

Managing Food Allergies in Schools and Camps

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KEYWORDS

• Food allergies • School • Camp • Food allergy action plan

Managing food allergies in schools and camps involves a community approach. The goal is to create a safe environment that still allows for maximal growth and development of the food-allergic child. The process involves building a supportive structure based on education and planning and then dismantling the more restrictive components through constant revision. The product is an individualized strategy that not only meets the needs of a food-allergic child but also supports the development of a food-allergic adolescent.

THE PRESCHOOL-AGED FOOD-ALLERGIC CHILD

By the time the child reaches preschool age, most families and caregivers have a constructed a significant protective structure around their food-allergic child to prevent food exposures at home, and to a lesser extent at the homes of family and friends. The thought of sending a food-allergic child to preschool or day camp without their carefully orchestrated plans is daunting to most parents. Families are very anxious about the child's safety¹ although the level of anxiety is not necessarily related to the severity of previous reactions, the need to treat with epinephrine, or a food allergy-related hospital admission.² Despite the fact that many families of food-allergic children would prefer a food-free (or at least, allergen-free) preschool situation, a realistic goal is to create a safe environment. The key is to implement the necessary structure and restrictions to balance safety with a situation that allows for growth and development. The structure should include both preventive strategies and food allergy emergency treatment plans. The preventive plans may include more restrictive techniques such as peanut-free policies and/or allergen-free tables. The level of restriction should reflect the personality and the developmental stage of the food-allergic child.

Preschool-aged children are prone developmentally to food sharing and messy eating behaviors. Many exhibit hand-to-mouth activities, all of which put them at

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risk for inadvertent ingestion exposures. Creating a safe environment for preschool-aged food-allergic children starts with prevention techniques, such as appropriate avoidance measures, proper cleaning techniques, and a “No Food Sharing” policy. Most of the avoidance effort should focus on preventing allergen ingestion because the largest “risk” to any food-allergic individual is actually consuming an allergenic food. Details of avoidance measures including label reading and prevention of cross-contamination are discussed in detail elsewhere in this issue in the article by Kim and Sicherer. In general, any food consumed by a food-allergic child needs to be pre-approved or provided by the family of the food-allergic child, or checked by a caregiver well versed in food label reading and preparation. A shared cookie can circumvent all of the layers of pre-approval and planning, necessitating a “No Food Sharing” policy. This policy ideally should include all children, not only the food-allergic child. Planning also should include a contingency plan for impromptu “special treats” that may appear in a classroom at birthdays as well as the potential consumption of “nonfood items.” For example, there is wheat in molding clay and egg in certain finger paints, and preschool-aged children may ingest these “nonfood items” during an art project.

Proper cleaning is another important part of the prevention strategy. Cleaning policies should reflect the evidence-based research on allergen removal. Food allergens can be effectively removed from eating surfaces with household cleaners such as soap and water, sanitizing wipes, and spray cleaners, using usual cleaning techniques. Allergens can also be removed from hands using soap and water or wipes.³ Therefore, foods can be prepared and served in a safe manner using proper cleaning and hand-washing procedures. It is noteworthy that hand sanitizers such as antibacterial gels are not effective at removing allergens,³ which means that for the purpose of “allergy cleaning,” use of hand sanitizer is not an acceptable alternative to hand washing. Areas where children eat or play with must be properly cleaned before and after eating, and proper hand washing needs to be enforced.

Creating a safe environment also includes having people and plans to recognize a food-allergic reaction and initiate a treatment plan. In the event of a food allergy reaction, everyone responsible for the food-allergic child needs to be able to respond appropriately. Written food allergy emergency treatment plans include specific instructions on symptom recognition and treatment. Because it is not possible to predict the severity of a reaction based on a previous reaction,⁴ it is prudent to prepare for a severe event. As shown in **Fig. 1**, a Food Allergy Action Plan lists potential symptoms matched with appropriate treatment including medications, doses, and monitoring plans.

Many preschool programs choose to implement “Peanut-Free” or “Peanut/Tree Nut-Free” policies. These food bans take several different forms, from allergen-safe tables in the cafeteria to school-wide, food-specific bans. There is evidence that school-wide “peanut-free guidelines” are successful in decreasing the amount of peanut present in lunches brought from home,⁵ but it is not clear that the allergen-free guidelines actually result in fewer allergen exposures.⁶ There is no agreement on the effectiveness or need for food bans (**Table 1**). In general, food bans and allergen-free seating may be helpful in preschool and early elementary school children, but are generally not necessary in upper elementary school-aged children.⁶

It is clear that it is not feasible to eliminate all allergenic foods from public venues including preschools, schools, and camps. The most commonsense approach to allergen avoidance is to tailor the allergen avoidance plan to the developmental age of the child. Most of the responsibility for establishing and maintaining a safe

environment for the preschool-aged child obviously lies with the adults, but preschool-aged children can actively participate in managing their food allergy. These children can learn not to accept food from peers, and can be taught that not all foods are “safe.” Although it is impossible to attain an allergen-free environment, a written food allergy emergency treatment plan, an increase in allergen awareness combined with hand washing, cleaning of eating surfaces, and high levels of supervision to prevent food sharing all work together to create a safe environment. Most of these measures also have a high level of “buy-in” from both allergic and nonallergic families. After all, everyone wants their children to have adequate supervision, clean hands, and a clean table when they eat.

SCHOOL-AGED CHILDREN

During the late preschool and early school years, children are more verbal and can follow rules such as “no sharing of food.” As children and their peers develop an understanding of the potential implications of a food allergy diagnosis, a safe environment no longer requires the highly restrictive controls that were appropriate at the preschool level. Camp and school environments offer food-allergic children an opportunity to practice food allergy management skills. Involving children in the process of developing a plan for lunch, for a school field trip, or including them in the discussions about choosing a camp promotes shared responsibility. Children who observe this type of adaptive behavior are more likely to be ready to assume self-management.¹ Children who adopt a negative attitude that focuses on limitations imposed by their food allergy are more likely to be distressed by their food allergy as compared with children who adopt a positive perspective that focuses on strengths and coping strategies.⁷ Children can become overwhelmed by the process or the lack of coping demonstrated by the adults in their life. Negative parental attitudes toward food allergy and maternal anxiety are related to greater child anxiety.⁷ Children who have been “programmed to be anxious” by the adults in their lives have a level of anxiety surrounding their food allergy that is not concordant with the severity of their food allergy or frequency of reactions.² Some amount of caution is of course necessary to maintain vigilance. However, maladaptive behavior such as overresponding to perceived risk or anxiety that interferes with activity should be addressed with a health care professional.⁷

As with preschool-aged children, growth and development issues have to be balanced with safety. School-aged children do not need the same level of supervision and restriction as preschool-aged children, but they are not ready to manage their food allergies on their own. Most school-aged kids know and can follow the rules to avoid most food allergen exposures, but they still need support and supervision. Some parents are apprehensive about moving their food-allergic child from the relatively contained environment of preschool to the larger, more chaotic, less controlled environment of school. Everyone realizes that the plan that worked for the 2-hours-a-day, 3-days-a-week, preschool program is completely inadequate for the 5-days-a-week, day-long demands of kindergarten.

One of the revisions to the safety structure as children transition from preschool to school is the relaxing of food bans, allergen-free tables, and hand washing. At some point, having the entire student population wash up after lunch or snacks becomes an unrealistic expectation and having a food-allergic child sit at the “allergy table” becomes onerous. As children and their peers develop impulse control and understand the rationale for allergen avoidance, allowing food-allergic children to sit with their friends and supportive peers is much less socially isolating. One of the obvious concerns is that the lack of hand washing and sharing of table space will result in

Food Allergy Action Plan

Name: _____ D.O.B.: ____ / ____ / ____

Allergy to: _____

Weight: _____ lbs. Asthma: ☐ Yes (higher risk for a severe reaction) ☐ No

Place Student's Picture Here

Extremely reactive to the following foods: _____

THEREFORE:

☐ If checked, give epinephrine immediately for ANY symptoms if the allergen was *likely* eaten.

☐ If checked, give epinephrine immediately if the allergen was *definitely* eaten, even if no symptoms are noted.

Any SEVERE SYMPTOMS after suspected or known ingestion:

One or more of the following:

LUNG: Short of breath, wheeze, repetitive cough

HEART: Pale, blue, faint, weak pulse, dizzy, confused

THROAT: Tight, hoarse, trouble breathing/swallowing

MOUTH: Obstructive swelling (tongue and/or lips)

SKIN: Many hives over body

Or **combination** of symptoms from different body areas:

SKIN: Hives, itchy rashes, swelling (e.g., eyes, lips)

GUT: Vomiting, crampy pain

MILD SYMPTOMS ONLY:

MOUTH: Itchy mouth

SKIN: A few hives around mouth/face, mild itch

GUT: Mild nausea/discomfort

1. INJECT EPINEPHRINE IMMEDIATELY

2. Call 911

3. Begin monitoring (see box below)

4. Give additional medications:*

-Antihistamine

-Inhaler (bronchodilator) if asthma

*Antihistamines & inhalers/bronchodilators are not to be depended upon to treat a severe reaction (anaphylaxis). USE EPINEPHRINE.

1. GIVE ANTIHISTAMINE

2. Stay with student; alert healthcare professionals and parent

3. If symptoms progress (see above), USE EPINEPHRINE

4. Begin monitoring (see box below)

Medications/Doses

Epinephrine (brand and dose): _____

Antihistamine (brand and dose): _____

Other (e.g., inhaler-bronchodilator if asthmatic): _____

Monitoring

Stay with student; alert healthcare professionals and parent. Tell rescue squad epinephrine was given; request an ambulance with epinephrine. Note time when epinephrine was administered. A second dose of epinephrine can be given 5 minutes or more after the first if symptoms persist or recur. For a severe reaction, consider keeping student lying on back with legs raised. Treat student even if parents cannot be reached. See back/attached for auto-injection technique.

Parent/Guardian Signature _____ Date _____

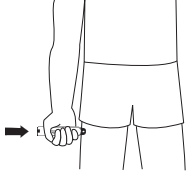
Physician/Healthcare Provider Signature _____ Date _____

TURN FORM OVER

Form provided courtesy of FAAN (www.foodallergy.org) 7/2010

Fig. 1. Food Allergy and Anaphylaxis Network food allergy action plan. Copyright © The Food Allergy and Anaphylaxis Network. Reprinted with permission. Available at: <http://www.foodallergy.org/files/FAAP.pdf>.

a “casual exposure” significant enough to cause a systemic reaction. The current research of casual types of exposures have focused on people with peanut allergy because peanut is a food staple in many nonallergic diets, peanut allergy is one of the most prevalent food allergies, and this allergy is responsible for more severe reactions than any other food.^{4,8} One study looked at the amount of peanut protein present in samples collected from lunch tables, water fountains, desks, and food preparation areas in 6 different schools. None of the eating areas, food preparation areas, or desks had detectable peanut protein. In that same study, researchers tried to detect peanut protein in the air under several different conditions, including by an open peanut butter

EpiPen Auto-Injector and EpiPen Jr Auto-Injector Directions - First, remove the EpiPen Auto-Injector from the plastic carrying case - Pull off the blue safety release cap  - Hold orange tip near outer thigh (always apply to thigh)  - Swing and firmly push orange tip against outer thigh. Hold on thigh for approximately 10 seconds. Remove the EpiPen Auto-Injector and massage the area for 10 more seconds  DEI™ and the Day logo, EpiPen™, EpiPen 2-Pak™, and EpiPen Jr 2-Pak™ are registered trademarks of Day Pharma, L.P.	Twinject® 0.3 mg and Twinject® 0.15 mg Directions  Remove caps labeled "1" and "2." Place rounded tip against outer thigh, press down hard until needle penetrates. Hold for 10 seconds, then remove. SECOND DOSE ADMINISTRATION: If symptoms don't improve after 10 minutes, administer second dose: Unscrew rounded tip. Pull syringe from barrel by holding blue collar at needle base. Slide yellow collar off plunger. Put needle into thigh through skin, push plunger down all the way, and remove.   
Adrenaclick™ 0.3 mg and Adrenaclick™ 0.15 mg Directions  Remove GREY caps labeled "1" and "2." Place RED rounded tip against outer thigh, press down hard until needle penetrates. Hold for 10 seconds, then remove. 	A food allergy response kit should contain at least two doses of epinephrine, other medications as noted by the student's physician, and a copy of this Food Allergy Action Plan. A kit must accompany the student if he/she is off school grounds (i.e., field trip).

Contacts

Call 911 (Rescue squad: () -) Doctor: _____
 Parent/Guardian: _____

Phone: () - _____
 Phone: () - _____

Other Emergency Contacts

Name/Relationship: _____
 Name/Relationship: _____

Phone: () - _____
 Phone: () - _____

Form provided courtesy of FAAN (www.foodallergy.org) 7/2010

Fig. 1. (continued)

jar and while nonallergic subjects ate peanut butter and jelly sandwiches. Airborne peanut protein was not detectable.³ When peanut-allergic children, many of whom had reported reactions to inhaled peanut, were purposely exposed to inhaled peanut fumes, none of the children experienced a respiratory or systemic reaction.⁹ Other studies have looked at reactions in children with known peanut sensitivity who had peanut butter applied directly to their skin. It turns out that the skin is a fairly effective barrier. None of the children experienced a systemic reaction, even those who developed a rash at the site where the peanut protein was applied.^{9,10} The consensus is that

Table 1 Pro/con food bans	
PRO	CON
"Loaded Gun" argument: reduce the chance of exposure	"No peanut detectors" to enforce food bans
Young children cannot bear responsibility of avoiding allergens	Causes an undue burden on children without a peanut allergy
Food contamination of shared equipment resulting in contact exposures	"Slippery Slope" argument: if you ban peanuts, why not ban other allergy foods
Food sharing is a common behavior in children	"False Sense of Security" argument
School bullying difficult to control	Schools should prepare students for the "real world"
"Community responsibility" approach to safety	Feelings of divisiveness

Adapted from Young MC, Munoz-Furlong A, Sicherer SH. Management of food allergies in school: a perspective for allergists. *J Allergy Clin Immunol* 2009;124(2):178; with permission.

90% of highly peanut-allergic children would not experience a systemic or respiratory reaction with "casual contact" to peanut.⁹ The lack of evidence to support measurable amounts of allergens from casual exposures does not negate a common sense approach to allergen avoidance. Activities that involve allergenic foods (eg, peanut butter bird feeders, wheat-containing modeling clay, using pudding as finger paint, churning butter, using peanuts in the classroom as a counting aid) should not technically involve food ingestion, but putting food-allergic children in such a situation lacks common sense.

Another repercussion of the transition from preschool to school is the issue of bullying. Bullying behavior has become a major concern in school-aged children. Bullying behaviors include "direct bullying" such as verbal abuse or physical aggression, and "relational victimization" such as intentionally excluding someone or targeting someone as a scapegoat.¹¹ "Cyber bullying" is a relatively new phenomenon that includes threatening behaviors and behaviors that are meant to embarrass or socially exclude someone through e-mail, cell phone or text messages, Twitter, Facebook, and Internet sites.¹² The actual number of kids who are bullied is uncertain, but it is clear that children with food allergies are not immune to bullying behavior.¹³ Bullying behaviors in the school setting should be addressed directly with school officials, as many schools have antibullying policies. In addition, parents need to be aware of the role of electronic technology in cyber bullying.¹²

It is clear that camp facilities and schools need comprehensive plans for managing food allergies in community settings. The Food Allergy and Anaphylaxis Network developed a set of guidelines useful in creating plans (Available at <http://www.foodallergy.org/page/school-guidelines-for-managing-students-with-food-allergies>). To date, 12 US states have adopted statewide guidelines to establish standards of care and current best practices. These guidelines are to meant assist local school systems in developing policies and procedures to provide consistent and safe care to food-allergic students. A current listing on the State guidelines is available at <http://www.foodallergy.org/page/statewideguidelines-for-schools>. The existing guidelines and policies are used as a framework to create an Individualized Health Care Plan (IHCP). According to the US National Association of School Nurses Position Statement, the IHCP is to specify the health care services required for students who have health

care needs that “affect or have the potential to affect safe and optimal school attendance and academic performance.” These written plans are developed collaboratively by the school nurse with input from the student, family, health care providers, and school staff. IHCPs are used to manage the potential risks associated with food allergy, to facilitate communication, and to coordinate and evaluate the care specified. The plans are dynamic documents that are meant to be evaluated and revised (as appropriate) on a yearly basis. The IHCP should include plans for allergen avoidance measures that focus on ingestion prevention and noningestion-type exposures that have the potential to expose food-allergic individuals to significant amounts of allergens. Because it is impossible to eliminate the potential risk of an allergen exposure, IHCPs need to specify food allergy emergency actions in the classroom, cafeteria, gymnasium, and playground, on field trips, and for extracurricular events; epinephrine administration and storage; student self-carrying of medications; emergency medical system activation; and transportation issues.

Some situations require more than an IHCP. Section 504 of the US Rehabilitation Act of 1973 is a piece of civil rights law that prohibits discrimination against individuals with disabilities in public and private programs and activities that receive financial assistance from the federal government. The Americans with Disabilities Act (ADA) prohibits discrimination against individuals with disabilities (including food allergy) and extends this protection to the full range of state and local government services, programs, or activities regardless of whether they receive federal assistance. In general, 504 Plans are used when food allergy discrimination has the potential to affect a food-allergic student's education. 504 Plans are legal documents with the backing of the US Department of Education, Office of Civil Rights.

Several other countries support the goals of The Food Allergy and Anaphylaxis Alliance to promote country-specific guidelines and policies to manage students with food allergy in schools and other child care settings. Countries including Sweden, China, Italy, Germany, Israel, New Zealand, The Netherlands, and Japan have food allergy management, education, and anaphylaxis forms available in many different languages (available at <http://www.FoodAllergyAlliance.org>). Anaphylaxis Canada (available at <http://www.anaphylaxis.ca>) has a resource section for schools that details a “Safe4kids” program, which includes sample policies, a Handbook for School Boards, and Anaphylaxis Alert Forms. The Quebec Food Allergy Association (available at <http://www.aqaa.qc.ca/accueil.asp>) provides similar information, guidance, and forms in French. The Department of Education and Skills in the United Kingdom has published a document *Managing Medicines in Schools and Early Years Settings* (available at <http://www.anaphylaxis.org.uk/information/Schools/information-for-schools.aspx>), which delineates the roles of local authorities, health trusts, and schools to create policies that support children with medical needs.

Even with the best avoidance plan in place, food-allergic reactions inevitably happen. In one study of food-allergic reactions in schools and preschools, close to 20% of the children experienced a food-allergic reaction in the school setting.¹⁴ Plans are only as good as their implementation, and there are multiple cases of deficient plans or plans written and not followed in food-allergic emergencies.^{6,15} The school needs time to write, revise, and initiate the plan. Frequently some amount of training is necessary. School nurses and teachers are not usually available in the summer, and trying to initiate a meeting and write a plan in the weeks before the school year can be challenging. The conversation about a written food allergy plan needs to be initiated well in advance of the school year. Therefore, it is suggested that food-allergic families need to plan to meet with the school nurse and school administration before everyone leaves for the summer holiday. A second meeting before the school

year begins is helpful to ensure that training is completed, medications are in place, and the plan is clear before the food-allergic child walks through the door. It is important that plans are in place before the school year starts. Imagine the potential disaster if an uninformed teacher promises the class a sundae bar or pizza day as a reward for project completion and then has to pull the plug because of a student's food allergy.

Camps and their staff need access to the same type of information that goes into preparing an IHCP. According to the Food Allergy and Anaphylaxis Network's Guidelines for Managing Food Allergies at Camp (available at <http://www.foodallergy.org/section/guidelines>), families should inform the camp director of the food allergies early in the process in order to give the camp time to hire and/or train appropriate personnel. As with schools, all of the people who will be responsible for the food-allergic child need to be aware of the food allergy and the proper steps to avoid food allergy reactions, as well as how to respond in the event of a food-related reaction.

As children enter late elementary and middle school years, they need to build on their management skills with the goal of progressing toward independence. At this age, children should be responsible enough to self-carry auto-injectors and make appropriate food choices outside the home setting. Many food-allergic children are ready to self-administer epinephrine by age 8 or 10 years. By age 12 or 13, children need to be well on their way to recognizing symptoms and initiating a food allergy emergency treatment plan, including self-administration of epinephrine. These skills need to be in place before food-allergic children can attain the independence they desire in the teenage years.

TEENAGED FOOD-ALLERGIC INDIVIDUALS

The teenage years can be challenging. After all, being a teen or young adult is one of the risk factors of death from food-induced anaphylaxis (Box 1).¹⁶ During this time of transition adolescents spend more of their time with friends, exploring their independence, and taking risk. The development of this peer network is an important goal of adolescence. The support from friends is important in protecting adolescents from bullying. High levels of support from friends seem to have a protective effect from the negative impact of bullying behaviors.¹¹ However, the very same peer group can put negative pressure on adolescent behavior. Adolescents and young adults are more concerned about fitting in with their peer group than with having a food-

Box 1
Risk factors for fatal anaphylaxis
Teen or young adult
Asthma
Peanut, tree nut, or seafood allergy
Delay in administration of epinephrine
Eating restaurant food
Reactions that do not involve skin symptoms
Denying symptoms
Concurrent intake of alcohol
Reliance on oral antihistamines to treat symptoms of anaphylaxis
Lack of reaction management education from health care providers

allergic reaction, and they balance safety with quality of life issues.¹⁷ Because teens have a poor perception of their health needs and a sense of invulnerability,¹⁸ they can make bad decisions. In one study of food-allergic adolescents and young adults, more than half of the adolescents reported trying a food that they knew contained a known allergen.¹⁹ In another study, a majority of teens reported checking food labels only on “new” foods and routinely trying foods that likely contain food allergens.¹³ Teens and college-aged students report trying food allergens despite a history of anaphylaxis.¹⁸

Even when they know what the “right” or expected behavior should be, teens will still balance safety with convenience. When asked about carrying self-injectable epinephrine, two-thirds reported carrying epinephrine “at all times.” This same group actually had epinephrine available mainly during times of travel or eating out and not during social events like parties and dances or sport events, or when carrying the epinephrine was inconvenient because of tight clothing.¹⁹ A study of food-allergic college-age individuals showed an alarmingly low number of young adults who had self-injectable epinephrine available on campus.¹⁸

By the time food-allergic children reach high school, the structure of the food allergy management plan has been condensed to a few vital parts consisting of education and support. Teens need appropriate knowledge about their food allergy and potential implications, because they will use the available information to assess the risk and make informed decisions.¹⁷ In addition, teens want their peers to know about food allergy and they identify classmates, friends, and teachers as the “most needy group” for education.¹⁹ It is obvious that sharing specific information on a teen’s food allergy with the entire school or camp would likely be viewed as an invasion of privacy by the teen. However, teens want their peers to know about the potential seriousness of food-allergic reactions,¹³ and sharing general information about food allergen avoidance, symptom recognition, and emergency plans helps establish a social safety net at school, at camp, and in other social situations. There are Web sites maintained by groups such as the Food Allergy and Anaphylaxis Network that are specifically designed for food-allergic teens (<http://www.fanteen.org>). These social networking sites give teens an opportunity to share their experiences and learn about food allergies from their peers.

Teens also need healthy, adaptive coping, planning, and food allergy management skills that they can take into adulthood.¹⁷ These skills are developed over time, with support and practice in an environment where the teens feel as though they can succeed. The school environment and camp experience lend themselves to practicing skills that teens need. By the time teens reach high school, they should be mastering the ability to make safe food selections in a variety of settings. These teens should be active participants in the conversation with the school cafeteria or the camp kitchen staff, and should also begin practicing the “art of compromise.” For example, if a teen wants to attend a school-related social event, is the parent going to contact the organizers to check for safe foods, or is the teen? If the teen chooses not to check the venue for safe foods, then is the teen going to bring his or her own safe foods? If bringing food is not an acceptable option and eating out of a common bowl is unacceptable, then the teen could agree to attend the event but not eat. Encouraging active participation allows the teen to practice planning and adaptive behaviors, fosters independence, and addresses the dreaded awkward social situation that a food reaction can cause.

Managing food allergy in any setting involves education and a team to establish and maintain a safe environment with food-allergic individuals. The process should create a dynamic structure that evolves as food-allergic individuals acquire confidence in their knowledge, and an ability to manage their food allergy and become self-sufficient. The ultimate goal is a support system that transitions the very young

food-allergic child through age-appropriate developmental stages and culminates in an empowered food-allergic individual.

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