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Presented at

2020 AAAAI Annual Meeting

March 13–16, 2020

Philadelphia, PA

Real-World Epinephrine Use in Oral Immunotherapy-Induced Reactions

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INTRODUCTION

- The prevalence of food allergy is increasing worldwide and in the United States (US)^{1,2}
- Oral immunotherapy (OIT) for food allergy has been shown to increase reaction thresholds in children and adults with food allergies, but is associated with a risk of allergic reactions and increased use of epinephrine^{2,3}
- Limited real-world data are available on the use of OIT and the management of side effects in patients with food allergy

OBJECTIVE

 To describe the use of epinephrine during food OIT in a sample of US-based allergists/immunologists who administer OIT

METHODS

Survey Design

- A double-blind, self-administered online survey was fielded between February 17 and April 22, 2019
- Potential responding physicians were recruited via email invitation

Study Population

- All responding physicians met the following inclusion criteria:
- Licensed to practice medicine in the US
- Board-eligible or board-certified in allergy and/or immunology
- Treated ≥5 patients with food OIT in the past 2 years in their clinical practice

Analysis

 Survey responses were described using summary statistics, including frequencies and percentages for categorical data

RESULTS

Responding Physicians

- A total of 80 allergists/immunologists completed the survey, achieving 80% of the target sample size
- 43.8% (n=35) worked in single-specialty group practices; 78.8% (n=63) had been practicing for ≥11 years (Table 1)
- Most responding physicians (85.0%; n=68) spent more than 80% of their time in direct patient care

Table 1. Characteristics of Survey Respondents (N=80)

Characteristic		Physicians Reporting, %
Type of practice	Solo	20.00
	Single-specialty group 2–5 allergists 6–10 allergists >10 allergists	28.75 10.00 5.00
	Multispecialty group	23.75
	Academic practice	12.50
Years practicing allergy/immunology ^a	0–5 6–10 11–15 >15	6.25 15.00 37.50 41.25
Time spent in direct patient care	81–100% 61–80% 41–60%	85.0 10.0 5.0

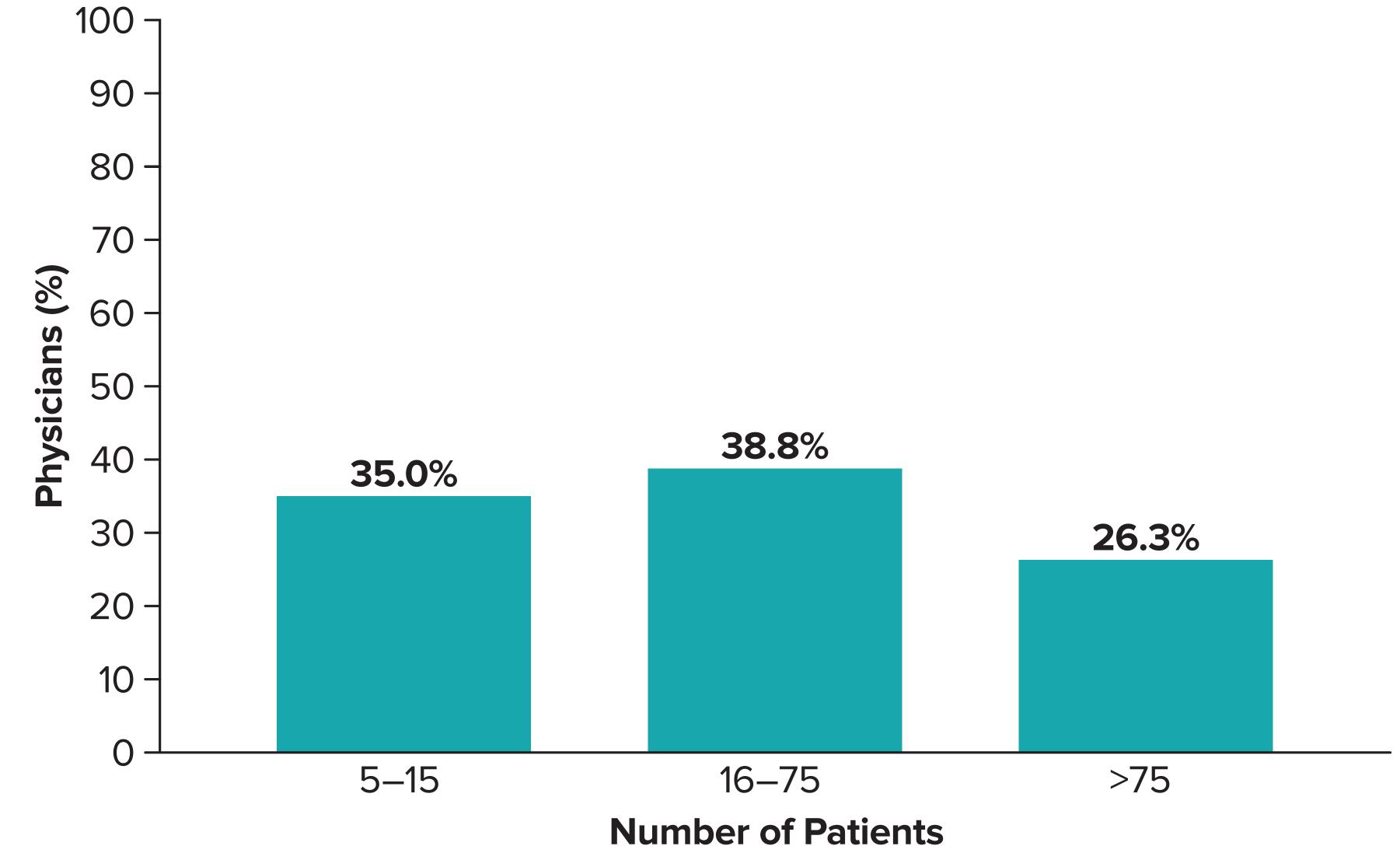
- ^aSince completing last year of training.
- Peanut allergy was the most common food allergy in patients treated by responding physicians (Table 2)
- -17.5% of physicians (n=14) had >500 patients with peanut allergy in their clinical practice
- Most physicians had ≤100 patients with tree nut, milk, egg, or wheat allergies in their clinical practice

Table 2. Numbers of Patients With Specific Food Allergies in Physician Practices

Allergy	Mean	Median (range)
Peanut	439	200 (0–5000)
Tree nuts	362	100 (0–5000)
Milk	242	75 (0–3000)
Egg	218	75 (0–2456)
Wheat	95	25 (0–1885)

 Nearly two-thirds of physicians (65.0%; n=52) treated >15 patients with food OIT in the past 2 years (Figure 1)

Figure 1. Number of Food Allergy Patients Treated With OIT in the Past 2 Years

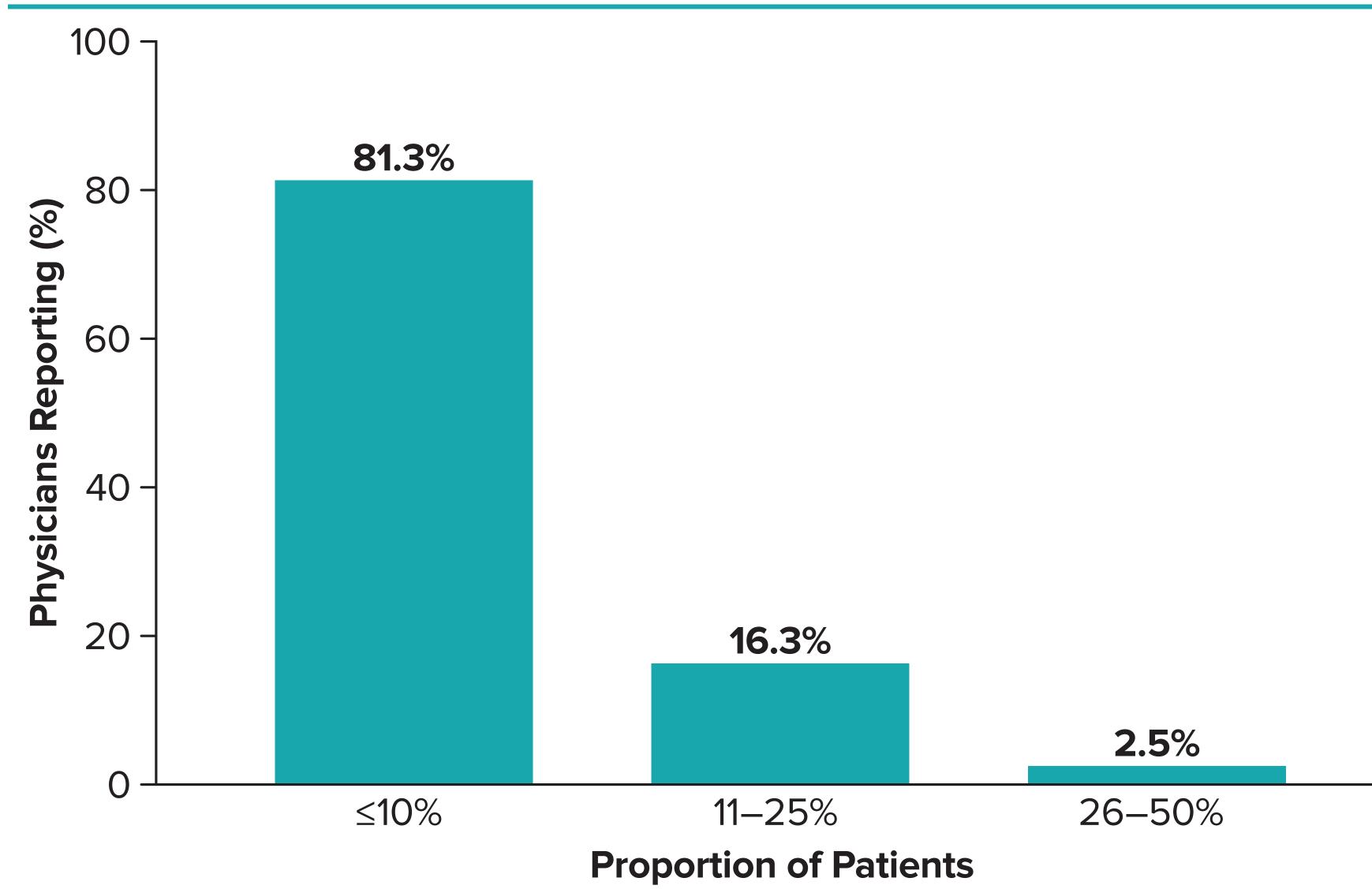


Survey question: "In the past 2 years, approximately how many patients have you treated with food OIT in your clinical practice? [free text] Number of patients." OIT, oral immunotherapy.

Epinephrine Use

 Most physicians (81.3%; n=65) reported that ≤10% of patients treated with OIT experienced in-clinic reactions that required epinephrine treatment (Figure 2)

Figure 2. Physician-Reported Proportion of Food OIT Patients Experiencing In-Clinic Reactions Requiring Epinephrine Treatment



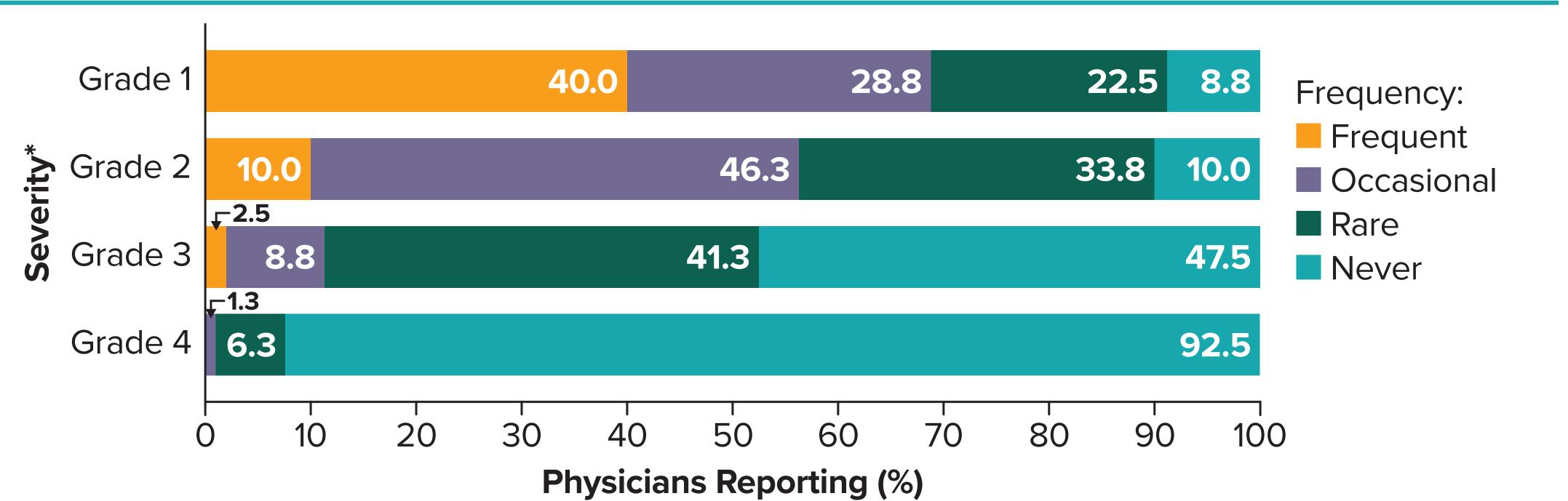
Survey question: "Approximately what proportion of your food OIT patients in your clinic experience reactions requiring epinephrine treatment?"

OIT, oral immunotherapy.

• 58.9% (n=47) of physicians reported that <10% of patients treated with OIT experienced reactions at home that required epinephrine treatment

- Of the OIT reactions at home that involved treatment with epinephrine, grade 1 reactions were reported to be a "frequent scenario" for 40.0% of patients and an "occasional scenario" for 28.8% of patients; grade 2 reactions were a "frequent scenario" for 10.0% of patients and an "occasional scenario" for 46.3% of patients; grade 3 reactions were "rare" for 41.3% of patients or "never occurred" for 47.5% of patients; and grade 4 reactions "never occurred" for 92.5% of patients (**Figure 3**)
- Most physicians (76.3%; n=61) advised patients by phone to administer epinephrine for an OIT reaction ≤2 times a year
- -62.5% of physicians (n=50) indicated that in >75% of such cases they would also advise the patient to seek emergency treatment

Figure 3. Physician-Reported Frequency and Severity of In-Home OIT Reactions Requiring Epinephrine Treatment

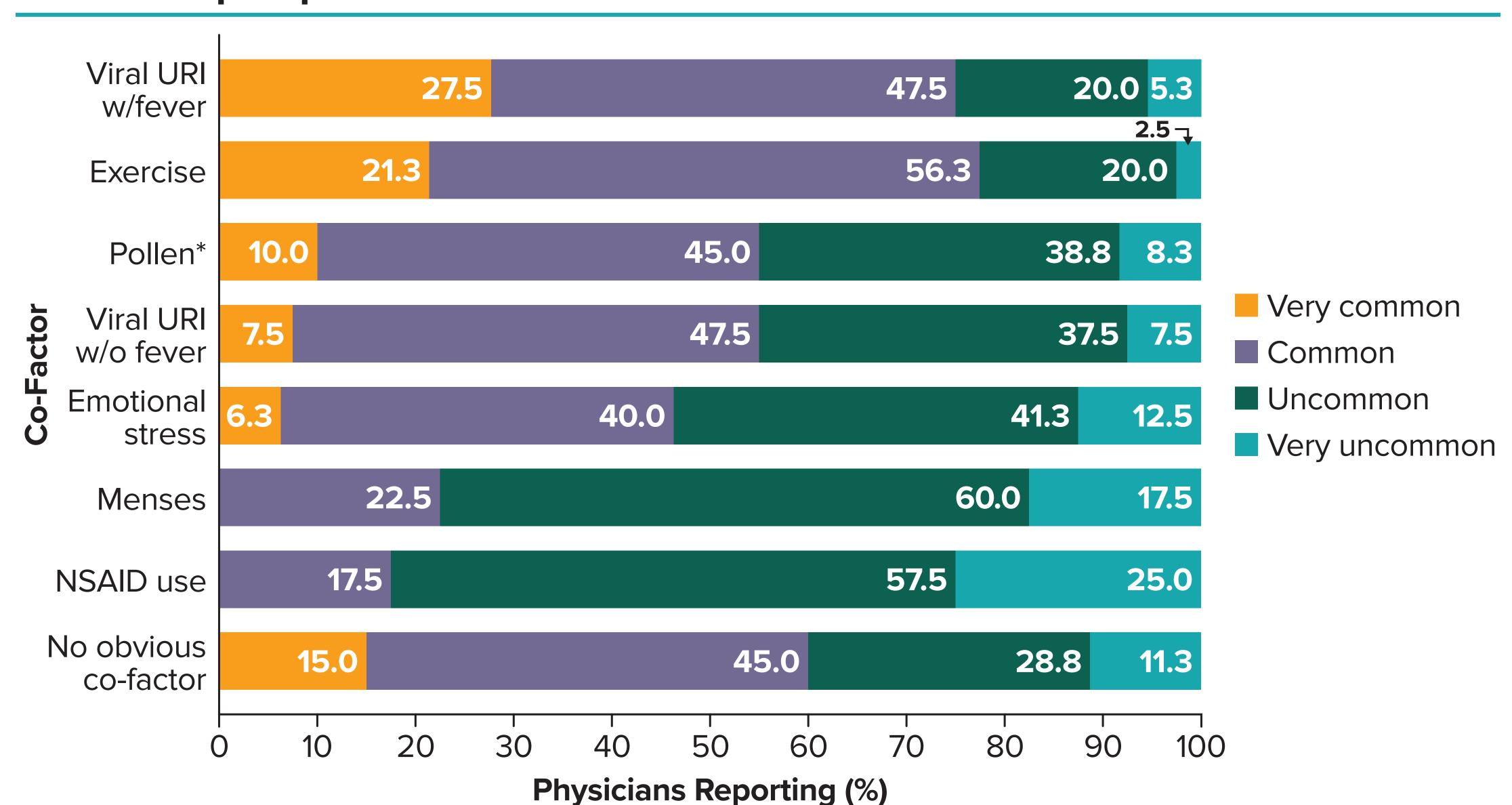


Survey question: "For OIT reactions at home that involve treatment with epinephrine, please indicate the general frequency of the follow severity grades:"

*Grade 1=single organ system involving itching, hives, rhinitis, upper airway cough, or nausea; grade 2=2 organ systems involved or bronchospasm or abdominal pain or diarrhea; grade 3=severe bronchospasm or airway edema, non-life-threatening; grade 4=respiratory failure or hypotension, life-threatening; grade 5=death. No grade 5 events were reported to have occurred. OIT, oral immunotherapy.

- Physicians cited viral upper respiratory infection (URI) with fever, exercise, and peak pollen season as the most common co-factors for OIT-induced in-home reactions requiring epinephrine (Figure 4)
- 60.0% of physicians (n=48) noted that no obvious co-factor was either common or very common

Figure 4. Physician-Reported Frequency of Co-Factors in Patients With In-Home Epinephrine-Treated OIT Reactions

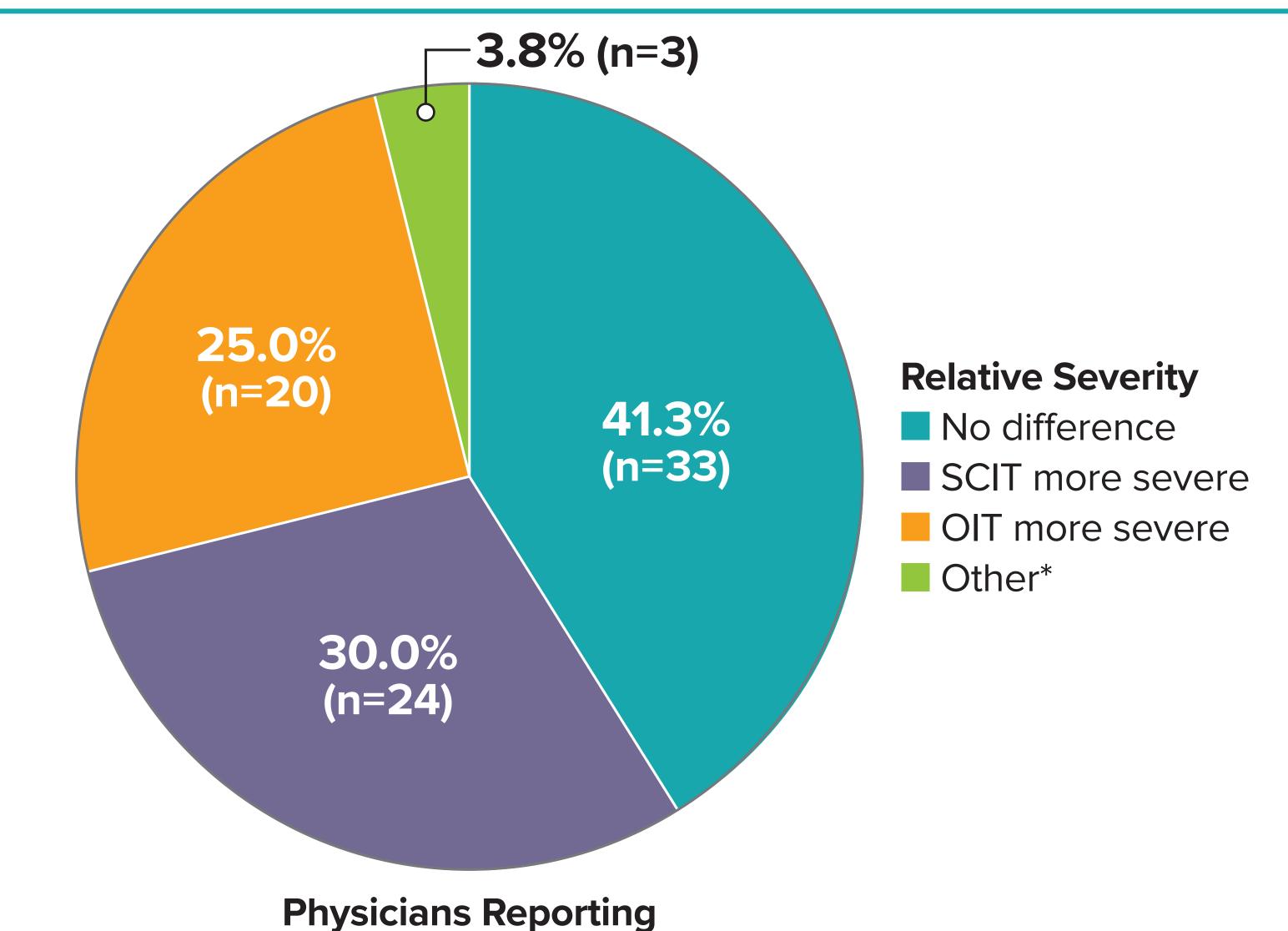


Survey question: "Based on your experience, when food OIT patients experience acute reactions at home requiring treatment, how commonly do each of the following co-factors play a role?"

*Peak pollen season. NSAID, nonsteroidal anti-inflammatory drug; OIT, oral immunotherapy; URI, upper respiratory infection; w, with; w/o, without.

When asked to describe the difference in severity between epinephrine-treated reactions associated with OIT versus those induced by environmental subcutaneous immunotherapy (SCIT), 41.3% of physicians (n=33) reported no difference (Figure 5)

Figure 5. Physician Appraisal of Difference in Severity Between OIT and SCIT Reactions Treated With Epinephrine



Survey question: "How would you describe the difference in severity between food OIT reactions treated with epinephrine and environmental SCIT reactions treated with epinephrine?"

*"Environmental [SCIT] reactions are slower to reach a crescendo"; "There are more GI side effects with OIT"; "They are about the same in severity, but more vomiting with OIT reactions." GI, gastrointestinal; OIT, oral immunotherapy; SCIT, subcutaneous immunotherapy.

CONCLUSIONS

- The majority of allergists/immunologists participating in this real-world survey (81.3%; n=65;) indicated that in-clinic OIT reactions requiring epinephrine are infrequent (<10% of patients)
- The frequencies of grades 1 and 2 at-home reactions were greater than those of grades 3 and 4 reactions
- Exercise and viral URIs with fever were the most common co-factors associated with allergic reactions at home requiring epinephrine treatment
- Epinephrine-treated OIT- and environmental SCIT-induced reactions were perceived to have comparable severity

Acknowledgments Aimmune Therapeutics sponsored the survey and appreciates the participation of the survey respondents. The authors would like to thank Adria Stapleton of SteepRock, Inc. for conducting the survey. Editorial assistance and medical writing support were provided by The Curry Rockefeller Group, LLC and were funded by Aimmune Therapeutics.

Disclosures JMH reports consultation fees from Aimmune Therapeutics, AstraZeneca, and AllerGenis, and speaker fees from AstraZeneca and Aimmune. **DTJ** reports consultation/speaker fees from Takeda, CSL Behring, Pharming, Nutricia, Aimmune Therapeutics, and Pfizer; consultant fees from DBV, Biocryst, Allakos, and Kalvista; and clinical research for Aimmune Therapeutics, Shire, AstraZeneca, Biocryst, Adare, Novartis, GSK, Medimmune, Sanofi/Regeneron, and Mylan. **KG** reports nothing to disclose. **ST** is an employee and **CB** a former employee of Aimmune Therapeutics. **TH** is a consultant to Aimmune Therapeutics. **JSJ** reports consultation fees and honoraria from AstraZeneca, Takeda, CSL, Behring, Aimmune Therapeutics, Regeneron, GSK, and Sanofi and contracted research for Aimmune Therapeutics, AstraZeneca, Biocryst, Takeda, Novartis, Genentech, and Regeneron.

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