Food allergies can be life-threatening, and affect up to 8% of US children. Nearly 25% of reactions requiring epinephrine had no prior history of life-threatening allergy. Although deaths from food allergies are generally preventable and rare, food allergy fatalities happen — even in US schools. The school setting poses challenges and requires extensive preparation and education to ensure appropriate food allergy management, and supportive school communities. Unlike many other chronic medical conditions, food allergies require interventions that not only impact the patient, but also their peers. Food allergies have a very real emotional impact on children and have been associated with an increase in bullying, teasing, and harassment.

To this end, pediatricians must protect children with food allergies by ensuring they have full and equal access to the same level of education as their non-allergic peers. Specifically, pediatricians need to provide guidance to school administrators and Boards of Education to safeguard the health of the child with life-threatening allergies and set the tone for a team effort among medical, educational, and family homes. Pediatricians are leaders in bringing the goals of the medical home into schools. In addition to providing action plans and medication to children with food allergy, pediatricians can participate in assisting area schools with creating evidence-based food allergy policies and protocols in order to protect these children.

THE ROLE OF THE PEDIATRICIAN

Community Pediatricians

Community-based pediatricians bridge the gap between the medical and educational home, supply patient-specific prescriptions for epinephrine auto-injectors, and provide education and counseling along with food allergy management plans. The overall goal is to provide practical evidence-based strategies to keep students safe and assist them in maintaining quality of life without needlessly restricting or negatively impacting others.

School Physicians

Many pediatricians also work or volunteer directly or indirectly with schools and play a key role in creating general food allergy policies and practices. These pediatricians help develop nursing protocols, prescribe non–patient-specific stock epinephrine orders that can be used by any student who has a reaction as permitted by state law, and provide education to the entire school community. School physician protocols must safeguard children with life-threatening food allergies in all school settings including: classrooms, cafeterias, buses, gymnasiums, non-core special subject classrooms, clubs, at recess, in theater productions, or on field trips. These protocols can promote effective teamwork among physicians, teachers and students. Advanced planning and effective education can prevent misunderstandings or exclusion of allergic children from any school activity before, during, or after regular school hours.

Allergists

Community and school physicians should also collaborate with allergists for...
both patient-specific as well as general management of food allergies and other life-threatening allergies in school. When allergists partner with the medical home, the family home, and the educational home, the result is more apt to be an optimal medical regimen that accounts for the total child, not just the allergy.

COMPLIANCE WITH REGULATIONS

As food allergy awareness continues to heighten, more schools are implementing food allergy management strategies. When physicians are looking to establish reasonable accommodations within the school setting, national and state laws/regulations, as well as local standards, vary. Although national guidelines are pending, there is currently no national standard; pediatricians need to be familiar with local and state-specific guidelines and regulations. In some states, non-licensed trained staff (delegates) can administer medications per a medical order, Emergency Care Plan, or 504 Plan, while in others they can only administer epinephrine and not antihistamines. In other states, students without a known allergy may not receive treatment for anaphylaxis from unlicensed persons (see Sidebar).

School health advocates recommend that all schools should have non–patient-specific standing orders written for school nurses by the school physician and stock epinephrine for life-saving treatment of first-time reactions. It is the opinion of the authors that all pediatricians should advocate with school districts, their chapters, and if necessary, to permit stock epinephrine and auto-injectors to be held in school for all life-threatening allergy.

UNDERSTANDING HEALTH CARE PLANS

Schools may differ in resources and culture, yet there are inherent responsibilities schools have for children with life-threatening allergies, even if requested medical intervention might not be managed by a medical professional. The following types of health care plans exist to help ensure that these responsibilities are met despite variations from school to school and state to state.

• Emergency Care Plan (ECP) Without national mandates, each state may differ in the use of terminology for a physician’s medical orders. Food Allergy Action Plans, or ECP, among others, may be used to refer to a pediatrician’s medical order. What is essential is that a pediatrician writes a medical order for use by a school health professional like a school nurse. The school, in turn, distributes medical orders as a clearly written ECP to appropriately trained non-licensed persons responsible for the care of a child in the absence of the school nurse. ECP are written in practical lay terms to reflect simply “if you see this”, “then do this” to avoid medical assessments by non-licensed persons. ECP should list allergens to avoid and symptoms that require prompt use of epinephrine auto-injector with immediate transport by ambulance to an emergency department. Staff responsible for the care of the child with a life-threatening allergy must have access to the ECP, epinephrine, and training. Pediatricians should either send an ECP directly to the school or instruct parents to submit the medical orders to the school to ensure that an ECP is in place. Pediatricians should follow-up with the parent and/or school to ensure that the school has implemented the plan. While there are many templates for sample ECP, one widely used ECP, created by the organization Food Allergy Research & Education (FARE) is easy to complete and understand (www.foodallergy.org).

• Individual Health Care Plan (IHP) An IHP is a written, medically-detailed document created by a school nurse based on information provided by the private pediatrician to document specific health care needs in the school setting with a plan for addressing each documented need. Most children with allergies need an IHP. An IHP is typically not legally binding unless signed by school officials and parents as a contractual agreement.

• 504 Plan Section 504 of the Rehabilitation Act and the Americans with Disabilities Act provides for a student who is not eligible

SIDEBAR.

Allergy Resources for Pediatricians, School Counselors, and Parents

Guidance Documents

Resources for School Community Education/Training
- AllergyHome (www.allergyhome.org/schools)
- AllergyReady (allergyready.com)
- Food Allergy Management and Education St. Louis Children’s Hospital: (www.stlouischildrens.org/health-resources/advocacy-outreach/food-allergy-management-and-education)
- NASN: Food Allergy and Anaphylaxis Tool Kit (www.nasn.org/ToolsResources/FoodAllergyandAnaphylaxis)
- National Education Association Health Information Network. The Food Allergy Book: What School Employees Need to Know (www.neahin.org/educator-resources/foodallergybook.html)

Additional Resources for Families/Schools
- Allergy and Asthma Network: Mothers of Asthmatics (www.aanma.org)
- AllergyHome (www.allergyhome.org)
- American Academy of Pediatrics (www.aap.org)
- American Academy of Allergy Asthma & Immunology (www.aaaai.org)
- American College of Allergy, Asthma & Immunology (www.acaai.org)
- Asthma and Allergy Foundation of America (www.aafa.org)
- Food Allergy Research & Education (www.foodallergy.org)
- Kids with Food Allergies Foundation (www.kidswithfoodallergies.org)
- National Association of School Nurses (www.nasn.org)
- NIAID: Guidelines for the diagnosis and management of food allergy in the United States (www.niaid.nih.gov/topics/foodallergy/clinical/Pages/default.aspx)
for special education under an IEP (at right), but who requires medical accommodations in regular education based on medical need as documented by a physician. Most children with life-threatening allergies are eligible for 504s. Establishment of a 504 is particularly important when any concerns exist with regard to effective food allergy management (eg, lack of a full-time school nurse, limited school resources, lack of effective protocol, etc). 504s are legally binding. 14

**Individualized Educational Plan (IEP)**

An IEP is a formalized educational plan, known commonly as Special Education legally protected under the Individuals with Disabilities Education Act (IDEA), that provides for classification or coding of a student under one of thirteen federally designated categories and allowances for modification of regular education without penalty to the student. Most children with allergies alone do not require an IEP.

**NEED FOR PRACTICAL FOOD ALLERGY MANAGEMENT**

All pediatricians need a solid understanding of reasonable strategies for implementing practical food allergy management within the school setting. Prevention and emergency preparedness are the pillars of food allergy management.

**Prevention:** Preventing allergic reactions requires avoiding or reducing exposure to allergens in school with evidence-based

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**TABLE 1A.**

Oral Exposure to Food Allergens in the School Setting

<table>
<thead>
<tr>
<th>Type of Exposure</th>
<th>Relevant Facts</th>
<th>Practical Challenges</th>
<th>Practical Interventions*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>• There can be invisible “hidden ingredients” in foods. • Labels and ingredients can change without warning. • Items with advisory labels can contain allergens. • Trace amounts can cause severe allergic reactions. • Allergens can be detectable in saliva. • All children are protected by law to have a right to a free and appropriate education in the least restrictive environment. • Cross contact is presence of unintended allergen. 18,20 - Allergen contact with surfaces, food, and saliva are common sources. - Exposure by mouth or mucus membranes is a common cause of reactions.</td>
<td>• Difficult to monitor outside food, especially if not labeled. • Reading labels takes training, pre-planning, assigned personnel, and time allowances. • Celebrations are common source of home-prepared, unlabeled food and cross-contact risk. • Majority of allergic reactions in school start in classrooms. • Allergic child can be targeted for being cause of disallowed celebration foods and other potentially unpopular accommodations. • Risk of bullying/teasing. 11</td>
<td>• Non-food celebrations, activities, and rewards. • Limited and pre-screened food projects in classrooms that do not contain the allergen; parent notification of all food projects or activities. • Scrutiny of chosen foods before use. • Safe snack stash in all classrooms that allow food. • Fresh fruits and vegetable snack alternatives. • Adult assistance for food allergic children in selection of safe foods from cafeteria lines. • No sharing or swapping of food, drinks, or personal items. • Appropriate cleaning of high-touch surfaces and hands. • Consider encouraging parents of allergic children to send in all foods for child. • Parent and student community education to create supportive environment. • Encouragement to report any bullying/ harassment. • No eating on school bus (exception for children with medical conditions).</td>
</tr>
</tbody>
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*See NSBA and/or state guidelines for comprehensive recommendations

Adapted from Pistiner; www.AllergyHome.org/Schools

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Additional considerations for preschool/early elementary students

• Young children can pass saliva to each other via age appropriate exploration. 20, 27 • Some schools children eat in their classrooms/learning environments. • Supervision during meal/snack time dependent on resources and staff.

Additional considerations for adolescent/teenage students

• Older students under less supervision and more reliant on self-management. • Risk-taking, sense of “invincibility,” peer pressure, bullying. 22,23

• Periodic check-ins to ensure continued self-management. • Encouragement to report any bullying/harassment. • Support and continued education by school nurse and staff.
**TABLE 1B.**

<table>
<thead>
<tr>
<th>Skin and Inhalation Exposure to Food Allergens in the School Setting*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Exposure</strong></td>
</tr>
<tr>
<td>Skin</td>
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<td>Inhalation</td>
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</tbody>
</table>

*See NSBA and/or state guidelines for comprehensive recommendations
Adapted from Pistiner, www.AllergyHome.org/Schools

and best-practice standards (See Table 1A and Table 1B).

**Emergency Preparedness:** Despite best efforts to prevent allergic reactions, exposure can occur. The recognition of allergic reactions and anaphylaxis is essential.12,17

All staff must be familiar with the signs and symptoms of allergic reactions and anaphylaxis and know their role in the school’s ECP, especially since allergic reactions can start with mild symptoms that quickly progress into a more severe reaction involving multiple organ systems that are more difficult to treat.12,17 Early recognition is especially critical in schools in which standing orders and stock epinephrine for the treatment of anaphylaxis in those with unknown allergies do not exist. In those cases, rapid contact of emergency services (911) can be life-saving (see Table 2).

**RESPONSE TO ANAPHYLAXIS**

Epinephrine is the treatment of choice for anaphylaxis. It works quickly, but is short acting, and requires further management in the emergency department by ambulance.12,13,17

Auto-injector trainers are essential tools for teaching staff to administer epinephrine, and frequent training updates should be encouraged. Of note, pediatricians should write prescriptions that include two doses of epinephrine. Ten percent to 20% of children with food-related anaphylaxis require two doses.12,31-33 School physicians should write general protocols and educate administrators that reinforce the need for two doses of epinephrine. Epinephrine should be kept in a well-defined, secure, and always accessible location, avoiding temperature extremes.13

Protocols should include calling 911 after epinephrine administration to transport the child via ambulance to the emergency department for assessment and at least 4 to 6 hours of observation for recrudescence or subsequent biphasic allergic reactions that may occur even after complete resolution of symptoms. The medical management of allergic reactions and anaphylaxis in
FOSTERING PARTNERSHIPS WITH FAMILIES

The message pediatricians send families with regard to treating children with food allergies must be meticulous. Pediatricians establish recommendations for a child’s safety that will either foster community cohesion or promote adversarial discord. Practical, evidence-based food-allergy management strategies must not only keep children safe, but must also be feasible. Reasonable accommodations can happen without negatively impacting others in the school community. When parents of the child with a life-threatening allergy have fear-driven or inappropriate expectations for what a school must do, it is important for pediatricians to reassure and educate the parent and correct any misperceptions that drive unreasonable demands. Similarly, when schools are not implementing effective management strategies, pediatricians must delineate essential accommodations. The ultimate goal is that a child is safely flourishing in the least restrictive school environment with a plan that is neither too limiting nor too lax. Allergists are especially important in this team effort, since it is often their orders that drive management in the school setting. Consecutively, when schools are not implementing effective management strategies, pediatricians must delineate essential accommodations. The ultimate goal is that a child is safely flourishing in the least restrictive school environment with a plan that is neither too limiting nor too lax. Allergists are especially important in this team effort, since it is often their orders that drive management in the school setting.

TABLE 2. Strategies Needed for Management of Allergic Emergencies in the School Setting

| General strategies needed for ALL students and staff with KNOWN or UNKNOWN allergies |
|---------------------------------|---------------------------------------------------------------------------|
| • Supportive district policy on food allergy management in the school setting         |
| • School physician prescription and standing medical orders for non-patient-specific epinephrine |
| • Full-time school nurse            |
| • Annual universal staff training in anaphylaxis rescue                                 |
| • Periodic crisis team training drills in crisis management, including anaphylaxis |
| • One-on-one training in use of epinephrine auto-injector for identified staff* |
| • Emergency protocols for crisis intervention to medical emergencies, including anaphylaxis, familiar to all staff |
| • Communication devices to contact school nurse and 911 access for transport by ambulance to emergency department |

<table>
<thead>
<tr>
<th>Child-specific strategies needed for those with KNOWN history of food allergy</th>
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<tbody>
<tr>
<td>• Food Allergy Emergency Care Plan</td>
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<tr>
<td>- Updated, reviewed, accessible</td>
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<tr>
<td>- With parent understanding to be shared with all responsible for students care</td>
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<tr>
<td>• Identification of students with life-threatening allergies</td>
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<tr>
<td>• Child specific auto-injectors (enough for second available dose) provided by family</td>
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<tr>
<td>- Kept in an accessible but secure location</td>
</tr>
<tr>
<td>• Delegate training*</td>
</tr>
<tr>
<td>- Non-licensed staff trained to recognize signs/symptoms of anaphylaxis and administer auto-injector when school nurse is not immediately available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non–Child-Specific Strategies Needed for Those with UNKNOWN History or First-Time Food Allergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Full-time school nurse</td>
</tr>
<tr>
<td>- In most states currently only licensed professionals can administer epinephrine to those experiencing anaphylaxis without a prior known allergy*</td>
</tr>
<tr>
<td>- Standing epinephrine orders*</td>
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<tr>
<td>- Stock epinephrine*</td>
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<tr>
<td>- 911 transport to emergency department</td>
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</tbody>
</table>

| Rapid identification of allergic reactions and immediate contact of school nurse and/or 911 (especially if nurse not immediately available) |

<table>
<thead>
<tr>
<th>Non–child-specific auto-injectors provided by school*</th>
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</thead>
<tbody>
<tr>
<td>- Kept in an accessible but secure location</td>
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</tbody>
</table>

*Regulations and guidance will vary state by state.

Importance of an ‘ALLERGY TEAM’

Pediatricians and families should partner with school health services teams. School nurses are school food allergy champions who know the resources, challenges, and culture of their schools. School nurses remain essential when responding to emer-
Emergency situations (eg, making medical assessments, implementing medical orders, etc). Nurses are advocates for appropriate food allergy protocols, are often creators of ECP or IHP, are able collaborators in the development and implementation of 504 plans, and are educators of unlicensed school staff in emergency intervention. They also play critical roles in heightening community understanding of the seriousness of life-threatening allergies through education, and can serve as liaisons among the parents of food-allergic and non-allergic children alike. Nurses are especially vital in recognizing and treating first reactions in the school setting.

The American Academy of Pediatrics recommends that a school nurse be present in every building and a school physician in every district. However, some school districts have limited resources, which results in limited nursing and physician resources. In cases when a full-time school nurse is unavailable, there must be an unlicensed designee who has been trained appropriately by a duly licensed medical professional in the recognition and management of children with food or other life-threatening allergies.

It is essential for pediatricians to keep open lines of communication between the medical home and the educational home, especially when there is not a full-time school nurse. In those instances, the pediatrician may need to communicate with other school personnel, such as the school physician, the principal, or counselor. In the absence of a school nurse, pediatricians should encourage the caregivers of these patients to contact their school administrators, first to advocate for a school nurse, and then for the parent to determine who the trained unlicensed designee is, especially if there are any changes in the child’s medical condition and/or allergy management plan. If all else fails, the pediatrician can assist a family by encouraging them to contact the superintendent or even a Board of Education member to express the importance of having a school nurse or trained unlicensed staff member to oversee the action plan for a child with life-threatening allergies.

COMMUNITY OUTREACH

Training and awareness are essential. Pediatricians must encourage and educate nurses, school staff, administration, parents, and children to understand their roles in food allergy management in school. School physicians can assist the school nurse in staff and administration education, and awareness teaching for parents and students. Implementation of safe protocols and effective training are dependent on leadership. Mandatory initial staff training, with more direct training for those being taught to use epinephrine auto-injectors, followed by annual and as-needed refreshers help ensure a safer school environment. Educating all parents about the needs of children with life-threatening allergies and providing student education promotes an understanding student body that may decrease bullying and teasing behavior. Well-educated staff, parents, and student body create a supportive community. School community food allergy training and awareness resources, created by the co-author, can be found at www.allergyhome.org/schools.

CONCLUSION

Whether community- or school-based, pediatricians play a key role in safeguarding children with life-threatening food allergies. They should be familiar with all aspects of management of food allergies in the school setting to implement essential and reasonable accommodations. Pediatricians in any setting should utilize the wealth of information and resources that are currently available to partner with schools to create valuable plans of action to protect these children.

REFERENCES

17. Sampson HA, Munoz-Furlong A, Campbell


