



DATA HEALTH BRIEF: EPINEPHRINE ADMINISTRATION IN SCHOOLS
Massachusetts Department of Public Health
Bureau of Community Health Access and Promotion
School Health Unit
August 1, 2007 – July 31, 2008 (School Year 2007 – 2008)

This annual data health brief documents the epidemiology of epinephrine administration for the treatment of life threatening allergic reactions or anaphylaxis in Massachusetts schools. The American Academy of Allergy, Asthma and Immunology defines anaphylaxis as a collection of symptoms affecting multiple systems in the body. Common signs and symptoms may be a combination of hives, swelling (of any body parts), stomach cramps, throat tightness or closing, difficulty breathing, faintness or loss of consciousness and others. The most dangerous symptoms include breathing difficulties and a drop in blood pressure or shock, which are potentially fatal. Common examples of potentially life-threatening allergies are those to food, stinging insects, medications, latex and others and reactions to those allergens may be mild, moderate, or severe. Epinephrine (adrenalin) is the first drug that should be used in the emergency management of an individual having a potentially life-threatening allergic reaction. It is recommended that epinephrine be given at the start of any reaction occurring in conjunction with exposure to a known or suspected allergen.¹

After administering epinephrine, schools are required to complete a standard form, *Report of EpiPen® Administration*, and submit it to the Massachusetts Department of Public Health (MDPH), School Health Unit. Reporting of epinephrine administration in all public and nonpublic schools became mandatory in November 2003 under 105 CMR 210, the Regulations Governing the Administration of Prescription Medications in Public and Private Schools.

During the 2007-2008 school year, 114 schools (107 public schools in 82 school districts, as well as 7 private schools) reported 158 administrations of epinephrine for the treatment of allergic reactions in schools.

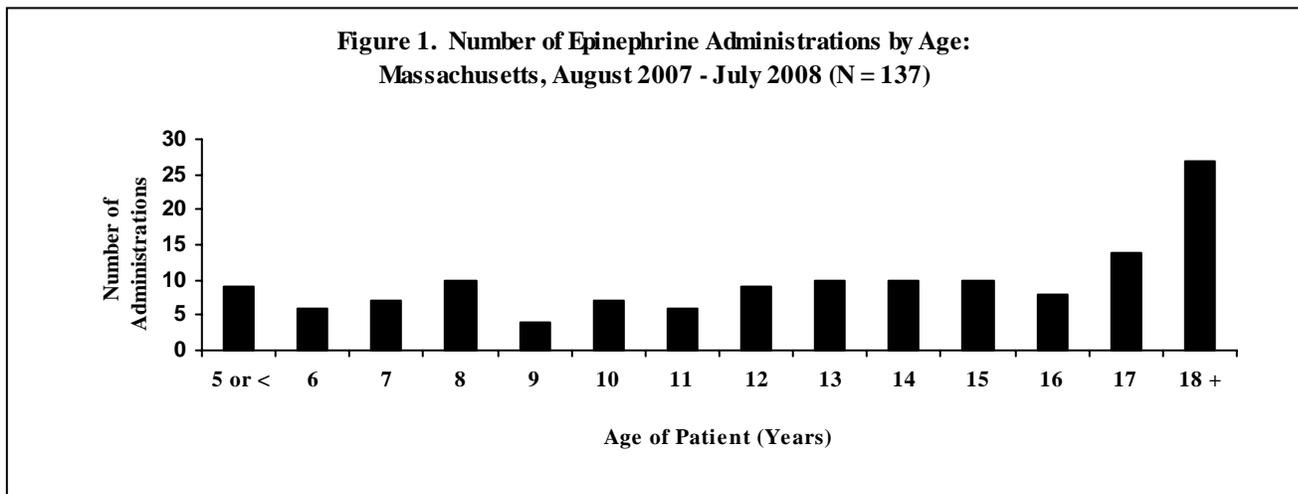
- All regions of the state reported epinephrine administration. The Northeast region reported the greatest number of administrations (24.7%), whereas the Boston region reported the fewest (3.2%).

¹ Position Statement: Anaphylaxis in schools and other child-care settings, American Academy of Allergy, Asthma and Immunology, J Allergy Clinical Immunology 1998; Vol.102, No. 2 , 173-175.

- While most school districts reported only one administration of epinephrine, 32 school districts reported more than one. Two school districts reported five or more epinephrine administrations during the school year.

Characteristics of Individuals Receiving Epinephrine

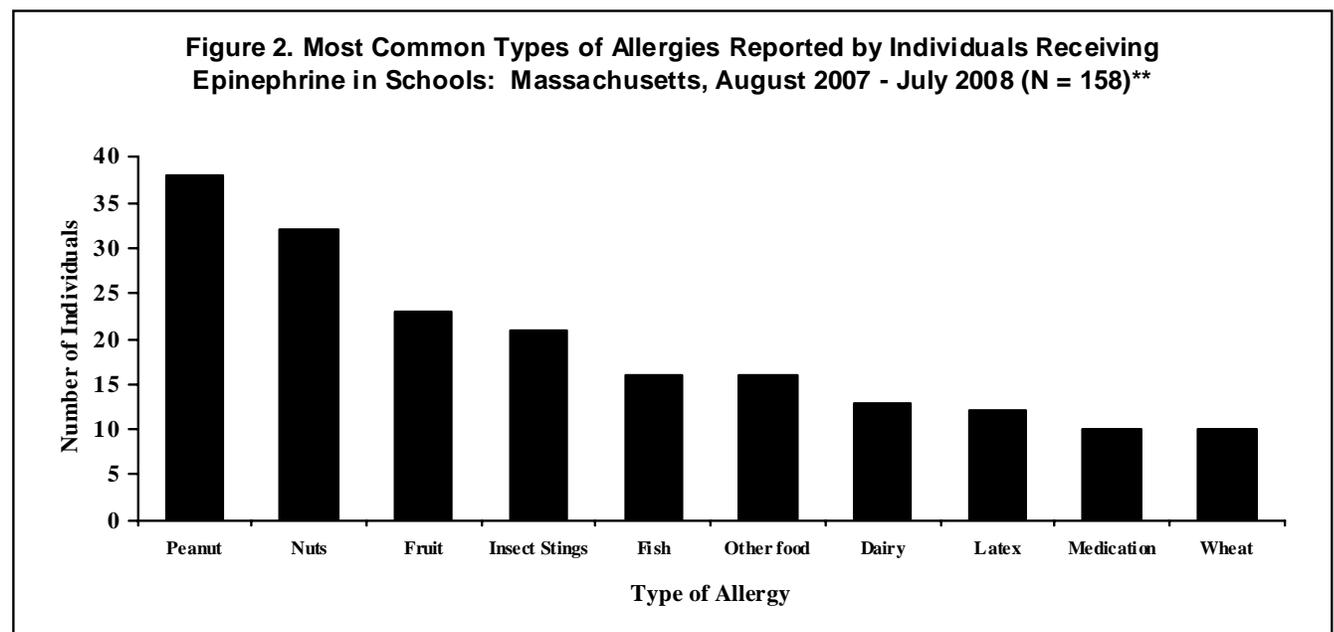
- 134 of the individuals receiving epinephrine were students; 19 were staff members; and 3 were visitors (the status of 2 was not reported). Figure 1 shows the age distribution of all individuals who received epinephrine.



Data Source: Report of EpiPen® Administration forms.. The age of 21 students was not reported.

Of the students who received epinephrine, 50% were female and 50% male (n = 133).

- The most frequently reported allergies were peanut and nut allergies (Figure 2).²



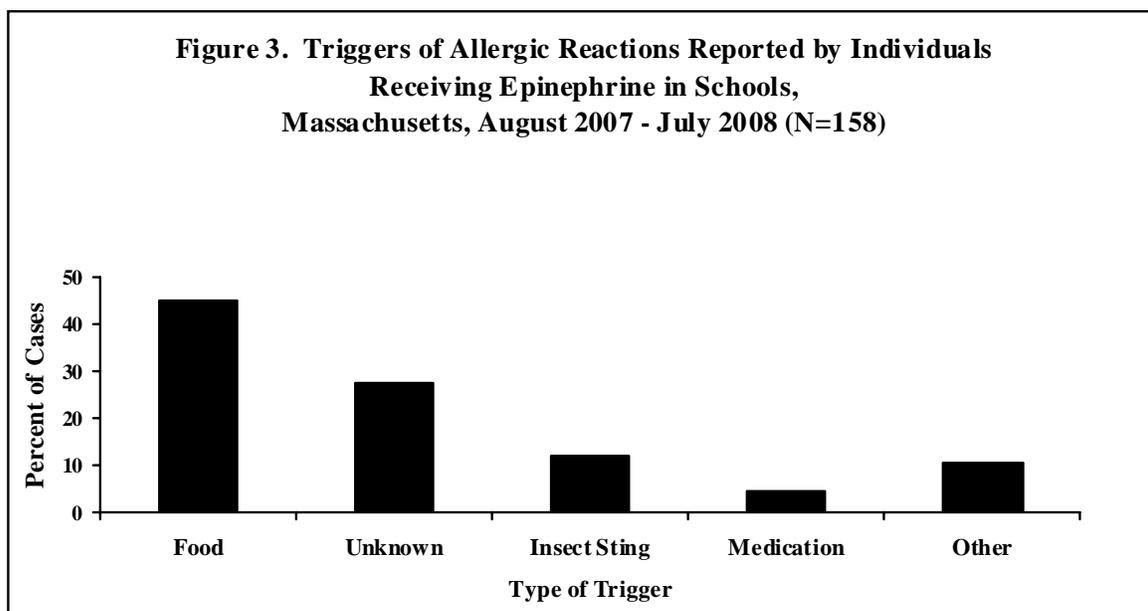
Data Source: Report of EpiPen Administration forms.

² Since those with multiple allergies reported more than one allergen, the total number of allergies reported will be greater than the number of cases

- 48 individuals receiving epinephrine (30%) reported having multiple allergies.
- In 26 cases (16.5%), the individual was not known to have an allergic condition at the time of the anaphylactic event.

Characteristics of Allergic Reactions

- Food was believed to be the cause of 44% of the reactions (Figure 3).
- In 26% of the cases, the allergen that triggered the reaction was unknown (Figure 3).
- Reported symptoms involved multiple organ systems such as the skin, gastrointestinal, respiratory, cardiovascular, or neurological. In 76% of the cases the symptoms reported involved the respiratory tract, such as a tightness of the throat, wheezing, shortness of breathe, or difficulty swallowing. About one-half of the cases (55 %) involved symptoms related to the skin such as hives, itchy skin or facial swelling. Cardiovascular symptoms were reported in 3% of the cases.
- Symptoms most frequently developed in the classroom (40%). Other locations included the cafeteria (18%), health office (12%), playground/outside/recess (7%) and various locations both inside and outside the school building. Symptoms developed on field trips in 2% of the cases.



Data Source: Report of EpiPen® Administration forms.

- The majority of epinephrine administrations (88 %) were performed by an RN. In 8% of cases, epinephrine was administered by other unlicensed personnel such as a teacher, coach, administrator and parent. All had been appropriately trained in the administration of epinephrine.

- In 3% of the cases, students self-administered the epinephrine. The students who self-administered were between 12 and 18 years of age.
- After the development of symptoms, epinephrine was administered in 10 minutes or less 61% of the time (Range: 0 - 180 minutes).³

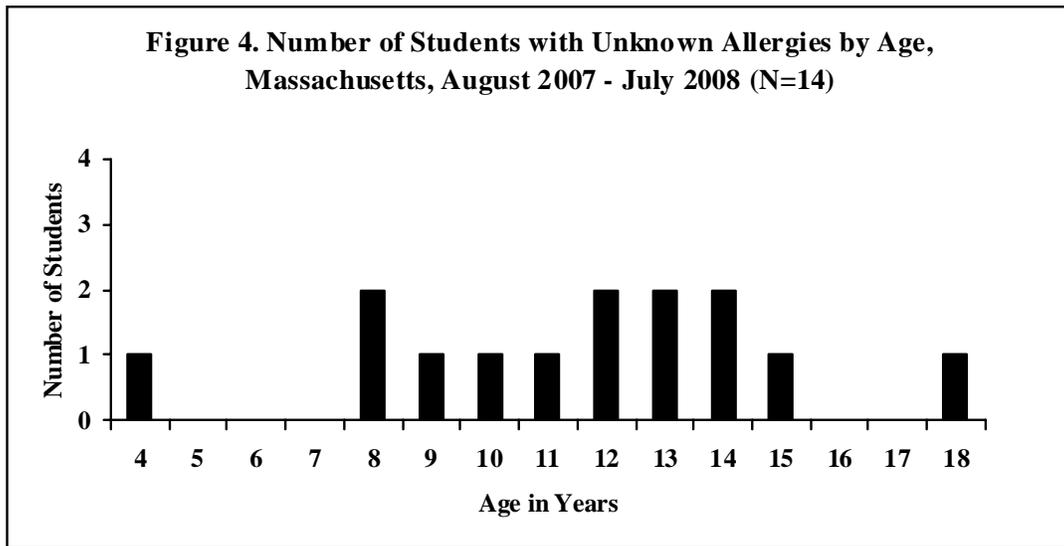
Reasons for delayed administration:

- 180 minute response was due to a delayed response to an unknown allergen of a two-year old visiting a school with the parent to pick up a sibling.
- 120 minute response resulted when a student received new medication at home prior to attending school. Epinephrine was administered within 10 minutes of arrival to nurse's office.
- 120 minute response because the nurse originally followed the Individual Health Care Plan (IHCP) and school policy which stated that an oral antihistamine should be given. Epi-Pen was later administered.
- Of those students with known allergies, 55% had an individualized health care plan (IHCP) in place.
- Three students were not transported to a medical facility via the Emergency Medical System. In one case, the parent and EMS agreed that the patient was stable, and the individual was released with no further symptoms. In two cases, the decision not to transport was made by a parent. Subsequently, further symptoms developed, and the patients were then transported to a medical facility.

Characteristics of Cases Involving Individuals without a Known Allergic Condition

- Twenty-six cases (16.5%) involved individuals without a known allergic condition, and 20 of those involved students.
- In cases involving individuals without a known allergic condition:
 - The average age of students was 12.2 years, with a range of 4-18 years (Figure 4).
 - After the development of symptoms, epinephrine was administered in 10 minutes or less 35% of the time (compared to 66% of the time in cases involving a known allergic condition).

³ This includes individuals with known and unknown allergic conditions.



Data Source: Report of EpiPen Administration forms. The age of 6 students with unknown allergies was not reported.

ONGOING RECOMMENDATIONS TO SCHOOLS

This report has been prepared as a performance improvement strategy to ensure high quality management of individuals with life threatening allergies in the school setting. Based on some of the findings, the following are ongoing recommendations:

- Ensure that all students with life threatening allergies have an individualized care plan.
- Recommend that school staff share any information on their own life threatening allergies with the school nurse to ensure a prompt emergency response should an unintended exposure occur.
- Ensure that all individuals who have experienced a life threatening allergic event are transported via an emergency medical vehicle to an emergency care facility. This usually required education of the parents/guardians about the potential for a repeat of the symptoms or a biphasic reaction.
- Ensure that school policy and individual health care plans follow the American Academy of Allergy, Asthma and Immunology position statement that epinephrine is the first drug that should be used in the emergency management of a child having a potentially life threatening allergic reaction.⁴
- Implement the Massachusetts guidelines, *Managing Life Threatening Food Allergies in Schools*. www.doe.mass.edu/cnp/allergy.pdf

⁴ Position Statement: Anaphylaxis in schools and other child-care settings, American Academy of Allergy, Asthma and Immunology, J Allergy Clinical Immunology 1998; Vol.102, No. 2 , 173-175.