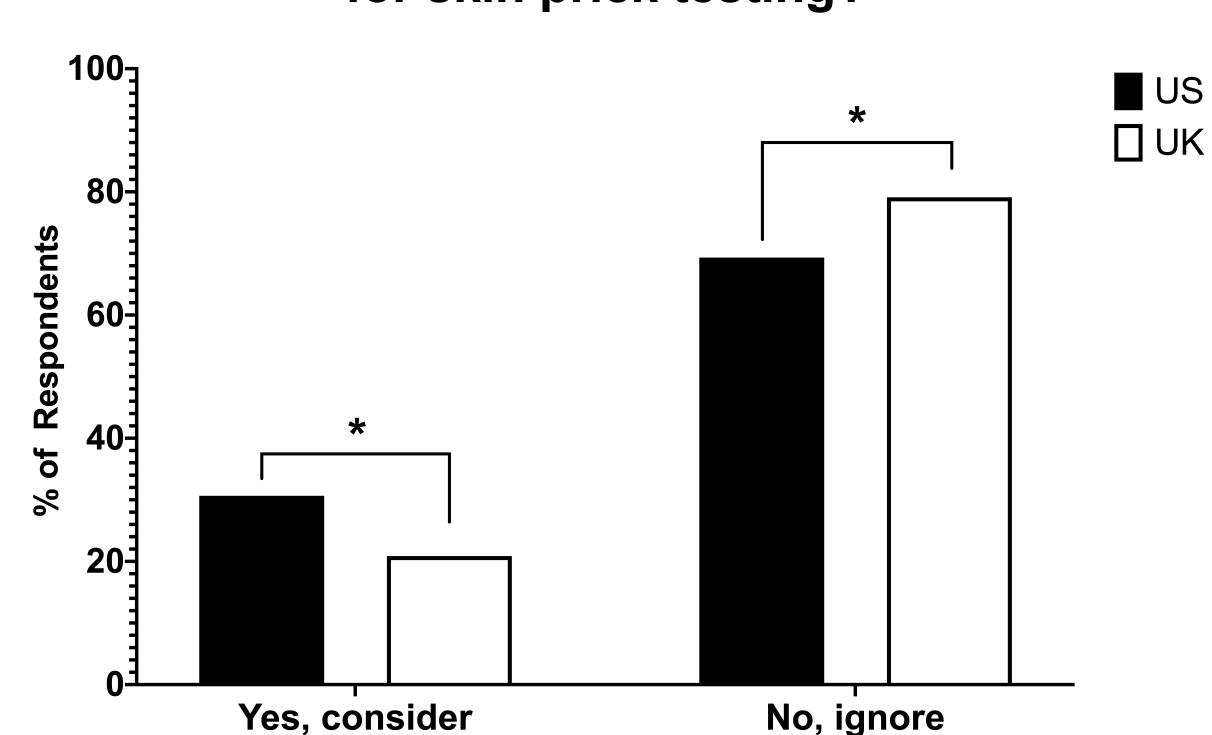


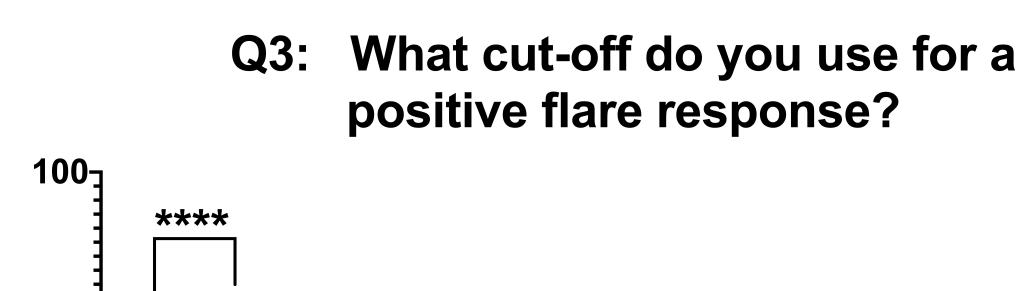
ACAAI: American College of Allergy, Asthma, and Immunology # BSACI: The British Society for Allergy and Clinical Immunology

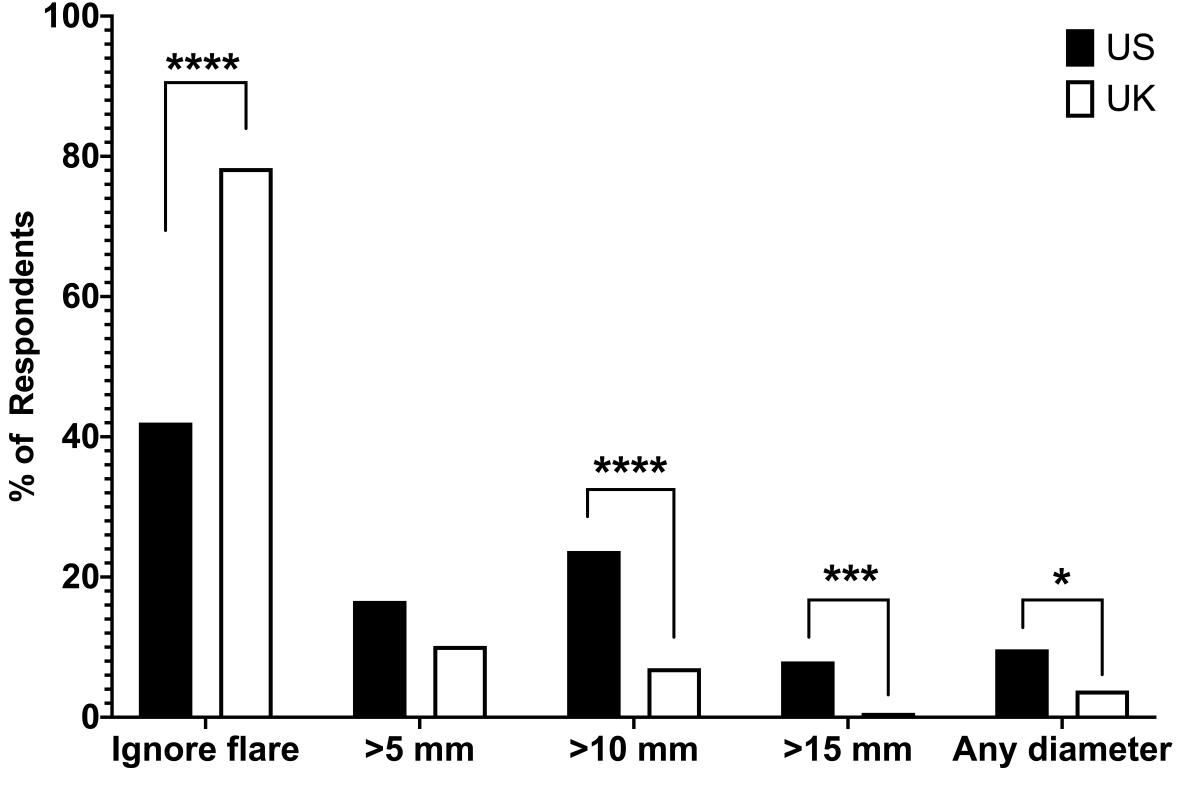
Figure 2

C) Yes, I now ignore the flare response.

Q2: If the wheal diameter is 0 mm, do you consider a large flare response as a positive result for skin prick testing?







Respondents

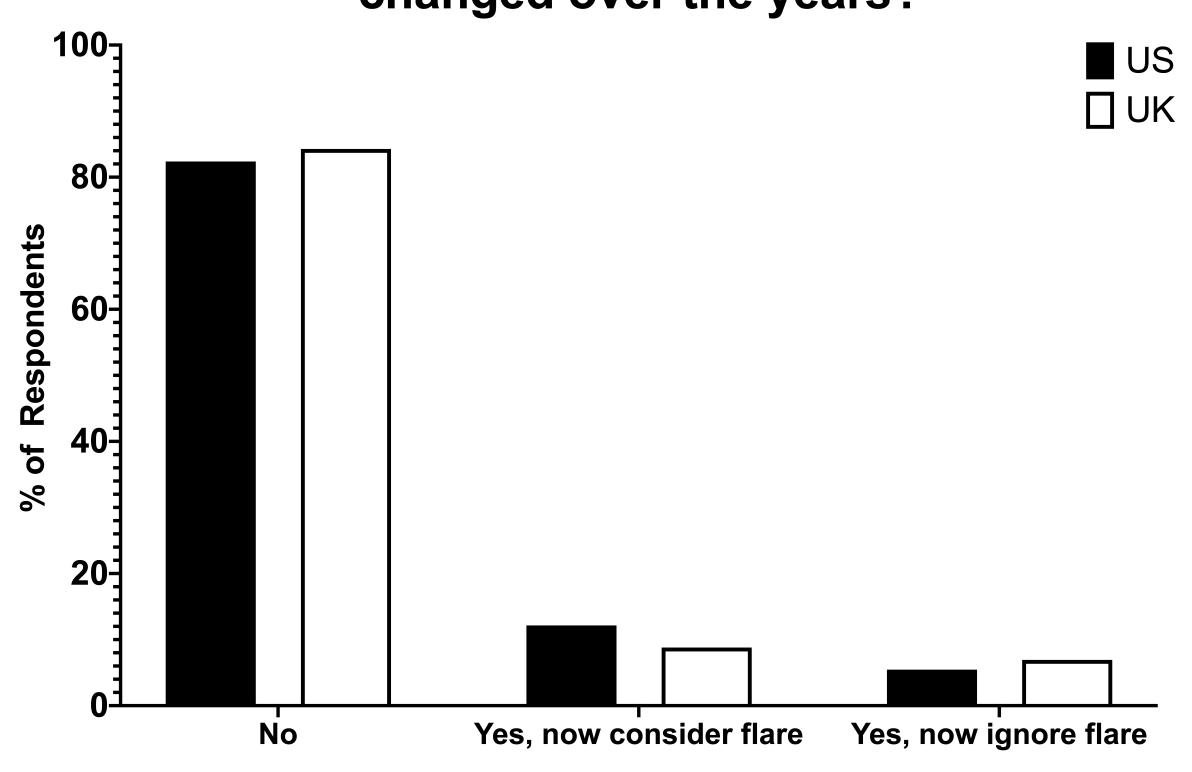
Statistical significance was determined at the * p<0.025, ** p<0.01, *** p<0.001, and **** p<0.0001 levels.

Table I. Survey Questions	Number [% of Total]		P-value
	US	UK	
Q1: Do you measure both wheal and flare when skin prick testing for food allergy? A) Yes, I measure both. B) No, I measure the wheal. C) No, I only measure the flare.	N = 474 391 [82.5] 82 [17.3] 1 [0.2]	N = 159 23 [14.5] 136 [85.5] 0 [0]	<0.0001 <0.0001 0.56
Q2: If the wheal diameter is 0 mm (= there is no visible wheal), do you consider a large flare response as a positive result for skin prick testing? A) Yes, I will consider a large flare response (in the absence of a wheal) as a positive skin testing result. B) No, if the wheal is absent, I will ignore the flare.	<i>N</i> = 476 146 [30.7] 330 [69.3]	<i>N</i> = 158 33 [20.9] 125 [79.1]	0.02 0.02
 Q3: What cut-off do you use for a positive flare response? A) None, I ignore/don't measure the flare. B) I consider a >5 mm flare response positive. C) I consider a >10 mm flare response positive. D) I consider a >15 mm flare response positive. E) I consider any diameter of flare response positive. 	N = 464 195 [42.0] 77 [16.6] 110 [23.7] 37 [8.0] 45 [9.7]	N = 157 123 [78.3] 16 [10.2] 11 [7.0] 1 [0.6] 6 [3.8]	<0.0001 0.05 <0.0001 <0.001 0.02
Q4: Has your practice with regards to measuring/considering the flare response changed over the years? A) No, I have always practiced this way. B) Yes, I now take the flare response into account.	<i>N</i> = <i>477</i> 393 [82.4] 58 [12.2]	<i>N</i> = 159 134 [84.3] 14 [8.8]	0.58 0.25

Results (continued)

Figure 4

Q4: Has your practice with regards to measuring/considering the flare response changed over the years?



- 1) Eighty-two percent of US allergists surveyed measure both the wheal and the flare compared to 14% of UK physicians.
- 2) Many more UK allergists ignore the flare in the absence of the wheal
- 3) Fifty-eight percent of US physicians will consider a positive flare response and only 24% will consider a >10 mm flare response as positive in the absence of a wheal.
- 4) The providers' practice with regards to measuring and considering the flare did not change over time in either region based on self-report.

Conclusions

- 1) Identified significant discordances in SPT interpretation practices between allergists in the US and the UK.
- 2) These differences may potentially contribute to conflicting diagnoses for patients, alter management plans, and ultimately affect the clinical outcomes of IgE-mediated food allergy patients.

Future Considerations

- 1) Follow-up survey to evaluate whether SPT interpretation affected a practitioner's decision to proceed with oral food provocation challenges.
- 2) Inquire whether the practice of using wheal +/- flare was applied across all age groups tested for food allergies.
- 3) Potential for academic versus private practice bias.

References

Abstract/References available at the following link:



Acknowledgements

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