

The EPIPEN4SCHOOLS[®] Survey: Prevalence and Triggers of Anaphylactic Events in Large US School Districts

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Disclosures and Acknowledgments

- Financial support for this study was provided by Mylan Specialty L.P., Canonsburg, PA.
- RTI International collaborated with Mylan Specialty L.P. on the design and implementation of the survey.
- BioRidge Pharma maintains the database of schools registered for the EpiPen4Schools program and worked with RTI International to provide logistical mailing services to contact schools to participate in the EpiPen4Schools survey.
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Introduction

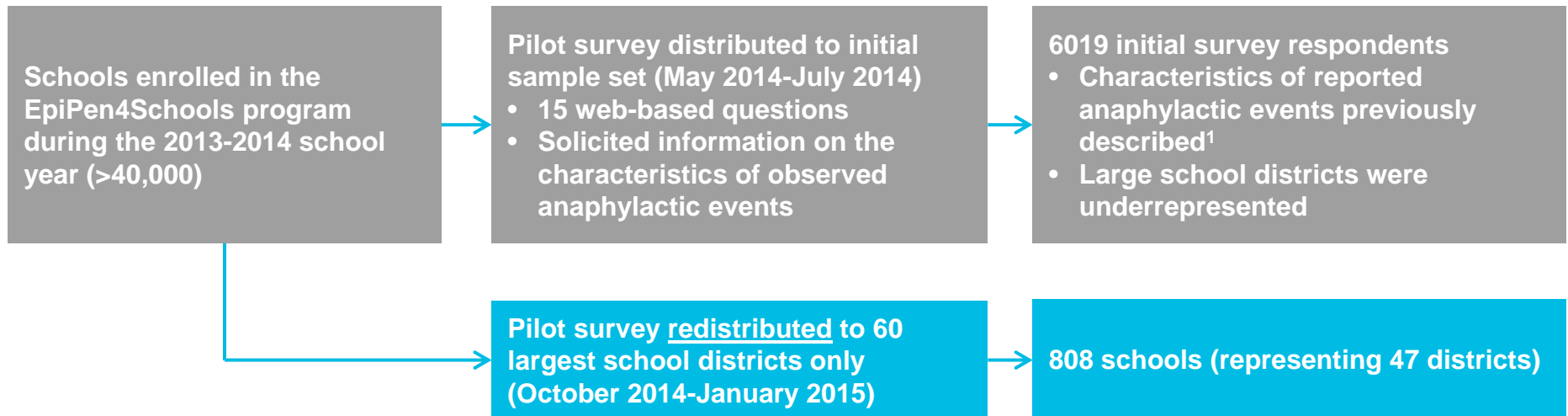
- Anaphylaxis is a serious, acute, and potentially life-threatening allergic reaction.¹
- The prevalence of food allergy may be increasing among school-aged children.²
- As children ≥ 5 years of age spend much of their day in school, there is a need for school staff to be prepared to manage life-threatening reactions to food and other triggers of anaphylaxis.
- The EPIPEN4SCHOOLS[®] program (Mylan Specialty L.P., Canonsburg, PA), launched in 2012, provides Epinephrine Auto-Injectors to qualifying public and private kindergarten, elementary, middle, and high schools in the United States.
 - Initial results from the pilot survey of participating schools described the characteristics of anaphylactic events observed during the 2013-2014 school year.³
- To better understand the prevalence and triggers of anaphylaxis across all types of school settings, the EpiPen4Schools pilot survey has been extended to large US school districts (≥ 50 schools per district), which were underrepresented in the previous survey findings.

1. Simons et al. *BMJ*. 2013;346:f602.

2. Branum et al. *Pediatrics*. 2009;124:1549-1555.

3. White et al. *Allergy Asthma Proc*. 2015;36:306-312.

Methods

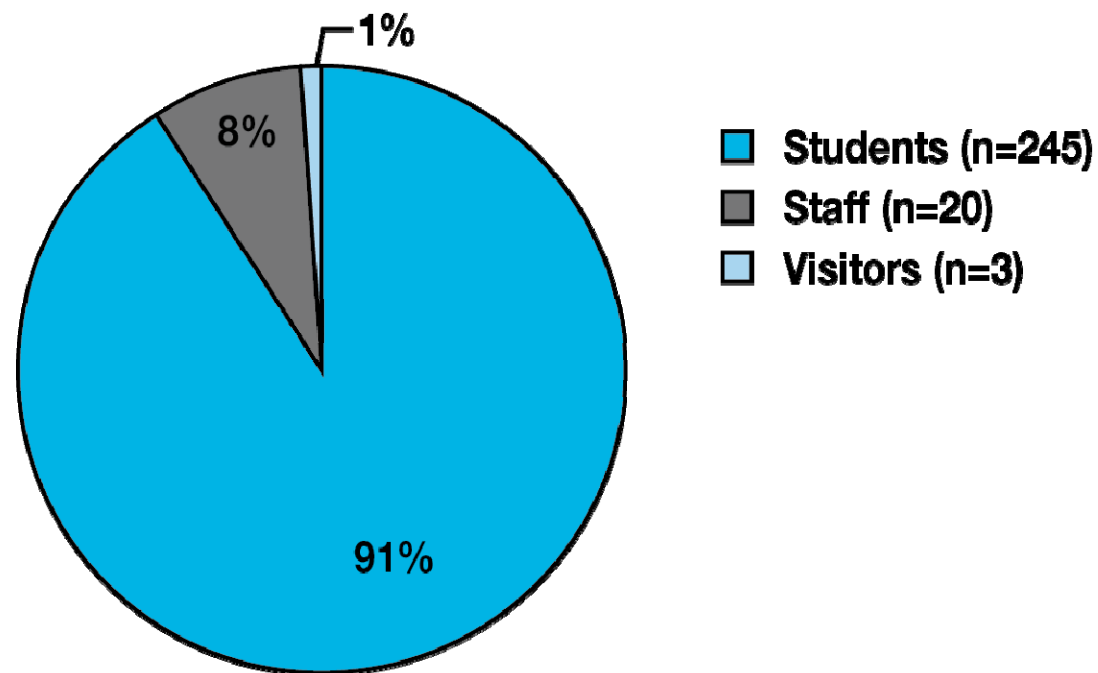


- Each of the 60 largest districts was also invited to participate in the first survey; however, many required research applications to release data, thereby necessitating this separate follow-up study.
- Characteristics of participating schools (eg, census region, grade levels of responding schools, type and source of epinephrine auto-injectors stocked) and of anaphylactic events (eg, individual who experienced the anaphylactic event, previously known allergies, the trigger that initiated the anaphylactic event, treatment administered) were reported using descriptive statistics.

White et al. *Allergy Asthma Proc.* 2015;36:306-312.

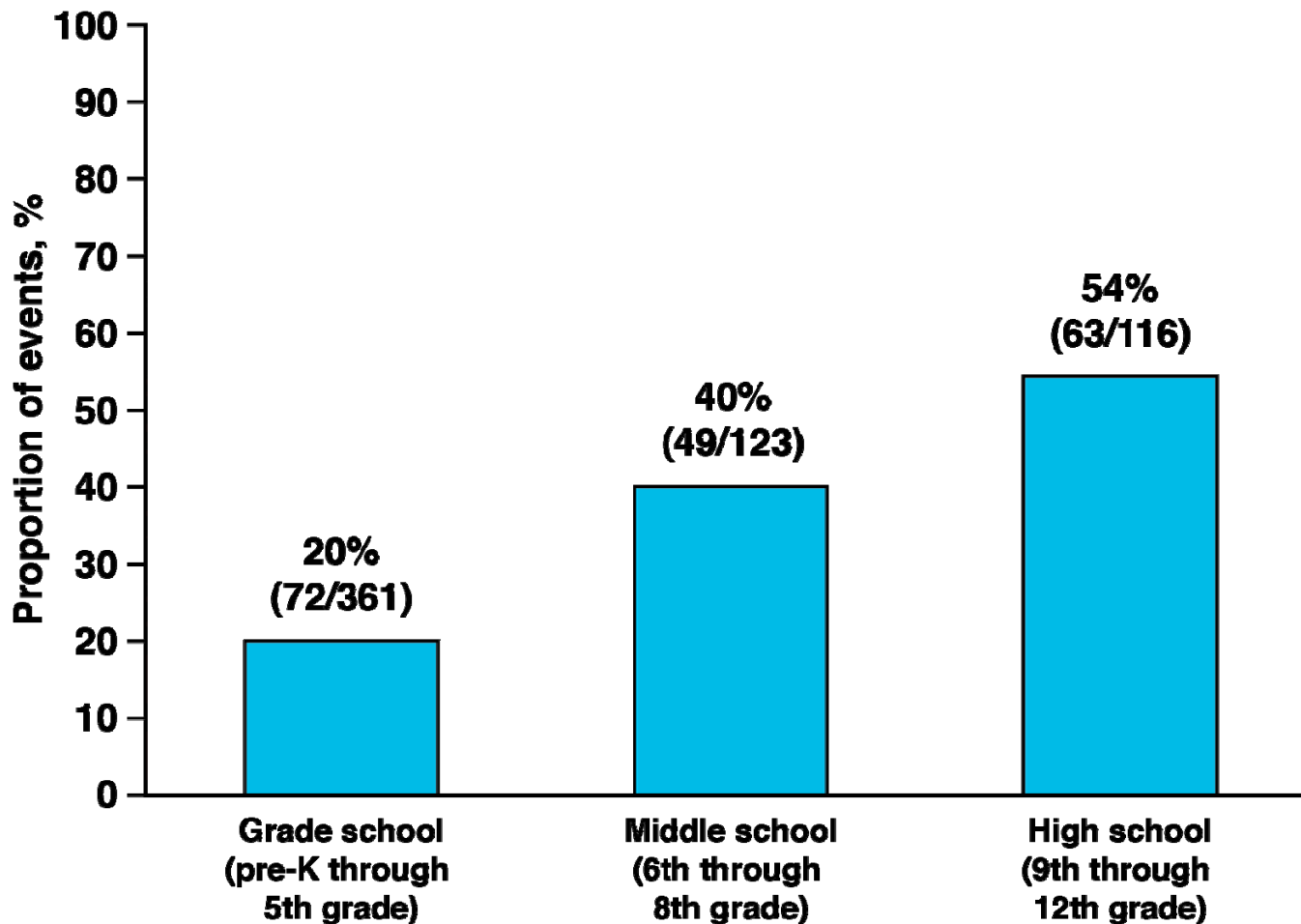
The Majority of Anaphylactic Events Occurred in Students

- A total of 286 anaphylactic events were reported in 808 schools (representing 47 districts).



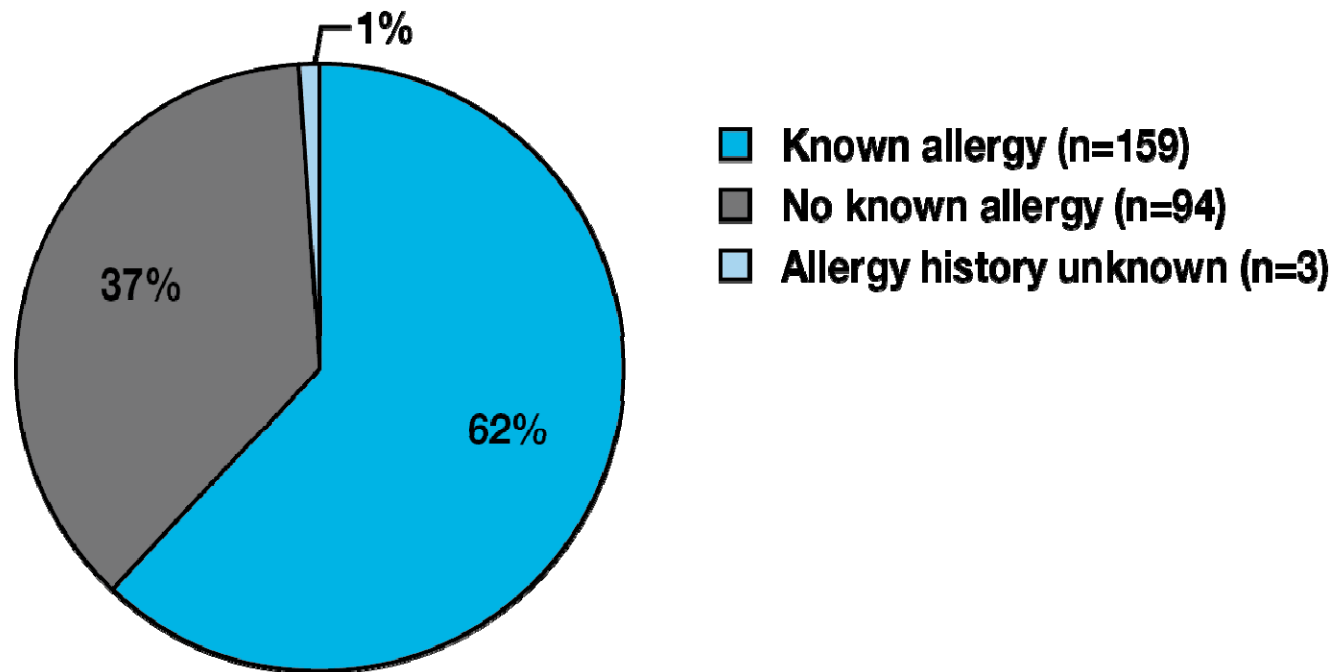
Of the 286 anaphylactic events, 268 events had information on the status of the individual experiencing the attack (eg, student, staff member, visitor).

Students in High School Accounted for the Highest Rate of Observed Events



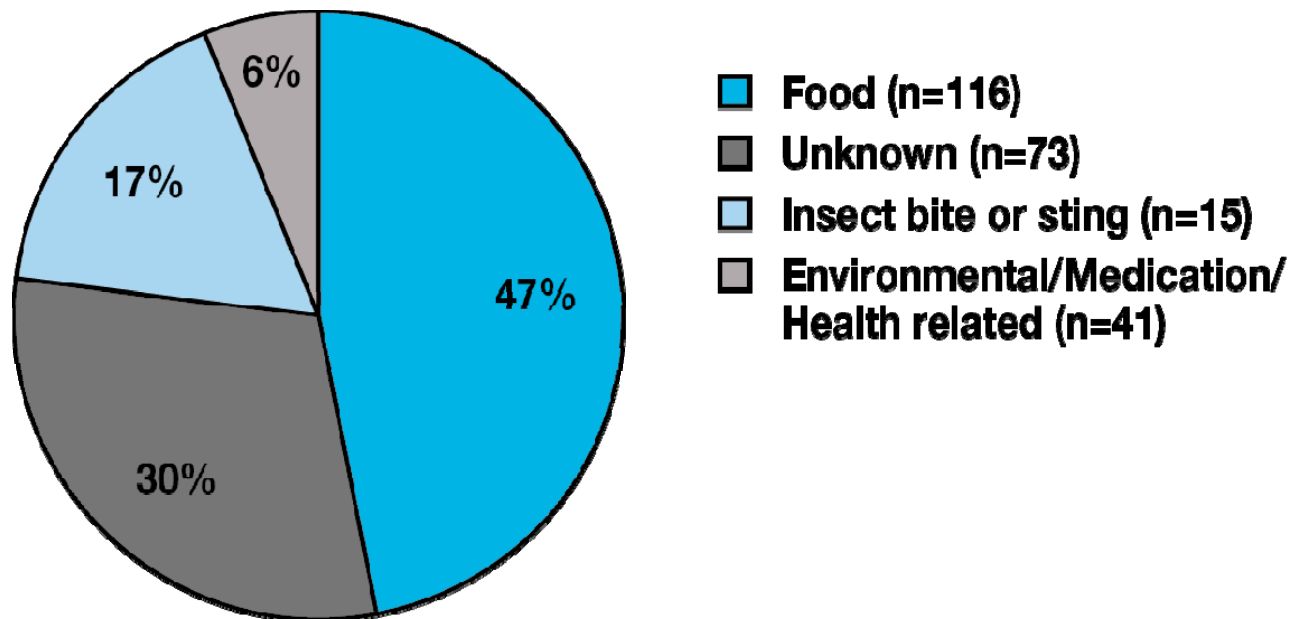
Of the anaphylactic events occurring in students, grade level information was provided for 184 events. Rates provided in the chart were calculated by dividing the total number of events with available grade level information within each school level by the total number of schools of that level responding to the survey.

More Than One-Third of Events Occurred in Individuals With No Previously Identified Allergy



Information on previous allergy history was available for 256 anaphylactic events.

Food Was the Most Common Trigger for Anaphylactic Events



Data on types of triggers were reported for 245 events.

Relative Frequency of Triggers of Anaphylactic Events Varied Seasonally

Trigger, n (%)	Fall* (n=72)	Winter* (n=33)	Spring* (n=81)
Food	28 (39)	18 (55)	42 (52)
Insect bite or sting	6 (8)	0 (0)	5 (6)
Environmental/Medication/Health related	15 (21)	5 (15)	12 (15)
Unknown	23 (32)	10 (30)	22 (27)

*Proportions were calculated by dividing the number of events with a specific trigger by the total number of events with available data on triggers in each season. Anaphylactic events that occurred during the summer were excluded as not all participating schools were open. Events for which either the date or trigger information was missing were also excluded from these counts.

- Food allergy triggers remained predominant throughout the school year, while the prevalence of other triggers varied by season.
- Fewer events triggered by insect stings or bites occurred in the winter compared with spring or fall.

Data were available on the seasonality of allergens that triggered 186 anaphylactic events experienced by students.

Study Strengths and Limitations

- This is the first comprehensive analysis of anaphylactic events and use of epinephrine auto-injectors in US schools located in large school districts.
- This exploratory survey was subject to limitations such as response bias and potential measurement errors, including systematic and random variance resulting from the respondents (eg, failing to carefully read a question or misreporting an event).
- Responses were limited by the level of detailed information retained at the schools related to anaphylaxis and were subject to respondent recollection of the events.
- Furthermore, if data were aggregated or reported at the district level, some school-level details may be unknown to the district reporter, leading to greater amounts of “unknown” or missing data.
- Some larger districts declined to participate in the survey because of the perceived burden on individual schools, likely contributing to the overall low response rate. Direct and verifiable contact information for some respondents was also lacking and may have affected the response rate.

Summary and Conclusions

- There were 286 anaphylactic events reported among 808 schools (representing 47 large school districts), suggesting that anaphylaxis is not uncommon in such settings.
- Most anaphylactic events (91%) were experienced by students, 37% of events occurred in individuals with no known allergy, and 30% of events were associated with unknown triggers.
- Food was the predominant trigger of anaphylactic events in students throughout the school year.
- These survey findings highlight the unpredictability of anaphylaxis and the need for continued anaphylaxis training for protection of all students, staff, and visitors.