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Children with Peanut and Tree Nut Allergies and Policy Issues Involving the School Environment

Linda Marie Elgart

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CHILDREN WITH PEANUT AND TREE NUT ALLERGIES
AND POLICY ISSUES INVOLVING THE SCHOOL ENVIRONMENT

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Introduction:

Hippocrates, the "Father of Medicine," first described food allergies over 2000 years ago. In the first and second centuries, Greek scholars recorded adverse reactions to cow’s milk. Marcello Donati, in the 16th century, first described anaphylaxis to eggs.¹ Physicians began reporting eczema exacerbated by food allergies in the beginning of the twentieth century and food allergy was described as a clinical entity in 1927.¹² The gold standard for the diagnosis of food allergy, the double-blind, placebo-controlled oral food challenges (DBPCFCs), was introduced by May in 1976. In 1978, Bock reported fourteen children with peanut allergy that were proven by direct challenge.²

A recent study by Bock et al. analyzed 32 fatalities caused by foods, 90% of which were due to peanuts and tree nuts.³ A conference was held on January 18, 2001 at Mount Sinai School of Medicine in New York to discuss the implications of the study. The conference was jointly hosted by the American Academy of Allergy, Asthma and Immunology (AAAAI), the Food Allergy and Anaphylaxis Network (FAAN), and Mount Sinai School of Medicine. The immediate press release was entitled, Urgent Need for Public Education to Avoid Fatalities from Food Allergies.⁴ H.A. Sampson, Director, The Elliot and Roslyn Jaffe Food Allergy Institute, Mount Sinai School of Medicine stated, “Food allergy surpasses insect stings and patient administered medications as the most common cause of fatal allergic reactions and it is estimated that such reactions result in 150 deaths annually in the US alone. The fact that all but one of the individuals for whom we had information, believed that they
were eating something safe, clearly indicates the life-saving potential of improved labeling and education."5 The study emphasized the need for education of the profession, allergic individuals, and the public.3

Approximately three million Americans suffer from peanut and tree nut allergies or 1.1% of the population.6 Allergies to foods are particularly dangerous for three reasons:

- No medical treatment is available to prevent allergic reactions to food
- They pose a higher risk of causing anaphylaxis and can cause death
- Allergic individuals are vulnerable in a variety of situations: restaurants, schools, public places7

No national incidence study of food-induced anaphylaxis has been done, but peanut and tree nut allergies appear to be increasing in prevalence. Peanut and tree nut allergies have an acute and severe nature and schools are a common location for accidental ingestion.

A recent study concluded that the exact prevalence of food allergy in school-age children is unclear, yet 97% of schools surveyed had at least one food-allergic student. The school districts that participated in the study did not have standardized policies for students with food allergy.8

Schools are faced with the challenge of how to protect peanut and tree nut allergic children who may have potentially life-threatening allergies. Many school administrators find themselves without either a district-wide policy or a statewide policy to guide them in creating adequate and appropriate procedures.
The objective of the paper is to review the recent research on peanut and tree
nut allergies, review laws, policy and guidelines on peanut and tree nut allergies, and
apply this information to school management procedures to consider how schools are
responding to provide a safe educational environment that takes into account medical,
social, psychological, and legal needs of students.

Legal issues including federal law, state statutes, Emergency Medical
Technician (EMT) laws, medical guidelines, and pending legislation are reviewed.

Organizations that provide education, support research, and influence public
policy are discussed and recommendations are made to improve the current school
environment.

The research was done primarily through a literature search and through
discussions with school nurses and other relevant professionals.
Chapter One: Food Allergy, Peanut and Tree Nut Allergy

A food allergy is an adverse immunologic reaction to food resulting in symptoms that may affect the skin, gastrointestinal tract, and respiratory system. Food allergy is usually mediated by IgE antibody directed to specific food proteins. When a food protein is ingested, the IgE antibody recognizes the protein, histamine is produced, and allergic symptoms occur. Hives are frequently the first symptom of a food allergy reaction and they may be followed by symptoms of asthma and then vomiting and diarrhea. Other symptoms may include itching and swelling of the mouth and throat, a red rash around the mouth, and abdominal pain.

Food allergy may be acute in nature and manifest as hives and anaphylaxis or may be chronic in nature and manifest as asthma, atopic dermatitis, and gastrointestinal disorders. Individuals who are genetically predisposed to other allergies are at higher risk for food allergy and symptoms may occur within minutes to two hours of consuming the responsible food allergen. Children with a history of moderate atopic dermatitis are at higher risk of having food allergies and children with food allergy and asthma are at increased risk for more severe and even fatal reactions.

Up to 8% of children less than three years old and 2% of adults experience food-induced allergic disorders. In children, 90% of food allergy is caused by milk, egg, peanuts, fish, and tree nuts (walnuts, cashews, almonds, and others). Children typically outgrow allergies to milk, wheat, and eggs, but those to peanuts, tree nuts, and shellfish are more likely to be lifelong. A recent study by Skolnick et al.,
however, showed that a subset of children, approximately 20%, do outgrow peanut allergy.  

In adults, 1.3% of food allergies are to peanuts and tree nuts and the rest are to shellfish (especially shrimp), fish, and a variety of other foods.  

Physicians across the country are reporting an increase in the number of food-allergic patients. The problem is more common when there is a family history of allergy and a reaction can occur even after ingestion of a very small amount of the food, after inhalation, or after skin contact with an offending food allergen.  

Peanut allergy alone effects 0.6% of the population, 0.4% of children, and it is increasing in prevalence. It represent a significant health concern because the allergy is usually long-lived and is potentially fatal.  

Peanuts are ubiquitous in the food supply and greater than 90% of American children are exposed to peanuts by age two. Early exposure and heavy consumption of peanuts by pregnant and breast feeding mothers may contribute in part to the increase in the incidence of peanut allergy, which has increased by 50% over the last 20 years.  

A study by Sicherer et al. highlights the acute and severe nature of peanut and tree nut allergies. The symptoms of an allergic reaction may occur shortly after ingestion with 89% of individuals in the study experiencing skin symptoms. Hives are particularly common on the mouth, lips, and face and can become itchy and swollen. Fifty two percent of allergic individuals experienced respiratory symptoms such as throat tightness, shortness of breath, and wheezing and 32% experienced
gastrointestinal symptoms of vomiting, diarrhea, and abdominal cramping. Two or more organ systems were involved in 31% of initial reactions and all three systems were involved in 21% of reactions. Thirty-eight of 190 first reactions were treated with epinephrine.\textsuperscript{15}

The researchers concluded that in the group they studied, significant reactions occurred early in life and the first reaction frequently required emergency treatment. Also, accidental ingestions were common, sometimes life-threatening, frequently occurred outside the home, and required emergency treatment. Although skin symptoms were the most common manifestation, they did not always occur during a reaction.\textsuperscript{15}

\textit{Food Intolerance:}

It is important not to confuse a true food allergy which is immunologic in nature with a food intolerance which is metabolic in nature. Food intolerance is much more common. The body cannot digest a portion of the offending food, usually due to a chemical deficiency.\textsuperscript{16} Examples of this are a lactose intolerance caused by a deficiency of the enzyme lactase and headaches triggered by chemicals (histamine) in cheese and chocolate.\textsuperscript{16,13} The best way to control these intolerances is to avoid the offending foods. Food intolerance in childhood generally improves as a child gets older. In adults, food intolerance generally intensifies with age.\textsuperscript{16}
Cross-reactivity:

Cross-reactivity occurs when a person is allergic to a food such as a peanut, which is a legume, and also is allergic to other foods in that group such as black-eyed peas, kidney and lima beans, or soybeans. This is especially true in the food groups of tree nuts and shellfish (shrimp, lobster, and crab). A person may be allergic to both peanuts and tree nuts and this is called coincidental allergies because these foods are not related. This occurrence is more common in plant food sources than in animal food sources such as eggs. A physician will usually advise a patient who has a life-threatening reaction to a particular food to avoid similar foods or foods in the same family.\textsuperscript{10}

Oral Allergy Syndrome:

Oral allergy syndrome frequently occurs in persons with significant allergic rhinitis and conjunctivitis that is related to a specific hayfever or other inhaled allergy.\textsuperscript{17} Oral allergy syndrome can occur after eating fresh apples, citrus fruits, peaches, and other fresh fruits and vegetables. It results from cross-reactivity and is caused by IgE antibodies.\textsuperscript{9} Itching or a tingling sensation of the mouth and lips and tongue may occur along with localized swelling of the mouth and throat, but generally the reaction is transient and does not progress to anaphylaxis.\textsuperscript{9,17} Symptoms primarily occur in individuals who are allergic to pollens and there is cross-reactivity to fruits and vegetables. A person with birch pollen hay fever may react after eating apples, celery or carrots and a person with a ragweed allergy may react after ingesting
bananas, cantaloupes, or honeydew melons. An individual with oral allergy syndrome can usually tolerate the cooked form of these foods because cooking destroys the responsible allergen. An antihistamine can usually control the symptoms, but it is very important to differentiate oral allergy syndrome from early stages of anaphylaxis.

Allergic Reaction Pattern:

Studies show that between 72-81% of persons who have an allergic reaction to peanuts do so on their first known exposure. A French study of newborn infants less than 11 days old and babies age 17 days to four months showed that 8% had positive skin tests to peanuts. All IgE-mediated allergic reactions require sensitization from prior exposure so exposure could have been in utero or via breast milk.

A study by Vadas et al. concluded that peanut protein is secreted into breast milk of lactating women for several hours following maternal ingestion. An exclusively breast-fed baby can still be exposed to peanut protein and become sensitized to peanut through the mother. This study may explain why 85% of children have a peanut reaction the first time they eat a food containing peanut allergen. Risk factors for food allergies that include a family history of hay fever, asthma, and eczema or having a parent or sibling with a peanut allergy suggest avoiding ingestion of peanuts and peanut products.

The American Academy of Pediatrics is encouraging mothers to breast-feed for at least a year. Food allergies are more common in formula-fed babies. In August
of 2000, the academy stated that nursing mothers of at-risk infants (history of allergy in the family) should avoid eating peanuts because of other potential allergens found in breast milk. Co-author Wesley Burks of Arkansas Children’s Hospital, said this study explains reactions such as hives that have occurred in nursing infants whose mothers had eaten peanuts. In Europe, vitamins that are peanut-oil based and baby formulas that contain peanut oil are other potential routes of sensitization. In the U.S., these products do not contain peanut oil.

Anaphylaxis:

Anaphylaxis is a severe, life-threatening allergic reaction that affects both children and adults. It is a dramatic multiorgan response to an allergen that is associated with IgE hypersensitivity. Clinical symptoms can vary in onset, appearance, and course, but common symptoms include a feeling of warmth, weakness, dizziness, angioedema, itching of the skin, congestion, and sneezing. More severe symptoms include a sense of impending doom, difficulty breathing, swelling of the mouth and throat, a drop in blood pressure, cardiovascular arrhythmias, loss of consciousness, shock, and arrest. The more common symptoms do not always precede the more serious symptoms and the time to symptoms is a good indicator of the severity of the reaction, with a more serious reaction occurring after a quick onset of symptoms.

Anaphylaxis can have a sudden and dramatic presentation, with symptoms occurring within 5-15 minutes after exposure, or life-threatening reactions can
progress over 1-3 hours. A reaction may be bi-phasic; it may respond initially to treatment with injectable epinephrine and then, perhaps 90 minutes later, be followed by a phase that is unresponsive and require intubation or intravenous pressor medication. Anaphylaxis may cause death if not treated immediately. Laryngeal edema and cardiovascular collapse are the most frequent causes of death.

Anaphylaxis usually occurs after a person who has been previously exposed to the allergen subsequently has an accidental exposure to that allergen.

Individuals with food allergy and also with asthma are at increased risk for anaphylaxis. Anaphylaxis appears to be more probable among persons allergic to peanut, fish, shellfish, and tree nuts and among those persons who have already experienced anaphylaxis.

It has been estimated that 1-2% of the population is at risk for anaphylaxis from food and insect stings, with a lower prevalence for drugs and latex. These estimates may be incomplete and thus unreliable due to incorrect medical chart and death certificate coding. No International Classification of Diseases, Ninth Revision code for “food anaphylaxis” existed prior to 1999 and therefore cases were attributed to other causes such as general anaphylaxis and respiratory or cardiac arrest.

A study published in January 2001 presented a thorough review of the literature and determined that the estimates of risk of anaphylaxis are affected by under-reporting that still exists because some individuals self treat with over the counter medications and never come to a hospital. Errors in diagnosis and the lack of a national network of case reporting also affect the estimates.
Diagnosis:

A diagnostic work-up is important for several reasons:

- Provide education to improve a person’s success at avoiding allergens that may cause a repeat reaction.
- Make a person aware of the dangers of anaphylaxis.
- Educate regarding specific therapies that are emerging.²⁰

Diagnosis is usually not difficult because food allergy is almost always limited to one or two foods. It is important to know the foods that one is allergic to so that every effort can be made to avoid accidental ingestion.²⁰

If a food allergy or anaphylaxis caused by food is suspected, the food in question should be strictly avoided until confirmatory tests have been completed by a board-certified allergist. The medical history is the most important guide in diagnosing food allergy, although it is important to recognize it is subjective.¹⁷ A physical examination and questions about frequency, seasonality, severity, and nature of symptoms will be asked.¹⁰ A history will include the amount of time between ingestion of suspected food allergen and the time to reaction.¹⁰ Skin prick tests and scratch tests may be done. The principal blood test done to detect a specific IgE antibody to a particular food is RAST testing or CAP-RAST.¹⁰,⁹ The CAP-RAST test may be more useful than a skin test in diagnosing milk, egg, peanut, or fish allergy.¹⁰ However, the “gold standard” of food allergy testing is a double-blind, placebo-controlled food challenge.⁹ The suspected food can be hidden in formulas, juice, or opaque capsules. Medical supervision, immediate access to emergency medications,
and CPR equipment are required since severe reactions are possible. Oral challenges are usually not recommended in patients with a history of reactivity or a severe reaction.\(^9\)

_Treatment:_

Strict avoidance of the allergic food is the only effective regimen once diagnosis is established.\(^{17}\) Medical management also is needed for symptoms such as topical dermatitis and asthma symptoms.\(^9\) Immunotherapy or allergy shots have not been proven effective for food allergy except when they are pollen related.\(^9\)

Since anaphylaxis is unpredictable in its clinical course, epinephrine, antihistamines, and oral steroids should be administered at the first sign of an allergic reaction. Success of treatment depends on the prompt administration of injectable epinephrine and there are no contraindications to the use of epinephrine for a potentially life-threatening reaction.\(^3,21\) After its administration, 911 should be called, the individual should be transported to a hospital for evaluation and monitoring, additional epinephrine should be available during transport, and the individual should then be monitored at the hospital for at least four hours.\(^{21}\)

Individuals with food allergy need to be given extensive education on how to avoid the foods to which they are allergic. They also need to be educated to recognize the early symptoms of anaphylaxis and then be trained to use self-injectable epinephrine, such as an EpiPen®. The individuals also need to have an emergency care plan to follow in case of accidental ingestion. Improving the knowledge of
families, friends, caregivers, schools, restaurants, and the general public on the food allergy and potential anaphylaxis, is also recommended.³

Emergency Room Care:

Four studies, including one at the Mayo Clinic in Minnesota, have determined that food is the leading cause of anaphylaxis addressed in emergency rooms, with twice the incidence and three times the mortality of anaphylactic reactions to bee stings.²⁰ Food allergy accounts for approximately 30,000 emergency room visits and 2,000 hospitalizations each year.²⁴

Despite the seriousness of peanut and tree nut allergies, most individuals do not seek medical attention after a reaction and for those who do, most do not receive a prescription for self-injectable epinephrine.⁶²⁵ Preliminary results from a four site study, including Massachusetts General Hospital in Boston, indicate that of 112 patients treated for clear cases of allergic reactions to food only 19% were treated with epinephrine and only 11% received a prescription for self-injectable epinephrine.²⁵

Anaphylaxis guidelines suggest that emergency room personnel should treat with epinephrine, teach how to use self-injectable epinephrine to treat future reactions, and then refer the patient to an allergist for further care. The study indicates that concordance to these guidelines appears low.²⁵
**Cross-contamination:**

Cross-contamination occurs when a safe food (non-allergenic food) comes in contact with a food allergen such as peanuts in peanut butter. Cross-contamination during food preparation, from utensils and cookware, is a dangerous problem for the peanut allergic individual. Reactions can occur if persons ate a food contaminated with a peanut product, or touched something with peanut traces and then put their hands to their mouth or touched their eyes. Cross-contamination occurs if a knife used to make a peanut butter sandwich is only wiped off, not washed, and is then used to make another type of sandwich.\(^2\) It can even occur if an individual eats peanuts and then kisses a peanut sensitive child. The use of craft items that are stored in a used peanut butter jar and using peanut butter for craft projects can cause reactions. If a spatula in a school cafeteria is used to remove peanut butter cookies from a pan and is later used to remove sugar cookies, the sensitized child who thinks that he/she is eating something safe may have an allergic reaction.\(^2\)

Peanut protein left behind and not visible may cause an allergic reaction in a sensitized individual, since even 100 ug of peanut protein can be enough to cause a reaction for some people.\(^2\)

**Foods to Avoid:**

Peanut and tree nuts are often “hidden” in foods and there are some foods that should be avoided. Foods sold in bakeries and ice cream shops are often in contact with peanuts and should be avoided. Ice cream shops usually just rinse the scoops and
this is a frequent cross-contamination mode. Restaurants that offer African, Chinese, Indonesian, Mexican, Thai, and Vietnamese food often serve dishes that contain peanuts or are contaminated with peanuts or tree nuts during preparation. It is not uncommon for a wok to be only wiped out, not washed, and leave the contamination from peanut and nut allergens. Artificial nuts can be peanuts that have been defavored and refavored with a nut such as a walnut. The product called arachis oil is actually peanut oil. Most allergic individuals can eat peanut oil that is not cold pressed oil. Cold pressed oil is not as refined and it retains peanut protein that could cause an allergic reaction. Stuffing in restaurants should be avoided due to the use of ground nuts in many recipes. Also, sauces and toppings may have finely crushed peanuts mixed in, but have no visible sign of them. Reading food product labels is essential for any allergic person, but there are other foods worth mentioning that should be avoided. Products to avoid include baking mixes, battered foods, breakfast cereals, candy, chili, egg rolls (peanut butter may be used to seal the edges), marzipan, nut butters, satay dishes, and sauces.

The Food Allergy and Anaphylaxis Network (FAAN) website, www.foodallergy.org, provides news reports and alerts from the food industry concerning product recalls and warnings.

Need for Self-Injectable Epinephrine:

Many allergists recommend that patients who have experienced anaphylaxis or who have food allergy and asthma should carry an injectable form of epinephrine in
case of accidental ingestion. Vander Leek et al. concluded that individuals with a serum protein-specific IgE antibody >15 kU/L have a 95% chance of an allergic reaction if they ingest peanut protein, but the IgE level was not an indicator of the severity of a reaction. This information affects the criteria that physicians use in prescribing epinephrine.

The findings of Vander Leek et al. suggest that the symptoms of the initial reaction do not predict the severity of subsequent reactions and patients who experience minor reactions at the initial reaction may be as likely to develop life-threatening symptoms during subsequent reactions as patients who experience more severe initial reactions.

Sampson believes that all patients with peanut allergy need self-injectable epinephrine immediately available to treat future, unavoidable reactions. Those with a peanut allergy and a very low PN-IgE level (<2kU/L) and older than age four should be food challenged in a medical setting to determine whether they can tolerate peanuts. It is of importance to recognize that most who outgrew their allergy had an initial reaction that only involved the skin and patients with initial reactions involving three systems were significantly more likely to have ongoing peanut allergy.

*EpiPen®*

Epinephrine for emergency home use comes in two forms: an Ana-Kit (traditional needle and syringe) or an EpiPen® (automatic injector system with one premeasured dose). Most young children are prescribed an EpiPen Jr® that is dose
adjusted for children. This is a disposable drug delivery system with a spring
activated, concealed needle designed for emergency self administration to provide
rapid convenient first aid for individuals experiencing life-threatening anaphylactic
reactions. Patients judged to have a high risk of anaphylaxis (perhaps as high as
40%) should be prescribed self-injectable epinephrine. An EpiPen® is a tubular sized
pen that a child can carry in a fanny pack. H.A. Sampson, of the Mount Sinai School
of Medicine, believes that patients should use the device whenever they believe a food
reaction is beginning since it is better to use it even if not necessary than not to use it,
when it is needed.

Epinephrine reverses the signs and symptoms of anaphylaxis and can "turn the
reaction off," preventing progression. It is recommended that epinephrine be given
intramuscularly because it produces higher blood levels than the subcutaneous route.

Educational instructions are provided by the manufacturer of EpiPen®. The
University of Maryland School of Nursing provides an interactive computer program,
EpiPen® 911 Rescue in the Classroom, to help elementary schoolteachers to
recognize signs and symptoms of an allergic reaction that would require the
administration and appropriate use of an EpiPen®. The program is available on the
Internet at http://parsons.umbc.edu/epipen/index.html

Family Stress:

Peanut-allergic children and their parents are affected by a condition that forces
them to exercise extreme dietary vigilance and to experience constant uncertainty in
their lives.32 There is no relaxed dinner out because the restaurant has to be considered “safe” and still the waiter, the manager, and the cook (if you can get to him) need to be cooperative, sympathetic, and willing to bother to confirm ingredients. Every label has to be scrutinized and friends’ parents have to understand the dietary restrictions and be part of the avoidance plan. Ice cream shops are usually off limits due to the high risk of cross-contamination and siblings may resent the restrictions. Attending childhood birthday parties and other celebrations becomes a time of stress when the focus of the party is food and the food-allergic child either does not attend or must bring his or her own food to the party. Childhood food allergy has a significant impact on general health perception, on emotional distress in children and parents, and on family activities.33

There are four principal sources of stress for the child and the parents:

1. The potential of an anaphylactic reaction
2. The inconvenience and change in lifestyle, including having to repeatedly explain the allergy to others
3. Feeling isolated and feeling that relatives and friends “do not understand”
4. Trusting the child and trusting others to deal with the allergy, “letting go”17

Parents of food-allergic children can help alleviate stress by:

- Having their child evaluated by a board certified allergist.
- Join a support group.
- Learn to bake.
- Accept limitations in lifestyle
- Carry an EpiPen® always and everywhere
- Have your child wear a Medic Alert bracelet
- Get clear emergency instructions from your allergist.
- Put the allergy in perspective, most deaths are preventable.
- Enlist the support of school nurses and other professionals
- Inform friends and relatives in a clear, concise, calm manner and be specific.
- Reassure your child, plan ahead, and give your child a positive attitude.
- Teach your child to be responsible in all aspects of life.³⁴

_Deaths of Two Students:_

In May of 2001, two students died at school from peanut and tree nut allergic reactions. On May 9, 2001 a 16-year-old boy died in a cooking class after eating something that contained walnuts. He was initially given asthma medications and it is unclear how much time elapsed before an ambulance was called and epinephrine was given. On May 18, 2001 a nine year old boy in Spokane, Washington died from anaphylactic shock due to ingestion of peanuts while on a school field trip.³⁵ The students on the field trip were all given bag lunches containing peanut butter and jelly sandwiches, trail mix, and a peanut butter cookie. Nathan had a known peanut allergy, but a peanut-free lunch was not ordered for him.³⁶ While on the bus, Nathan returned the sandwich and trail mix to a teacher and told her that he was allergic to peanuts. Nathan took a bite of the cookie because he did not realize that it was a peanut butter cookie. Nathan complained that he was ill after he ate the cookie and used his asthma
inhaler. He was then left on the bus alone for an estimated hour or more. When the other children returned, Nathan collapsed. Two volunteers then attempted to drive him home, but stopped at a fire station for help where a volunteer firefighter immediately phoned for assistance and started CPR. The firefighter saw the chaperone, a licensed practical nurse, give Nathan an injection of epinephrine at this time, at least two hours after ingestion of the cookie. 7 Nathan was later pronounced dead at Holy Family Hospital. 36

These recent and sad stories highlight why the issue of education regarding peanut and tree nut allergies is so very important. The science does not yet exist to prevent allergic reactions to peanut and tree nuts and avoidance, education, and prompt administration of epinephrine in accidental ingestion are the most important interventions available.

H.A. Sampson, Food Allergy and Anaphylaxis Network Medical Director and head of the Jaffe Food Allergy Institute at Mt. Sinai Medical Center in New York said, “Nathan’s death only re-emphasizes the need for schools to have emergency programs in place and to make sure that personnel dealing with food-allergic children know how to recognize and treat food-allergic reactions. Tragedies like this should not happen.” 38

School personnel need to work in partnership with the parents to develop strategies to avoid reactions while allowing the child to participate fully in all activities. 23
Recent Studies:

Since 1997, new studies have been published that have a significant impact on the treatment and management of food allergy and the impact of food allergy on schools. I will present some of the studies that investigate peanut and tree nut allergies.

- Nowak-Wegrzyn, Isenbergt and Wood conducted a phone survey of the parents of 50 patients with food allergies seen in a clinic from April to August in 1999. The purpose of the survey was to better characterize the reactions to food allergy at school. Forty-two children met the study criteria and 67% of them attended school. The study found a total of 16 reactions to nine children that had occurred at school. Thirty eight percent of children who had accidental ingestion of foods that they were allergic to in the past two years had at least one reaction at school, and 25% of all reactions encountered within the past two years took place at school. All of these reactions were successfully treated although there was no protocol or medications available for 9% and 7%, respectively.39

- Furlong et al. conducted 100 telephone interviews of parental surrogates from a random sampling of registrants in the National Peanut and Tree Nut Allergy Registrar. A standard questionnaire was used to assess the clinical features of reactions that occur in schools. One hundred and twenty four school reactions were described to peanut (115) and tree nuts (9). The study determined that 64% of the reactions took place in child care or preschool, but of the reactions in elementary school, close to 70% occurred in public school and 25% of the cases were a first time peanut allergic
reaction. Ingestion caused 60% of the reactions, skin contact caused 24% of the reactions and inhalation caused 15% of the reactions. Peanut butter craft projects caused 60% of the skin contact reactions and 44% of the inhalation reactions. Twenty four percent of the cases occurred during special occasions or parties. Symptoms were considered severe in 24% of the reactions and medications were given for 90% of the reactions. Epinephrine was given 19 times; six times by school nurses, four times by teachers and nine times by parents of other school staff. There were 36 children with previously identified allergy requiring, but not receiving medication in school. The reasons given for not administering epinephrine included reaction not initially noticed, parents called to pick up child, and unable to activate epinephrine. An emergency care plan was in place only 33% of the time and three reactions occurred even when a peanut ban was in place.40

- A study published by Sicherer et al. in 2000 searched for evidence that genetic factors influence peanut allergy. Previous studies of twins have shown a strong genetic influence on atopic dermatitis, asthma, allergic rhinitis, and IgE antibody concentration, but only one previous study explored the genetic basis of peanut allergy.14

Sicherer et al. studied twin pairs with at least one member with peanut allergy who were recruited through the Food Allergy and Anaphylaxis Network. A telephone interview of the individuals with peanut allergy or their parental surrogate included family history of peanut allergy, personal atopic history, characteristics of peanut allergy, and zygosity. Fifty-eight pairs of twins, with 70 of these individuals having
peanut allergy documented from convincing histories and skin prick testing (52), were involved in the interviews.\textsuperscript{14}

The study showed a significantly higher concordance rate of peanut allergy among monozygotic twins (65\% versus 7\%), thus indicating a significant genetic influence on peanut allergy. The researchers concluded that more studies are needed to dissect the role of multiple genes likely to influence peanut allergy and other food allergy diseases.\textsuperscript{14}

- Sicherer et al. distributed a structured questionnaire to 7000 lay members and 1000 health professional members of Food Allergy and Anaphylaxis Network (FAAN), a nonprofit organization that educates and supports families and individuals with food allergies. Also, the 4000 members of the American Academy of Allergy, Asthma and Immunology each received ten copies to distribute to their patients. The objective of the questionnaire was to obtain demographic information and details about allergic reactions to peanuts and tree nuts.\textsuperscript{41}

Registrants were mostly children (89\%) and parental surrogates completed the forms for children under age 18. The questionnaire asked registrants to describe their reactions by selecting from a variety of symptoms in organ systems that included skin (urticaria and edema), GI tract (vomiting, diarrhea, and abdominal pain), respiratory tract (wheezing, throat tightness, and trouble breathing) and cardiovascular system (hypotension and loss of consciousness). They were also asked to note symptoms of itchy throat and conjunctivitis. A reaction was considered severe if it involved three organ systems or there was hypotension or wheezing along with hives or diarrhea and
vomiting. The results of the questionnaire were entered into an electronic database for analysis and the results provided new insights, confirmed previous observations, and provide a valuable source for studies on peanut and tree allergies.\(^\text{41}\)

The study determined that 89% of the registrants were under the age of 18 and isolated peanut allergy was reported by 68%, isolated tree nut allergy was reported by 9% and allergy to both foods was reported by 23% of the registrants. The median age of reaction to peanuts was 14 months and to tree nuts, 36 months. One half of the reactions involved more than one organ system. More than 75% of reactions required treatment and those registrants with asthma were more likely to have severe reactions. Subsequent accidental reactions, when compared to initial accidental reactions, were more severe, more common outside the home, and more likely to be treated with epinephrine.\(^\text{41}\)

- Sicherer, Furlong, DeSimone and Sampson reported a study in 2001 with the objective of describing the clinical features of peanut and tree nut reactions that occurred in a school setting. Food allergies are among the common medical emergencies that occur in schools yet no study had examined the clinical features of the reactions.\(^\text{42}\)

The researchers asked registrants in the US Peanut and Tree Nut Allergy Registry who had indicated that their child had experienced an allergic reaction at school or day care to participate in a structured telephone interview. Results of the survey indicated that 64% of reactions occurred in preschool or day care and this reaction represented 25% of the initial allergic responses. The majority of reactions
was due to ingestion of a cookie or baked product (54%), and 46% of skin reactions and 41% of inhalation reactions were due to a peanut butter craft project.\textsuperscript{42}

The most common reaction by adults was to call the parent to find out what to do (60%). An emergency care plan was in place for only 33% of the reactions and was followed only 73% of the time. Injectable epinephrine, the first line of treatment, was available in 29 episodes out of 124, but instructions on how to administer it were never demonstrated in four instances.\textsuperscript{42}

Researchers have documented several sources of treatment delay that have been associated with fatal outcomes in school. The delays include failure to recognize reactions, failure to follow emergency plans, calling parents instead of administering emergency medications, and the inability to administer self-injectable epinephrine.\textsuperscript{42}

The study supports educating school personnel regarding signs of an allergic reaction, having emergency care plans in place, and having emergency epinephrine readily available.\textsuperscript{42}

- Rhim and McMorris presented a study in 2000 with the objective of identifying and characterizing school education, prevention, and treatment policies for food-allergic children in the state of Michigan. Food allergy reactions and anaphylaxis may occur in children at school, but the preparation for schools to handle these medical emergencies is unknown.\textsuperscript{8}

A randomized sample of public, elementary school principals (273 out of 2,083) was mailed a 21-item questionnaire to assess food allergy awareness, avoidance
measures, and treatment strategies. The questions consisted of multiple-choice responses and were derived from suggested school guidelines for anaphylaxis. Information was collected from 109 schools, representing 66,598 students. Of these schools, greater than 50% reported having at least ten food-allergic students and the most common food allergens were milk, peanuts, and tree nuts. School-reported estimates showed a 1.7% prevalence of food allergies.

The survey showed a lack of school-wide staff education, deficiencies in avoidance measures such as educating staff about school projects involving foods and lack of easy access to self-injectable epinephrine. Only 16% of the schools had specified that they had written individual emergency plans and 11% of schools had no allergy education for staff. Many respondents did have avoidance measures in place to help prevent accidental ingestion, but only 21% reported instruction on reading food labels for hidden allergens. If a serious food-allergic reaction did occur, 94% of schools said that they would transport the student to a medical facility and only a minority of schools had epinephrine immediately accessible. No training of staff on epinephrine administration was reported by 10% of schools.

The researchers determined that it is essential that schools establish food allergy education, preventive measures, and treatment guidelines.

Current Research:

A multi-center peanut allergy drug study is currently taking place at seven medical centers in the U.S. including the National Jewish Medical and Research
Center in Denver, CO; Mt. Sinai Medical Center in New York City, NY; Arkansas Children’s Hospital, Little Rock, AR; Children’s Hospital, Boston, MA; Southern California Research, Mission Viejo, CA; Scripps Clinic, San Diego, CA; and Mayo Clinic, Rochester, MN. Researchers are trying to determine if multiple subcutaneous IgE injections are safe and tolerable for treating peanut allergy. The injections, an antibody with the code-name Hu-901, and made by Houston-based Tanox Inc. are currently administered monthly.

The experimental therapy will not be a cure, but the hope is that the drug will control a molecule that causes severe reactions in allergic individuals and reduce the risk of death from anaphylaxis.

Peanut proteins have been identified as Ara h1, Ara h2 and Ara h3. The way that Ara h1 binds to IgE may explain why it is such an extremely allergic protein. Researchers are working on ways to alter the structure of the peanut protein so that the allergenic characteristic is changed. Wesley Burks, at the University of Arkansas for Medical Sciences, has cloned the Ara h1 protein and is cloning peanut specific T cells from patients with peanut anaphylaxis to use for mapping T-cell epitopes on these proteins. His goal is to delineate the proteins responsible for hypersensitivity response and thus develop better treatment for food allergy and anaphylaxis.
Chapter Two: Legal Issues, Policy and Guidelines

There has been limited law related to peanut and tree nut allergies and schools. However, law has been either promulgated or discussed on both the federal and state levels. I will discuss the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, the US Federal Drug Administration, and the Family Educational Rights and Privacy Act and how they relate to food allergy. I will also discuss state statutes regarding EMT's and epinephrine administration and Connecticut statutes regarding the administration of medications in Connecticut schools. Pending legislation on food ingredient labels will also be presented.

The American Academy of Allergy, Asthma, and Immunology has a position statement and guidelines concerning food allergy, anaphylaxis, and schools and this will also be addressed. The American Association of School Nurses Position Papers will be presented.

Federal Law:

- Section 504 of the Rehabilitation Act of 1973:

Section 504 is a civil rights law designed to prohibit discrimination on the basis of disability in programs and activities, public and private, that receive federal financial assistance.\textsuperscript{46} Section 504 has a specific set of regulations that apply to elementary, secondary, and postsecondary schools.\textsuperscript{47} The language of Section 504 broadly prohibits denial of public education or enjoyment of the
benefits of public school programs because of a child’s disability. No funding was applied to this ruling, but full compliance was expected if Federal funds were to continue. Section 504 protects all persons with a disability who:

1. have a physical or mental impairment that substantially limits one or more major life activities;
2. have a record of such impairment; or
3. are regarded as having such an impairment.

Major life activities include walking, seeing, hearing, speaking, breathing, learning, working, caring for oneself, and performing manual tasks. Schools are concerned with whether a student’s impairment limits the ability to learn. Section 504 is very important because it is the only legal mandate requiring education agencies to provide special education or related services to a child with a disability. Section 504 is there to “level the playing field” or eliminate impediments to full participation by persons with disabilities. It was meant to prevent intentional or unintentional discrimination against persons with disabilities, persons who are believed to have disabilities, or family members of persons with disabilities. 504 is not meant to have a narrow interpretation and schools that have done that have been found to be out of compliance for failure to identify students protected solely by 504.

The following are some examples of students who may be protected under Section 504:

- Students with communicable disease (i.e.: hepatitis)
- Students with allergies or asthma
• Students who are drug addicted or alcoholic, as long as they are not currently using illegal drugs

• Students with temporary disabilities from accidents who need homebound recovery

Section 504 states that schools must provide medical care to children who need it, and budgetary cutbacks are not an acceptable excuse not to do so. In the context of Section 504, medical services are those other than provided by a physician. Court decisions have affirmed that a school’s obligations under Section 504 are not limitless, but often require a balancing of competing factors. Section 504’s definition also includes the provision of special or regular education and related services. The related services are the health services that a child with severe food allergies would need while a student at school and the school is obligated to provide those accommodations.

Parents and physicians of children with peanut, tree nut, and other severe food allergies may refer the student to the school Section 504 team for an eligibility assessment. The pediatrician must provide the medical diagnosis, confirming that the student’s condition significantly interferes with breathing or other life-functions (when exposed), and that health-related accommodations are needed in school. A decision for 504 eligibility is made by the school 504 team. It is important that the school nurse receive correct information regarding history of anaphylaxis and need for emergency medications, etc. before the 504 team meeting so an appropriate decision can be made.
The development of an Individualized Education Program or IEP is expected, although it is not mandated, and a child with a peanut or tree nut allergy would also need an emergency plan for accidental ingestion and that would become part of the IEP. The parents and pediatricians of children covered by 504 need ongoing communication with the school and the IEP needs to follow the up-to-date medical information and follow state laws and regulations.\(^{31}\)

The IEP (Section 504 Plan) should include strategies to help students avoid allergic foods that could cause that child to have a reaction. Once the IEP is completed, participation by teachers, paraprofessionals, and other staff such as cafeteria personnel, bus drivers, and playground monitors is essential so they will recognize and respond appropriately to a food allergy reaction.\(^{31}\)

If a reaction does occur at school, the IEP should include a specific emergency medical plan including:

1. Prescribed emergency medication and personnel responsible for administering it
2. Prescribed indications for administering medication (such as give epinephrine after ingestion of an offending food or wait until symptoms of a reaction occur)
3. Instructions for activating the emergency medical system
4. Instructions for contacting the student’s parent and physician\(^{49}\)

- **Americans with Disabilities Act of 1990 (ADA):**

  Children with serious allergies or asthma may have some protections under the Americans with Disabilities Act of 1990 (ADA).\(^{50}\) Child care centers cannot refuse children with food allergies because of their disability. The law suit Fisher v. La Petite
Academy, Inc. involved two children with severe peanut allergies and their day care center, a nationwide day care provider called La Petite Academy. La Petite Academy was alleged to discriminate against children with severe food allergies and their families by maintaining a policy of not administering the EpiPen Jr. to children in their custody who experienced a severe allergic reaction. The policy that La Petite followed was to call 911 and have the emergency personnel administer the EpiPen. On October 23, 1997, the Justice Department reached a settlement agreement with La Petite Academy that protects the rights of children with severe food allergies and other disabilities, including diabetes and cerebral palsy. La Petite Academy, Inc. agreed to change their policy and to administer epinephrine to those children who experience life-threatening allergic reactions to certain foods such as peanuts or to bee stings.

Although La Petite did not concede liability in the agreement, it did agree with the Justice Department that the “children are persons within the meaning of (the ADA).” La Petite also agreed to pay a total of $55,000 to the total of five complainants. In return, the Department agreed not to bring suit under Title 111 of the ADA, and the complainants relinquished their claims.

There have been other day care centers and preschools denying admission to food-allergic children and litigation is ongoing. The Supreme Court recently ruled that the ADA does not cover individuals with disabilities that can be corrected or reversed with medical treatment. The court felt the intent of the ADA was not to cover “common, correctable impairments and that the person must be limited presently, not potentially or hypothetically.” Food allergy was not specifically dealt with, but current studies conflict with food allergy being common or correctable. Future
litigation will reveal how patients and schools are affected. The ADA of 1990 does have deep roots in Section 504 of the Rehabilitation Act of 1973. The primary difference is that while 504 applies only to organizations that receive federal funding, the ADA has a much broader application. Both are administered by the Office for Civil Rights and considered essentially identical. In effect, virtually every violation of 504 is a violation of the ADA as it applies to students.

It is likely that allergy-related lawsuits will increase as public awareness increases regarding the serious, life-threatening aspects of food allergy and accidental ingestion. In a law review published in March of 2000, the author could find no litigations prior to 1992 and only six up to March of 2000. The assumption is that food allergy is an issue just starting to attract the attention that precedes prolific litigation. Manufacturing defects and failure to warn are two areas of law that could be involved. Increased awareness and education about the seriousness of food allergy is essential and perhaps liability can play a role in increasing this awareness. Individuals must accept primary responsibility for their own safety and risk of exposure, but "a multi-million dollar judgment or two might go a long way in reducing that risk.”

- **U.S. Food and Drug Administration (FDA):**

  The FDA has actively addressed food allergy with specific law and educational publications since 1994. The FDA has a responsibility to individuals and to the public health of the country to help protect against accidental ingestion of food allergens due to food labeling and misleading terms such as “may contain”. Individuals rely on
accurate food labeling to protect themselves against anaphylaxis and possible death. Teachers and food workers in schools and public institutions also depend on the accuracy of food labels. The FDA is working with food manufacturers and consumer groups to increase public awareness and to ensure that allergens are appropriately labeled.\textsuperscript{54}

- In 1994, the FDA Consumer published a paper “Food Allergies Rare But Risky.” This is an informative nine-page paper presenting up-to-date for the time medical information in a user-friendly format. It talks about food labeling and “Finding the Forbidden” by reading food labels. The paper notes that the Nutrition Labeling and Education Act requires more complete food labeling that should help people with food allergies avoid dangerous foods. This act requires that all ingredients in standardized foods, such as mayonnaise, must be declared. Originally, true allergens were required to be on the label, but standardized foods were the exception.\textsuperscript{16}

- In 1996, the FDA issued a notice to the food industry that alerted manufacturers and trade associations requesting their assistance in addressing the major public health problem of undeclared allergens in food. They noted the importance of declaring allergens in food even when present in only trace amounts. Two types of exemptions occurred at this time: the naming of collective spices, flavors and colors, and the other on declaration of incidental additives such as processing aids. They also noted the use of “may contain” statements on food ingredient labels and planned to address this type of labeling in the future.\textsuperscript{55}

- In January 2001, the FDA and the Center for Food Safety and Applied
Nutrition (CFSAN) released a study entitled “Food Allergen Partnership” that focused on 85 randomly chosen firms within the states of Minnesota and Wisconsin: bakeries, ice cream manufacturers, and candy manufacturers. The partnership consisted of State and FDA field investigators and was set up in response to the increase in food-allergen related recalls across the country. The partnership looked for the presence of peanuts and egg allergens on food processing lines, label verification, rework procedures, and cross-contamination prevention. The inspections found that 25% of the final food samples tested positive for peanut allergens even though peanuts were not declared on the product label and 11% had unlisted traces of eggs. The reasons were inadequate scheduling to prevent cross-contamination, improper cleaning between different products, and the use of allergen containing rework in non-allergen containing products. This occurred when bakers used the same utensils to stir separate mixes or when they reused baking sheets between batches. One candy company washed the machinery just once a year and this machinery was used to produce chocolates that contained peanuts and chocolates that did not contain peanuts. The study also found that 25% of the companies failed to list all of the ingredients on their products and about 50% did not check the labels to be sure that all ingredients used in a product were listed on the product label.

In February-March of 2001, the FDA published “Food Allergen Awareness: A FDA Priority, new initiatives focus on allergens in 2001”. The paper describes major new initiatives of the FDA including providing guidance to industry and regulators on how to manage allergens through manufacturing and labeling practices. One of the U.S. Department of Health and Human Services “Healthy People
2010” initiatives for the coming decade is to reduce the number of deaths from food allergy anaphylaxis. The FDA has been working closely with CFSAN and CFSAN has increased allergen awareness for those groups who provide food products to the public and may not be familiar with food allergens. Future research the FDA considered was a national survey on the extent of food allergenicity, food allergen test kits, and food allergen thresholds.65

- In April of 2001, The FDA issued a “Compliance Policy Guide” which was an update to the Compliance Policy Manual and dealt with labeling and preventing cross-contamination of common food allergens.58 It was published in direct response to the increase in food recall actions during the last decade. In 1990 there were 35 recalls and in 2000 there were 121. The guide provides guidance to the regulated industry to increase allergy awareness.59 The common allergens include peanuts, soybeans, milk, eggs, fish, shellfish, tree nuts, and wheat.58 The compliance guide specifies regulatory action that would be taken against manufacturers who do not comply with the letter of June 10, 1996, “Notice to Manufacturers” regarding labeling issues. The FDA pointed out that the exemption of not declaring incidental additives does not include additives that are food allergens and the presence of an allergen must be declared in accordance with 21 CFE 101.4.58 This compliance policy became effective immediately.59

- In April of 2001, the National Food Processors Association (NFPA), the scientific trade association for the food processing industry, released an industry “Code of Practice” for managing food allergens that would ensure strategies. NFPA is the voice of the $460 billion food processing industry on scientific and public policy.
The code was developed in cooperation with the FDA, the U.S. Department of Agriculture, and the Food Allergy and Anaphylaxis Network. The Code of Practice included using simple English terms like milk instead of casein and the disclosure of food allergens when present in flavors.60

- In May 2001, Attorney General Eliot Spitzer and Attorneys Generals from NY, MY, MI, WY, OH, TE, CT, VT and MA submitted a citizen petition to the FDA to request action by the FDA regarding allergenic substances.61 They requested that reforms be instituted aimed at reducing the number of cases of illness and death caused by severe food allergies.62

The key components of the petition to the FDA include:

1. Creating a symbol, a circled letter A, to be prominently displayed on the upper right front of food packages to alert consumers that the product contains allergens

2. Establishing a toll-free hotline where consumers can obtain reliable food ingredient information

3. Specifying on food labels when allergenic substances are contained even as “insignificant amounts”

4. Establishing food industry guidelines to prevent the migrations of allergenic ingredients from one product to another during food processing62

- In June 2001, the FDA announced that it would begin inspecting thousands of candy makers, bakeries, and other processors over the next two years to make sure that ingredients that cause common allergic reactions are not accidentally getting into food and candy. The agency is also asking food companies and ingredient suppliers to study all flavorings, colors, and spices in use to identify those that might contain
allergens. Kenneth Falci of the FDA said the inspections were decided on after 25% of plants in Minnesota and Wisconsin had ingredients such as peanuts that weren’t disclosed on product labels. Training for 2500 inspectors is expected to take up to a year and up to 6000 plants will be inspected. Falci also suggested that the FDA might restrict the use of some precautionary statements such as “May contain peanuts” because this could be considered “false and misleading” if there is a chance the food could contain an allergen.63

* The July-August 2001 FDA Consumer magazine is entitled “Food Allergies: When food becomes the enemy.” This is an eight page publication that covers allergic reactions, most common allergens, anecdotes about individuals and food allergy, food labeling, the FDA’s role, industry response, labeling policy and gaps in the policy, and consumer involvement. The publication has accurate and up-to-date information and is a good resource about food allergies.22

* On August 13, 2001, the FDA held a public meeting in Washington DC called "The Challenge of Labeling Food Allergens" that supported the use of "plain language"on food labels. The labeling of foods containing allergens and the inadvertent addition of allergens to foods due to processing practices was discussed.64 The purpose of the meeting was to stimulate dialogue and to obtain information to assist the FDA determine what additional measures are needed for accurate information on product labels. The meeting focused on three main areas: plain English labeling, supplemental labeling (e.g., “may contain”), and labeling of ingredients exempted from declaration (i.e., flavorings, spices).61 The National Food Processors Association (NFPA) strongly supported the use of “plain language”, but said that
Labeling options should be flexible and voluntary. NFPA also believes that plain language should augment, but not replace current ingredient labeling and that supplementary labels ("may contain") are necessary and should be permitted, but should be relatively rare.  

- *Family Educational Rights and Privacy Act (FERPA):*

  This is a federal law that protects the privacy of student education records at all schools that receive funds from the U.S. Department of Education. FERPA gives parents of children under 18 certain rights in regard to their children’s education records. After age 18, the rights are transferred to the student and the student is called an "eligible student".  

  Parents or eligible students have the right to review the student’s education records and to have the right to ask to have corrections made if they believe the record to be inaccurate or misleading. Also, generally the school must have written permission from the parent or eligible student to release any information. There are exceptions in areas of transfer to another school, to comply with a judicial order, and in causes of health and safety emergencies. Schools must inform parents and students of their rights under FERPA.  

  FERPA thus protects the privacy of students with food allergies. A classroom or school may decide to take protective measures for a child such as having a classroom be "peanut/nut free". A letter may be sent home to the other parents stating this information, but the child may not be identified because of the privacy protection...
of FERPA. It can be psychologically difficult being “the only one” who cannot eat peanut butter like “everyone else” and that child should not be publicly identified.

State Law:

- Epinephrine in allergic emergencies for Emergency Medical Technicians (EMT’s):

  The national guidelines for EMT’s suggest about 100 hours of training, but most states do not allow, by law, EMT’s to carry or administer medication, except in some cases the patient’s own medication. 66 Paramedics, who have more training in medical diagnosis, are usually the only ones allowed to give medicines. EMT basics are allowed to assist patients in administering their own autoinjector such as an EpiPen®. If an EMT arrives at the scene where an individual is experiencing anaphylaxis, the EMT can either ask the individual for the location of the EpiPen® or look through the individual’s belongings to find the Epipen®, wrap the individual’s hands around the EpiPen®, and wrap their own hand around the individual’s hand to assist in administration. 67 This can occur, but the EMT basic cannot carry the epinephrine with them. If the person experiencing the reaction does not have their own life-saving epinephrine, there will be none available. In some states intermediate EMT’s can carry injectable epinephrine and administer it and in other states they cannot. 68 All states allow paramedics to administer epinephrine. 69

  The American Academy of Allergy, Asthma & Immunology’s Anaphylaxis Position Statement cites, “There is clear evidence that delays or failure in the use of epinephrine have both contributed to many fatal reactions in insect stings and foods. These reactions occurred in spite of the patient making reasonable efforts to avoid
exposure, and fatal outcomes are most often associated with either not using or a delay in its use.\textsuperscript{69}

In many circumstances, EMT basics will be the first to arrive on the scene in an emergency vehicle and the expectation by an individual having a food reaction that help is here may be, unfortunately, incorrect. Dr. John Brennan, the emergency medical system chair for the American College of Emergency Physicians says that the nation’s emergency response system has fallen out of date and that the laws need to be changed.\textsuperscript{66} Rules, regulations, and standards governing Emergency Medical Services are developed at the state level and vary from state to state.\textsuperscript{67} Some physicians say that the restriction on EMT’s may be preventing them from saving thousands of other lives.\textsuperscript{66}

In November 1999, 12 year old Kristine Kastner of Mercer Island, Washington accidentally ingested peanut fragments in a cookie and had an anaphylactic reaction. Her mother tried to give her an injection, but the EpiPen\textsuperscript{®} malfunctioned and the mother called 911. The mother told the dispatcher twice that her daughter was having trouble breathing and that she needed epinephrine. Under the Seattle system, EMT’s respond to most aid calls and paramedics come later. The first EMT arrived within five minutes, but without epinephrine. The second EMT arrived two minutes later, also without epinephrine. To the mother of the child it was a nightmare. The EMT’s radioed the paramedics who were on their way from another town and they arrived eight minutes after the first EMTs.\textsuperscript{66} Kristine’s heart had stopped and she died 45 minutes after biting into a chocolate chip cookie containing finely chopped peanuts.\textsuperscript{69}
The state of Washington instituted the Kristine Kastner Act on January 1, 2000 allowing all EMT’s to carry epinephrine and be trained on how to administer the medication. Only 18 days after the law went into effect, a woman in Kirkland, Washington survived a life-threatening allergic reaction because the EMT that responded to her call carried epinephrine and he was trained on how to use it.⁶⁹

- **Connecticut Public Act No. 00-135**

  On January 1, 2001 Connecticut Public Act No. 00-135 for Substitute House Bill No. 5792 went in to effect. Prior to this act, Connecticut only allowed paramedics to carry and administer epinephrine. This act allows any EMT in Connecticut who has been trained, in accordance with national standards, in the administration of epinephrine using automatic prefilled cartridges (such as an EpiPen®) to administer such injectors or equipment. The law states that all EMT’s shall receive such training and all licensed or certified ambulances shall be equipped with epinephrine in accordance with written protocols and standing orders of a licensed physician serving as an emergency department director.⁷⁰ Connecticut joined the other ten states that allow all levels of EMT’s to carry epinephrine. There are 14 other states developing regulatory guidelines and the rest (majority) of states do not allow EMT basics to carry or administer epinephrine.⁶⁹
Connecticut General Statutes 52-557b, Standard of Care of Volunteer (Common Law), "Good Samaritan Law:

This statute states that a teacher or other school personnel on school grounds or in the school building or at a school function, who has completed both a course in first aid given by the medical advisor or a licensed physician, who renders emergency care by administration of medication by injection to a person shall not be liable for civil damages for any injuries that result. This immunity does not apply to acts or omissions constituting gross negligence. This provision does not require any teacher or other school personnel to render emergency first aid or administer medication by injection. 71

This very important Connecticut statute allows trained teachers and principals to administer an emergency injection of epinephrine, usually via a self-injectable automatic device such an EpiPen®, to a child who may be experiencing anaphylaxis. School nurses are not always in school buildings and other personnel need to be able to accept responsibility for this life-saving treatment without fear of liability.

Connecticut General Statutes, Section 10-220(a):

Section 10-220(a) describes the duties of boards of education and the administration of medications in schools and at athletic events. This statute allows school nurses who work under the direction of a local or regional board of education to administer medications to students enrolled at the school. In the absence of a school nurse, the principal and any teacher or coach of intramural and interscholastic athletics of a school may administer medications that have been prescribed by a licensed
physician. Also, the school nurse, principal, and/or teacher is not liable for any personal injuries that result from acts of omission or ordinary negligence.\textsuperscript{72}

\textit{Pending Legislation:}

On April 30, 2001 Rep. Nita Lowey (D-NY) announced her Food Allergen Consumer Protection Act, which addresses some of the current problems with food labeling.\textsuperscript{73} This act would take the following measures to protect the health of allergic consumers:

1. Require that food labels list in common language what, if any, of the eight main food allergens are contained in the product.
2. Close the additive loophole by requiring labeling to identify allergens in spices, natural or artificial flavorings, additives, and colorings.
3. Require food manufacturers to have a working telephone information number on food labels.
4. Require manufacturers to better prevent cross contact.
5. Allow the FDA to assess civil penalties against processors and plants in violation.
6. Require the CDC to establish a tracking system for food-allergic related deaths.\textsuperscript{74}

Rep. Lowey feels that voluntary action is not enough and the time has come for federal action. This act is supported by New York State Attorney General Eliot Spitzer.\textsuperscript{74}
The National Association of School Nurses Position Statements:

It is the responsibility of the school nurse to initiate an Individualized Healthcare Plan (IHP) that includes emergency intervention components and avoidance strategies for each child with a documented food allergy. The National Association of School Nurses has several Position Statements that guide nurses in these areas.49

1. Individualized Health Care Plans, (IHP): An IPH is a variation of the nursing care plan, which has been adopted for an individual student. Each student with a relatively complex health condition or a need for modification of the school environment due to a health condition should have an IHP. The school nurse is responsible for writing the IHP in collaboration with the student, family, and health care providers.75

2. Emergency Care Plans for Students with Special Health Care Needs: Students with greater health care needs may be at a greater risk for a medical emergency and a written emergency care plan will promote quality school nursing services. This plan should provide school nurses, school personnel and emergency health care providers with the information needed to provide appropriate care to the child without delay.76

3. Medication Administration in the School Setting: The use of medications at school has increased dramatically over the past few years as the effective use of medication has enabled many children with illness and disability to attend school. The school nurse must ensure that medications are administered safely and effectively according to school policy, nursing standards of practice, and state
nurse practice acts and state laws. School nurses may monitor self-administration of certain medications such as epinephrine and insulin if self-administration is permissible under state law.\textsuperscript{77}

4. Epinephrine Use in Life-Threatening Emergencies: An increasing number of students and of school staff have life-threatening allergies that require early recognition and prompt treatment with injectable epinephrine. Easy access and correct use of epinephrine is necessary to avoid life-threatening complications. The school nurse provides an individual health care plan that includes continuous monitoring, emergency plans, and written evaluation for every student with prescribed epinephrine. State laws pertaining to nursing practice impact the need for protocols or standing orders for episodes of anaphylaxis in students and staff with no previous history of life-threatening allergies.\textsuperscript{78}

5. Out-Of-School Education Field Trips and Camps: All students are entitled to participate in the educational programs even if special accommodations are needed to meet their special health needs. The school nurse needs to be involved in school policy and procedure relating to health issues for out-of-school experiences and some students might require a specific Emergency Health Care Plan to allow participation.\textsuperscript{79}

6. Healthy School Environment: A healthy school environment is safe from physical, chemical, infectious, psychological, and/or natural environmental hazards and students have a right to learn in an environment safe from air pollution, radiation, sound and mechanical stress, chemical exposures, obscure infectious agents, water and food pollution, allergens, and psychological stress.
The school nurse should be an advocate for students and staff and be involved in the development and maintenance of a plan to for a healthy school atmosphere.\textsuperscript{80}

\textit{AAAAI Treatment Guidelines:}

The American Academy of Allergy, Asthma and Immunology (AAAAI) created Position Statement 34 in 2001 to help simplify the management of anaphylaxis for the public. The AAAAI offers treatment guidelines for individuals with food allergy and guidelines for schools and other child-care settings.\textsuperscript{23}

The AAAAI suggests these treatment guidelines for individuals:

- “Avoid the food.” Strict avoidance of the specific foods that trigger allergies is the best treatment.
- "Ask about ingredients." Try to avoid eating “hidden” foods by inquiring about ingredients when eating at restaurants or away from home.
- "Read food labels and become familiar with scientific and technical names for foods"
- " Be prepared for emergencies." Carry and know how to use self-injectable epinephrine if you have experienced a severe food allergy. Wear a medical identification bracelet that describes the allergy and go to an emergency room following an anaphylactic reaction, even if symptoms subside. Also, get follow-up care from an allergist.\textsuperscript{10}
The AAAAI Board of Directors guidelines for schools and other child-care settings include:

- Identification of students with food allergy, take measures to protect them, and be prepared to handle emergencies
- Identification of all students who have been prescribed epinephrine
- Education of school staff regarding the potential severe nature of an allergic reaction and proper treatment of a reaction
- Have epinephrine accessible to all staff in an unlocked area
- Have avoidance strategies in place, the cornerstone of preventing anaphylaxis:
  - staff should learn scientific names of foods and read food ingredients labels
  - "no food or eating utensil trading" rules
  - wash surfaces clean of contaminating foods
  - lesson plans should not use foods such as peanuts
  - handwashing after food handling in lower school levels

The AAAAI also recommends following the guidance of the United States Dietary Association Nutrition Section, “Accommodating Children with Special Dietary Needs in the School Nutrition Programs: Guidance for School Food Service Staff” in regard to preparing special meals of equivalent quality for children who cannot eat the regular meal, if requested by parents. This should occur at no extra charge. The USDA also provides education to food service personnel about cross-contamination of food during handling, preparation, and serving of food. Food that is brought to the school for special occasions should be store bought and have complete ingredient labels.
Older children should carry their own EpiPens® and younger children need to have the epinephrine in their classroom and passed from teacher to teacher as the child moves about the school. All students, regardless of age, need adult supervision when self-administering epinephrine. The severity of the reaction may hamper their ability to self inject. The AAAAI suggests that all individuals entrusted with the care of children be trained in basic first-aid, CPR, and formal training on the use of injectable epinephrine devices. They encourage that all school personnel, school bus drivers, coaches, camp counselors and lifeguards be qualified in these techniques.²³
Chapter Three: Responsibility and Response of Schools

Schools are now faced with managing the medical needs for an increasing number of students with peanut and tree nut allergies who may have potentially life-threatening reactions while they are at school. Principals, teachers, school nurses, parents, and physicians need to provide a team approach to planning school health services and accommodations for children with severe food allergies. Schools need to have guidelines and procedures in place to minimize risks and provide a safe educational environment.

It is not uncommon for school officials and teachers to feel overwhelmed by the responsibility of protecting food allergic students from accidental exposure. A school may not have a full time school nurse or any substitute nurses, it may have large class sizes, and the school may have other students enrolled who have serious medical conditions. Parents may be very frightened that their child’s life could be in danger and studies confirm this possibility.

Food Allergies as a Health Problem in Schools:

A study by Sampson et al., concluded that dangerous anaphylactic reactions to food occur in children and adolescents and the failure to recognize the severity of the reactions and failure to promptly administer epinephrine increases the risk of a fatal outcome.
The study identified 13 students who had fatal or near-fatal food-induced anaphylaxis over a 14-month period. Six children in the study died and the other seven children required intubation. Important commonalities were revealed:

- All the deaths involved children who ingested food at school and who received inappropriate care at school.
- All the students had asthma, considered to be well controlled.
- All the students had a history of food allergy and had accidental ingestion of an allergen.
- Milk, eggs, nuts, peanuts, and fish caused the fatal allergic reactions.
- Of those who died, epinephrine was not administered in a timely manner.
- Of those who survived, epinephrine was given within the first 30 minutes of the onset of symptoms.  

The researchers believe that the frequency of fatal and near-fatal food-induced anaphylactic reactions has risen over the past several years and will continue to rise. They offer these suggestions:

- Epinephrine should be prescribed and kept available to all children and adolescents with IgE-mediated food allergies
- Caretakers should be trained in the administration of epinephrine
- Following a reaction, the individual should be observed for three to four hours at a medical facility capable of managing anaphylaxis
- Evaluation and education of the individual by a knowledgeable physician should take place
Parents of the children should be taught ways of ensuring a rapid response by schools and other public institutions in the event of accidental ingestion.\(^\text{83}\)

The study revealed that four of the six fatalities occurred in schools. The authors concluded that school personnel had a lack of understanding of how to help allergic students and that resulted in a delay in administering epinephrine.\(^\text{83}\)

Avoidance and education are key to preventing anaphylaxis. David Golden, Chair of the AAAAI's Anaphylaxis Committee and a practicing allergist, noted, “Our concern is to get all school staff and classmates to take food allergy seriously, to understand the danger of even tiny amounts of food to a highly sensitive person, and to realize the importance of immediate treatment for reactions, since most life-threatening reactions occur because of carelessness or a delay in giving epinephrine.”\(^\text{84}\)

**Peanut Bans:**

Parents of some food allergic children have insisted that their child’s school ban peanuts and tree nuts all together so the risk of accidental exposure is removed. Some schools, fearful of litigation, have put peanut bans in place. The position of the American Academy of Allergy, Asthma and Immunology (AAAAI) and of the Food Allergy and Anaphylaxis Network (FAAN) is not to support bans.\(^\text{85}\) They feel that bans create a false sense of security that could have disastrous affects because diligence is a key to prevention.\(^\text{82}\) Bans are divisive and a cooperative environment is essential in dealing with food allergies.\(^\text{81}\) There is no way to ensure that no student will ever bring in a food that may contain an offending allergen. Banning one food
may make parents demand the banning of other food allergens such as milk, eggs, and wheat.\textsuperscript{85}

School bans have pitted parents against parents. In North Andover, Massachusetts, a peanut ban created an emotional situation that became a media field day. Some parents said that their child would starve without peanut butter and some parents said that their child might die if exposed to peanut butter. Some parents of children with peanut allergies became so afraid of stigma that they asked to have the allergy information removed from their child’s school health form. In this instance, the procedures that were put into place to protect children actually backfired and put some food-allergic children at risk because they were not identified.\textsuperscript{82}

AAAAI and FAAN recommend that schools clearly identify food allergic students, have medical response plans that include access to epinephrine injections, and have allergenic food avoidance policies in place.\textsuperscript{85}

\textit{Family Responsibility:}

The family should notify the school of their child’s allergy and this should happen in advance of the beginning of the school year so that appropriate procedures can be put into place. They should provide written documentation about the allergy from the pediatrician or allergist and provide prescribed medications along with specific instructions on their use.\textsuperscript{86}

Parents need to educate the child in the self-management of his or her food allergy and in the importance of avoiding the offending allergen(s). The child needs to be taught what foods are safe and what are unsafe, strategies on avoiding exposure to
unsafe foods, the symptoms of an allergic reaction, how and when to tell an adult that they are having an allergic reaction, and how to read food labels (age appropriate). The family must not assume that the school will take on the responsibility of health care. The family must replace used or expired medications and review policies and procedures with the school staff, the child’s physician, and the child after any changes have occurred. The family should work with the school team to develop an Individualized Healthcare Plan (IHP) that accommodates the child’s needs.

**Student Responsibility:**

The student’s responsibility is age related, but they should be taught at a young age not to trade food with others. They should not eat anything with unknown ingredients or foods known to contain any allergen. If a student eats anything they think contains the food they are allergic to, they should notify an adult immediately. Children need to learn to be proactive regarding the care and management food of allergy.

**School Responsibility:**

It is very important that schools are knowledgeable of and follow federal laws (ADA, Section 504, and FERPA), applicable state laws, and districts policies that are applicable to students with documented food allergy. The ADA extended the access rights of Section 504 and private schools and childcare settings are prohibited from discriminating on the basis of disability.
School Treatment Plan:

Schools need to identify students with a diagnosis of food allergy to prevent the risk of anaphylactic reactions. Treatment protocols should be physician prescribed for use in the school environment and the school should be prepared to deal with reactions that occur due to accidental ingestion.\(^{23}\) A core team of the school nurse, teacher, principal, school food service and nutrition manager, and counselor should work with the parents and student to establish a prevention plan.\(^{86}\) All school personnel should be aware of students identified as having a food allergy and of students who have been prescribed injectable epinephrine. Personnel should be instructed about the potential severity and the proper treatment of a food-induced allergic reaction. Aids to identify allergic students include sheets with the child’s name, photograph, specific allergen, warning signs of a reaction, and treatment information.\(^{23}\) These sheets should be easily available as a reference. Medical alert bracelets that indicate the food he or she is allergic to and the treatment for a reaction is another important tool to utilize.\(^ {31}\)

The school should conduct educational programs for the entire staff about the cause and symptoms of food allergy and the use of epinephrine kits such as EpiPen\(^\circledR\).\(^ {87}\) The school should conduct mock emergency drills to assure the efficiency and effectiveness of the plans.\(^ {77}\)

Food Avoidance:

Food avoidance can be achieved in school by having district-wide strategies such
as prohibiting the use of foods that are common allergens. Schools need to eliminate the use of food allergens in allergic student’s meals, educational tools, arts and crafts projects, and as incentives. Projects such as peanut butter and pine cone bird feeders and using peanuts as tools in learning to count should be discontinued. Food should be avoided as a reward system in schools and be replaced with other creative incentives such as stickers and privileges.

Districts can ensure that all school staff have access to a communication device such as a two-way radio to summon emergency help in the school, on the playground, and while on field trips. Districts can also require that only foods with ingredient labels should be brought to school.

Individual needs of students can be met by eating only foods brought to school from home. If a student decides to eat in the cafeteria, the child’s parents should inform the cafeteria staff in writing about foods to be avoided and they should suggest “safe substitutes.”

Schools can provide allergen free tables in the cafeteria (frequently called “peanut-free”), require students to wash their hands after handling offending foods, and require that lunch tables, desktops, and other surfaces be thoroughly washed to remove particles of food such as peanut butter and milk.

Parents can be of great assistance in food avoidance strategies by providing nonperishable treats for their children to have during parties and by conferring with the cafeteria staff regarding the lunch menu and safe and unsafe foods. Parents can also volunteer to be room parents and to chaperone school field trips.
Reading labels on food products is essential to help food allergic individuals avoid an accidental ingestion. However, the scientific and technical language that is often used on food labeling can make that very difficult. An example of this is casein or whey to list milk. “Non-dairy” products can contain mostly egg white, which is the allergic part of egg, and lactoid or lactose-free milk lacks sugar but has the same amount of milk protein. It is important that school staff, especially cafeteria workers, learn all the “code words” for peanuts, nuts, and allergic foods. The FDA is currently addressing food ingredient labeling so that food labels are clear, consistent, and reliable.

School Nurses’ Role:

School nurses play a key role in school management of food allergic reactions. School nurses understand the students’ health care needs as well as the school environment. They collaborate with pediatricians to identify students and to develop a school plan for the prevention of allergic reactions and for the rapid response to anaphylaxis. They are the liaison among the school administration, teachers, auxiliary personnel, parents, students, physicians, and medical advisors in establishing individual food allergy management plans. They collect and communicate information to help ensure the safety of the student while at school.

The nurses collect general medical histories, medical histories specific to food allergy and allergic reactions, descriptions of offending foods, students’ awareness of their allergic condition, and management strategies that have been successful for them. The nurse must review the student's school record, physical examinations, physician
orders, parent authorization forms for medication administration in school, and any other pertinent information. 49

When the data is collected, the school nurse should meet with the 504 team and initiate an Individualized Healthcare Plan, (IHP). The IHP should help protect the child in the classroom, the cafeteria, the playground, during transport, and while on field trips. 5 The nurse is the main coordinator of medical care in the school and she should communicate the medical healthcare plan to appropriate school personnel. 49

School nurses use the National Association of School Nurses Position Papers as a resource to create written emergency plans for each student on an individual basis. The plans should contain telephone numbers for the child’s parents or guardians and the name and number of the primary care provider. The management plan as well as prescribed medications should be available during school hours as well as during after school programs. Treatment or transport of a child requiring medical intervention for an allergic reaction should never be delayed due to the inability of being able to contact a parent or guardian. 31

The basic tenet of school nursing is to recognize potential health problems, to act proactively, and to advocate for the health and safety of all students. The school nurse becomes the advocate, teacher, and team coordinator in the school to protect the health and safety of the student without sacrificing sensitivity, discretion, and dignity involving the student’s food allergy. 88

- Prescribed Epinephrine:

Every student with prescribed epinephrine should have the medication clearly labeled with his or her name and classroom number and school personnel should be
instructed about the location of the epinephrine. The school nurse should coordinate the storage and availability of medication and keep the medication easily accessible to designated school personnel.

School nurses, working in collaboration with the school medical advisor, should train qualified school personnel to administer epinephrine and other medications to treat allergic reactions. Older children may be taught to self-administer their medications if it is permitted by the district policy and state law. State nursing and Good Samaritan Laws should be considered. The emergency medical plan needs to be clear and offer step-by-step instructions on the procedure to be followed so the child receives the appropriate medical care.

The school should work with the district transportation administrator so school bus drivers are trained in symptom awareness and know what to do if an allergic reaction occurs. Schools should recommend that all buses have communication devices in case of an emergency and there should be a “no eating” policy on school buses, except to accommodate special needs. The child’s Individual Healthcare Plan should be reviewed with the student’s parents before each school year, before school trips, or after any change has occurred. Questions and possible treatment strategies need to be discussed with the parent and the child’s physician.

Schools need to follow federal and state laws regarding sharing of medical information in allergic management and the school medical advisor needs to be a part of the decision process.

If accidental ingestion or exposure does occur at school, treatment should be immediately available. The child’s written emergency medical plan should have
instructions from the child’s physician and be signed by the parents. All individuals receiving emergency epinephrine should be transported to a hospital even if the symptoms seem to resolve. An individual may need additional injections of epinephrine after 15-20 minutes, if the symptoms do not improve. An adult should always accompany a child from a school to a hospital with additional epinephrine since not all ambulance personnel are legally able to administer epinephrine.

Policy recommendations by the school medical advisor that provide standing medical orders are a critical component of treating food-induced allergic reactions that occur for known or unknown reactors.

Psychological Impact:

A headline in the New Haven Register on October 27, 2001 read, “Food allergies may foil school parties.” An Associated Press article of February 16, 1999 entitled, “Peanut allergies pit parent against parent in school debate” describes the severe food allergies of an eight year old boy in Ellington, CT. The article quotes one student’s mother as saying, “My child matters too. I don’t think it’s fair to change twenty three kids for one.”

Food allergies are not well understood by many and Anne Munoz-Furlong of FAAN states, “It comes down to: My kid’s life or your kid’s peanut butter sandwich. That’s how divided an issue this can become.” On one side are the parents of children with peanut and tree nut allergies who know that their child is at risk of anaphylaxis and even possible death if they are exposed to these foods. These parents have usually
spent years helping their children avoid allergens and now their children have entered the public school system where every turn may seem like a minefield. On the other side are the parents who feel that their child cannot possibly live without a peanut butter sandwich for lunch and they believe their child is entitled to that right.

The New Haven Register article referred to the Madison, CT school system that confirmed that there are 85-100 children in their school system with severe food allergies, some life threatening. The superintendent of schools in Madison said that different schools in the district handle food allergies differently, there is no uniform policy. He stated that “the number of children with severe food allergies has increased dramatically in the past couple of years and we have a responsibility to them and their families to keep them safe.”

The Madison, CT school district did not abolish school birthday parties, but has suggested that birthdays can be celebrated in ways other than with food.

The situation the Madison, CT school system faced is common to many school districts: the lack of a clear and uniform policy that parents and students can refer to, depend on, and feel comfortable with.

Food-allergic students entering the school system for the first time need the psychological support of the school system. School administrators need to understand that it is not easy living with the threat of anaphylaxis, since it is potentially life-threatening. A school that recognizes the psychological component of food-allergy along with the medical seriousness can help create a positive experience for the student and for the parents.
Schools need to provide education regarding food-allergy to all students and families. This is necessary for medical safety and to help eliminate the misconceptions that can create friction between parents of children with food allergies and parents whose children must have peanut butter sandwiches everyday. School-wide avoidance techniques that affect all students are preferable than an approach that singles out the food-allergic student. Schools with food-allergic students can enlist the assistance of the Parent Teacher Associations and ask them to sponsor a pediatric allergist be a guest speaker. Letters from schools to parents informing them of food-allergic children in the building and asking their cooperation regarding bringing in food to school that may contain potential allergens is another approach. The key is to find a safe balance so schools provide reasonable accommodations in a cooperative manner.

Informational Resources:

The Food Allergy and Anaphylaxis Network (FAAN) was established in 1991 and is a world-wide organization with over 23,000 members that includes families, dietitians, nurses, physicians, school staff, representatives from government agencies, and the food and pharmaceutical industries. The mission of FAAN is to increase public awareness of food allergies and anaphylaxis, to provide education, and to advance research on behalf of those affected by food allergies. FAAN conducts seminars and training sessions on food allergy and anaphylaxis for patients, government officials, industry leaders, and other policy makers. FAAN is an advocate on policy in such areas as food labeling, schools, emergency medical services, camps, restaurants, and airlines. FAAN supports and participates in research studies focusing
on the epidemiology of food allergy and it serves as a link between the patient and others. 92

FAAN is also a founding member of the Food Allergy and Anaphylaxis Alliance (FAAA) which is an alliance of patient education groups around the world whose mission is to unite similar organizations in order to exchange information and advance key issues of importance related to food allergy and anaphylaxis. 92

The medical advisory group for FAAN includes leaders in food allergy research in the United States such as S. Allan Bock, Hugh A. Sampson, Scott H. Schierer, Robert A. Wood, and in Connecticut, James P. Rosen. 92

FAAN offers written materials to help solve the day-to-day problems faced by individuals with food allergies, a bimonthly publication called Food Allergy News, tips for assistance with shopping and cooking, educational materials for schools and camps, and training tools for education of everyone from the school nurse to the baby sitter. 92

There are special educational resources for teens, FANTEEN, and for children, PAL. Books and videos are offered as teaching tools that make education about food allergies fun for children. FAAN offers an annual conference and sponsors Food Allergy Awareness Week. This is a national awareness campaign created by FAAN to educate and spread awareness about food allergy. The campaign is designed to reach out to the general public, medical professionals, schools, the food industry, and to government officials. 92

The issue of food-allergy in schools is a major focus for FAAN because they feel it is critical that schools have their staff properly trained in recognizing the
symptoms of food allergy and that the staff knows what to do in an emergency. In 2000, FAAN created the free *Special Edition of the School Food Allergy Program* for parents and school staff. This program, which is funded by a grant, helps school administrators safely and successfully manage food-allergic children. It includes information on medical and legal issues, provides a model program that includes sample forms, and includes separate sections for the school principal, nurse, teacher, food service staff, and parents. It also includes the video, *Keeping Our Children Safe*, and a video EpiPen® trainer. The package also includes FAAN’s program to educate the friends of children with food allergy, *Be A Pal*. This program teaches children how to recognize a severe food allergy and what to do if one occurs. The Girl Scouts of America have recently included the *Be A Pal Patch* to their list of patches that girl scouts can work towards. A new program, *Friends Helping Friends: Make it Your Goal!* is directed toward educating non-food allergic middle-school age children about food allergy and this program includes a video featuring NHL hockey star Tom Poti of the Edmonton Oilers. The video combines education with “real-life” stories and Tom Poti discusses his own allergy to peanuts and other foods.

This comprehensive, multimedia program contains a binder of more than 100 pages of information and standardized forms that are being used by thousands of schools across the country to manage food-allergic students. Parents of food-allergic children and school officials are invited to nominate the school of their choice for a free copy of this special program. FAAN is available on the Internet at [www.foodallergy.org](http://www.foodallergy.org).
FAAN recognizes the fact that most fatalities due to food anaphylaxis occur in adolescents and young adults and that most of these fatalities occur outside of the home. FAAN publishes a bi-monthly newsletter for teens that is distributed via e-mail called Food Allergy News for Teens. FAAN also makes available, A College Guide for Students with Food Allergies: It’s Not All Pizza and Ice Cream and “Food Allergies: Fact or Fiction”, a video designed to help teens manage their food allergy.

FAAN is an advocate of having epinephrine available in emergency situations in all states. They offer a 20-minute video entitled Epinephrine in Allergic Emergencies that is designed to educate EMT basics on how to recognize and treat anaphylaxis. It presents real-life experiences from EMT’s, emergency room physicians, allergists, and patients. The video includes a training session and an EpiPen® trainer is included with this program.

The Food Allergy Initiative (FAI) is a non-profit organization that was founded to raise funds toward the effective treatment and cure for food allergies. This organization is dedicated to a strategic, comprehensive and multi-disciplinary approach to food allergies. FAI invests in clinical research, provides grants, and raises public awareness about the seriousness of food allergies. FAI works as an advocate to implement public policy. Currently, food induced anaphylaxis is not mandated as reportable event by the Center for Disease Control (CDC) and FAI is working toward having this policy revised. The data from clinical research that FAI supports affects how schools respond to students with food allergy. FAI provided the educational grants for FAAN to produce an educational video for restaurants and for school nurses
around the country to receive free copies of *The Peanut Butter Jam*, a book that educates young students about food allergies.\(^3\)

FAI is working with U.S. Senator Edward Kennedy and Congresswoman Nita Lowey to develop and pass comprehensive food labeling legislation and FAI is committed to financial support of food allergy research in the hope of finding a cure.\(^3\)


**Other organizations** that are important resources for children with food allergies, parents of children with food allergies, schools and educators include:

1. American Academy of Allergy, Asthma, and Immunology
2. National Institute of Allergy and Infectious Disease
3. Anaphylaxis Network of Canada
4. Allergy Awareness Association, New Zealand
5. The Anaphylaxis Campaign, Ireland
6. Federal Drug Administration
7. United States Dietary Association
8. The Elliot and Roslyn Jaffe Food Allergy Institute, Mount Sinai School of Medicine
9. Johns Hopkins School of Medicine, Eudowood Division of Pediatric Allergy and Immunology
Recommendations:

Peanut and tree nut allergies are a public health problem that is not being properly addressed by society. There are no federal or state laws that address ways to manage the problem in industry, schools, or public places. Individuals, mostly children, are left in the precarious position of being at risk for possible anaphylaxis when they eat food that is not made in their own homes.

Schools find themselves being responsible for the health and safety of food-allergic students, but they have few procedures and guidelines to follow. School nurses are the medical resource at most schools and they need the support of the school medical advisor, the Board of Education, the superintendent of schools, the principal, and the nurse supervisor. If there is not a written procedure to follow, many different opinions could cause a lack of consistency and appropriate medical care could be compromised.

The most important issue that needs to be addressed regarding food allergy is education. Education needs to be increased at all levels. Physicians, nurses, EMT’s, school staff, individuals with food allergy, and the general public need to know about the life-threatening risk of food-induced anaphylaxis and how to treat it. Many new studies have revealed new information that affects schools and the treatment of food-allergy in schools and this information needs to be disseminated.

Education regarding the use of epinephrine and how to actually administer an EpiPen® is very important. School nurses are usually responsible for doing this. They
need to help non-medical individuals get past "needle phobia" and gain a comfort level in handling an EpiPen® so that if an emergency situation arises they will not hesitate to administer the medication because they are afraid to. EpiPen® trainers are available from FAAN along with a trainer video.

Avoidance of food allergens is another critical area that needs more attention. The FDA has made food allergy a priority, but the food industry is reluctant to conform to all the recommendations regarding ingredient labeling. Federal regulations that mandate accurate labeling and mandate industry procedures that prevent cross-contamination could be more effective than voluntary guidelines. The large increase in food recalls due to allergens in foods that are not defined on the ingredient labels indicates the need for legislation.

Avoidance in schools should be a priority, with all schools following the same guidelines. The AAAAI offers reasonable suggestions that are easy to implement and offer protection for food-allergic students. Unfortunately, schools are not all following the same procedures, some schools are proactive and other schools are resistant to implement standardized procedures.

I believe that all students should be equally protected from food allergens while they are in school and to do this I think there should be a statewide policy that all schools would need to follow. A statewide policy would eliminate the risk of schools not following the ADA specifications or Section 504 guidelines that legally protect food-allergic students. Parents of children could feel some assurance that a plan is in place to protect their child from accidental ingestion of a food allergen while they are at school.
A statewide policy should take advantage of the Food Allergy and Anaphylaxis Network and the information that they make available to schools. Many schools already use the free, *Special Edition of the School Food Allergy Program* to help manage the needs of food-allergic children. This is a complete and up-to-date resource that offers a model program, educational material, and many other tools.

A national standard on the administration of epinephrine by EMT's also needs to be considered. The majority of states do not allow EMT's to administer any medications, including epinephrine. If a small child is allowed to carry the medication and is taught to self-administer epinephrine, than it is only logical that EMT's should all receive instruction on it's use and it's administration in life-threatening emergencies. No other state should wait to enact this law until another unnecessary death of an individual. All states need to follow the leadership of the state of Washington following the death of Kristine Kastner.

Emergency room care needs to be improved regarding food-allergy treatment. No individual should leave an emergency room following a severe reaction without a prescription for epinephrine, instruction on its use, and recommendations for follow up care with a board-certified allergist. Education of emergency room personnel needs to focus on preventive care to avoid possible anaphylaxis and death. This begins with educating emergency room directors and encouraging them to educate their staff on the appropriate treatment guidelines, appropriate coding of food-induced anaphylaxis, and appropriate respect for the statistics of food-induced severe reactions.

Finally, the CDC needs to recognize food-allergy death as a reportable event so that more accurate information can lead to better treatment. Research for finding a
treatment and possible cure needs to be supported. The FAI is a leader in research support, but much more needs to be done.
REFERENCES


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