

Management of Food Allergies in Schools



February 9, 2016

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Summary Report

The Center of Excellence for Food Safety Research in Child Nutrition Programs

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Executive Summary

A school's ability to provide allergen-free meals to children with food allergies requires managing school cafeterias, field trips, and classrooms properly, with attention from and effective communication among many internal and external stakeholders. Food allergy management in schools is also uniquely multidisciplinary, involving parents and school nutrition staff who prepare and serve food, and school nurses who may be responsible when an allergic reaction occurs, teachers, and even food manufacturers and suppliers.

Various strategies are used in schools to control or monitor food allergies, such as using food bans or isolated eating areas, modifying menus, products, or preparation, implementing a variety of training initiatives, tracking ingredients, and administering epinephrine. Although many schools have access to various resources to help them comply with current guidelines on food allergies, implementing and adhering to formal policies or practices remains inconsistent or unclear.

The goal of this study was to collect baseline data about food allergies and allergic reactions in schools. Specifically, the Center sought to determine current practices and challenges for managing food allergies in schools during food production, with food vendors, and with personnel training. The researchers also attempted to describe the incidence, nature of, and response to food allergic reactions in schools.

The results of this study reiterate the importance of managing food allergies in schools. School nutrition programs *frequently* or *always* met the needs of students with severe food allergies with foods they normally purchase. It was also evident that school districts are responding to the changing needs of students with food allergies.

This research also found that some school nutrition personnel were not sure about the frequency or nature of allergic reactions occurring in their district. A number of factors may contribute to this finding, including how food allergy information is communicated throughout the school district. The multidisciplinary nature of food allergies in schools reinforces the need for consistent and effective training.

Acknowledgements

This study was conducted by the Center of Excellence for Food Safety in Child Nutrition Programs with federal funds from the U.S. Department of Agriculture. The contents of this publication do not necessarily reflect the views or policies of the U.S. Department of Agriculture, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.

Background

Food allergies in the school nutrition environment continue to be an important food safety concern, affecting approximately one in 25 school-aged children (Sicherer, Mahr, & the Section on Allergy and Immunology, 2010.). Although many young children with food allergies may have received a specific diagnosis at an early age, approximately 25% may not experience their first reaction until they enter elementary school (Leo & Clark, 2007). Increasingly, school administrators revise their district and departmental policies and procedures for managing food allergies directly or consider various modifications to the physical environments and situations where children and food allergens intersect.

Meanwhile, considering the multifaceted nature of food allergies, the stakeholders involved are diverse, often involving not only the children, but their medical provider(s), teachers, parents, and other school personnel. The impact of food allergies extends beyond the school cafeteria; students and food intersect throughout the school district, even in the various subsystems like classrooms and school transportation (Carrol, McIntyre, Sheetz, & Young, 2005).

Children with food allergies must avoid food allergens to prevent allergic reactions. Children may inadvertently consume food containing life-threatening allergens during the school day, while others may be exposed to these same allergens through cross contact of products or ingredients at various points in the school, in particular during breakfast, lunch, or snack periods. Eight food items are commonly associated with most allergic reactions: milk, eggs, peanuts, tree nuts, fish, shellfish, soy, and wheat. These foods are ingredients in a popular array of food options for children or are often used in school recipes or purchased food products.

Managing food allergens in the school environment requires very close supervision of food supplies, ingredient listings, and product labels, and requires appropriate and effective communication channels with food manufacturers or suppliers. Foodservice staff, teachers, and school healthcare professionals must be prepared for emergencies and are essential to the internal communication channels on the allergies themselves, on access to epinephrine, or in providing various food alternatives. School nutrition personnel, especially those in food production and service roles, often benefit from specific training on food allergies, including modifying recipes or interpreting the complexities of product ingredients or labels.

Guidance and support resources specific to food allergy training in schools have been developed in recent years. The United States Department of Agriculture's Food and Nutrition Service published *Accommodating Children with Special Dietary Needs in the School Nutrition Programs – Guidance for School Food Service Staff*. In addition, the Centers for Disease Control and Prevention provides *Food Allergies in Schools*, a comprehensive online collection of resources on the daily management of food allergies for children, emergency planning, and education information for parents, children, and staff. Finally, the Institute of Child Nutrition (formerly the National Food Service Management Institute) provides an array of traditional and in-person training materials on food allergies, including fact sheets, school messaging and signage, and video-based training resources for school nutrition operators.

School nutrition directors and their employees intend to provide safe and nutritious food to children. Food allergies, however, will continue to pose a unique challenge for schools and their nutrition programs. Because no cure for food allergies will likely exist in the near future, school nutrition program staff must remain proactive in protecting students with food allergies. The Center of Excellence for Food Safety Research in Child Nutrition Programs (Center)

believes that food allergies represent a very important element of a school's comprehensive food safety program and food safety culture, yet little is known about how food allergies are handled in schools or the related challenges to school nutrition personnel.

Objectives

The goal of this study was to collect baseline data about food allergies and allergic reactions in schools. The guiding specific objectives were to:

1. Determine current practices and challenges for managing food allergies in schools, specifically those challenges:
 - during key points of food production,
 - with food vendors and with recall communication,
 - with USDA foods, and
 - with personnel training.
2. Determine the incidence, nature of, and response to food allergic reactions.

Methods

The staff at the Center and the USDA Food and Nutrition Service (FNS) Office of Food Safety collaborated on this study. This research used an online questionnaire to gather information concerning practices from a national sample of school nutrition directors about food allergies and related practices in their operations. The questions were designed and categorized to address the study objectives, with both quantitative and qualitative data gathered and assessed.

Research Approval

Kansas State University's Institutional Review Board approved the research protocol before data were collected. All researchers involved in the study successfully completed mandatory human subjects training.

Sample

School nutrition directors were the intended audience for this report; however, they were also the most likely to know professionals who could provide the data needed for this research. Therefore, school nutrition directors were asked to provide our questionnaire to district or nutrition program professionals who were directly involved with managing food allergies. The sample of directors (n = 5,592) was purchased from MDR, a marketing company that maintains a national contact listing for school nutrition personnel.

Questionnaire and Instrumentation

The initial questionnaire was collaboratively designed and revised by Center and FNS staff members and then pilot-tested with a convenience sample of 20 school nutrition directors and state agency personnel. Minor modifications were made to the final instrument based on their feedback.

The final questionnaire is included in Appendix A. The questionnaire sections included:

- types and frequencies of food allergies;
- nature and frequency of food allergic reactions;
- provision and administration of epinephrine;
- food allergy documentation and plans;
- food allergy training and continuing education;

- foodservice operational practices and allergy controls; and
- demographic questions.

Responses to questions included yes/no/not sure/not applicable, frequency, percentage, and Likert-scale responses. Open-ended questions with text boxes were included frequently throughout the questionnaire to allow for additional comments.

The first question of the questionnaire was a screening question that asked, “*Does your district have students who require meal accommodations due to food allergies?*” Participants responding in the affirmative continued with the questionnaire, while those who selected “no” did not continue.

Data Collection

The MDR client representative forwarded the instructional cover letter with a link to the online questionnaire to the sample. The cover letter (Appendix B) outlined the purpose of the study, study objectives, the rights of human subjects, terms of confidentiality, and contact information for the lead researcher. The questionnaire was active for four weeks with two follow-up emails sent at the beginning of weeks two and three to encourage participation. All individual responses were anonymous and returned directly to the Center through the Qualtrics® survey administration system.

Data Analysis

The raw data set was imported into SPSS. Descriptive statistics, which included frequencies, percentages, and means, were calculated. Summaries of specific comments or key themes were derived from the open-ended responses.

Results and Discussion

Response rate and sample description

Of the 5,592 surveys distributed, a total of 480 individuals accessed the questionnaire. For the initial screening question “*Does your district have students who require meal accommodations due to food allergies*”, 422 individuals indicated yes, 49 indicated no, and nine did not respond, yielding a usable response rate of 9%. The initial question indicates that most original respondents provide meal accommodations for food allergies. On subsequent questions, response rates varied based on the applicability of questions, conditional branching from the preceding question, or non-responses. Multiple responses were encouraged on some questions.

The response rate was less than desirable; however, it parallels survey attempts and response rates for the same audience in recent years. The lower response rate could be attributed to the survey being conducted later in the school year at a time when dealing with food allergies has become routine and may not be perceived as important. Therefore, the results and interpretation of these findings should be approached with caution given the inability to fully reflect the larger school nutrition population with accuracy.

Participants reported their job titles ($n = 262$) as mostly directors of school nutrition programs (74%), followed by program coordinators (16%), supervisors (5%), and managers

(5%). Thus, most of the sample reflects school nutrition professionals employed in a supervisory capacity. While about 30% of the programs reported employing a Registered Dietitian or Registered Dietitian Nutritionist, few survey participants identified as RD or RDN (14%), School Nutrition Specialist (14%), Certified Dietary Manager (6%). Finally, about 66% identified “other” credentials as ServSafe[®] certified or having a BS degree.

Reported school district enrollments were distributed evenly within the 1,000 to 50,000 student enrollment range. The fewest respondents came from school districts with enrollments of 50,000 students or more. Schools per district were most commonly one to five schools (44%) or six to 10 schools (21%). Furthermore, the number of schools per district generally fell within the ranges of 11 to 20, 21 to 50, and 50+ schools per district. Responses were gathered from school districts in all 50 states and territories except Puerto Rico, Hawaii, Delaware, and Rhode Island. Nearly all school foodservice operations were self-operated (91%).

Prevalence of food allergies

Table 1 summarizes the percentage of school districts providing meal accommodations for the top eight food allergens. Nearly all reporting school districts provided meals to students with allergies to peanuts (97%) and milk (96%), followed closely by tree nuts (89%), wheat (87%), and eggs (81%). About three-fourths of the school districts served students with soy or *other* allergies. The primary food accommodations provided in the *other* category were food dye (18%), strawberry (18%), corn (12%), pineapple (10%), gluten (9%), and/or citrus (5%).

Table 1. Frequency of Schools Providing Meals to Students with Allergies to the Top Eight Food Allergens (N=390)

	Yes	No	Unsure
Peanuts	375 (96.9)	10 (2.6)	2 (0.5)
Milk	363 (96.0)	10 (2.6)	5 (1.3)
Tree nuts	298 (88.7)	27 (8.0)	11 (3.3)
Wheat	297 (87.4)	36 (10.6)	7 (2.1)
Eggs	274 (80.6)	52 (15.3)	14 (4.1)
Soy	206 (72.8)	56 (19.8)	21 (7.4)
Fish	198 (66.7)	78 (26.3)	21 (7.1)
Shellfish	174 (62.6)	77 (27.7)	27 (9.7)
Other	94 (72.3)	22 (16.9)	14 (10.8)

Table 2 summarizes the number of students that districts accommodated per type of food allergen. Most schools accommodated one to 10 students per food allergen, with a significant number accommodating 11 to 100 students per allergen. Interestingly, providing accommodations for all or most of the top eight allergens became less frequent as the total number of student accommodations per district increased. This could be attributed to the fact that as the school district size (number of schools and children) and proximity to the central administrative offices increase, greater limitations are placed on menu offerings and choices, thus limiting the number of allergies accommodated. Additionally, an even percentage of school districts reported accommodating children with one allergy (40%) versus two allergies (41%), while about 19% of the districts accommodated students with three or more allergies.

Table 2. Frequency of Students Accommodated per Food Allergen (N=301)

	Number (%)							
	0	1-10	11-25	26-50	51-100	101-150	151-200	>200
Peanuts	2 (7.0)	137 (45.5)	71 (23.6)	37 (12.3)	24 (8.0)	9 (3.0)	8 (2.7)	13 (4.3)
Milk	1 (0.3)	159 (54.5)	65 (22.3)	36 (12.3)	17 (5.8)	4 (1.4)	3 (1.0)	7 (2.4)
Tree nuts	3 (1.3)	127 (54.3)	44 (18.8)	27 (11.5)	13 (5.6)	9 (3.8)	6 (2.6)	5 (2.1)
Wheat	-	149 (63.9)	45 (19.3)	24 (10.3)	12 (5.2)	2 (0.9)	1 (0.4)	-
Eggs	-	159 (74.0)	29 (13.5)	13 (6.0)	11 (5.1)	2 (0.9)	1 (0.5)	-
Soy	3 (1.8)	124 (74.3)	24 (14.4)	8 (4.8)	7 (4.2)	1 (0.6)	-	-
Fish	2 (1.4)	108 (73.5)	22 (15.0)	10 (6.8)	2 (1.4)	-	3 (0.6)	-
Shellfish	3 (2.3)	100 (75.2)	16 (12.0)	9 (6.8)	2 (1.5)	-	3 (2.3)	-

Incidence of Allergic Reactions and Administration of Epinephrine

Some respondents (n=100) provided insight about the number of food allergy reactions that occurred during the past academic year. When numerical figures were provided (about 25% of the contributions), most reported only a few allergic reactions, with a range of one to 10 reactions. However, many more respondents indicated they were *not sure* (75%) if allergic reactions had occurred. When asked about the number of anaphylactic reactions during the past year, respondents provided fewer and less frequent open-ended responses, and ranged from one to three anaphylactic reactions. Again, most respondents indicated that they were *not sure*, a response we found of concern.

Table 3 summarizes school personnel permitted to administer epinephrine. School nurses comprised the largest percentage (64%); only 17% reported that school nutrition employees could administer epinephrine. Approximately 65% of respondents indicated that their state laws did not allow foodservice employees to administer epinephrine. Those who provided qualitative comments (n=83) indicated other personnel were allowed to administer epinephrine. Approximately 40% generally responded with “*trained individual*”, while less than 10% indicated office personnel (9%), health aide (7%), student (6%), bus driver (5%), secretary (4%), or did not know (4%).

Table 3. School Personnel Allowed to Administer Epinephrine (N=480)

	Number (%)	
	Yes	No
School Nurse	307 (64.0)	173 (36.0)
School Administrator	155 (32.3)	325 (67.7)
Teachers	146 (30.4)	334 (69.6)
School Nutrition Employees	81 (16.9)	399 (83.1)
Other	92 (19.2)	388 (80.8)

About 79% of the school districts reported maintaining appropriate documentation for students with food allergies. School nurses (58%) were primarily responsible for maintaining students' allergy documentation (Table 4), with only 16% reporting that school nutrition directors had that responsibility.

Table 4. Personnel Responsible for Maintaining Food Allergy Documentation (N=293)

	Number (%)
Registered Nurse	169 (57.7)
District Nutrition Director	48 (16.4)
Other	31 (10.6)
School Nutrition Manager	25 (8.5)
Registered Dietitian	20 (6.8)

Food Allergy Management Strategies

This study sought to assess specific strategies used by directors to identify and control reactions to food allergies in the school environment. We found approximately 74% of the respondents indicated that their district had a plan for managing food allergies, while most (n=188) said their plans were about 76% complete. Open-ended comments suggested that having adequate time and other resources were the primary challenges to having a comprehensive plan for food allergies.

About 74% of the respondents also felt they could *always or frequently* meet students' severe food allergy restrictions with foods that were normally purchased. Table 5 presents responses to the implementation of common operational policies used to manage food allergies. Allergen-safe zones to protect students were the most frequently used practice, but only 39% of the respondents actually had such a policy in place. Other policies were used less frequently.

Table 5. Frequency of Policies Used to Manage Food Allergies (N=480)

	Number (%)	
	Yes	No
Allergen-safe zones on campus	187 (39.0)	293 (61.0)
Ban on specific foods on campus	75 (15.6)	405 (84.4)
Restrictions on food not included in a reimbursable program ¹	68 (14.2)	412 (85.8)
Food-free zones on campus	42 (8.8)	438 (91.3)
None of the above	60 (12.5)	420 (87.5)

¹ Defined as foods provided outside of the USDA National School Lunch or similar programs

The questionnaire also inquired about the implementation of common operational practices like ingredient tracking, vendor communication, and internal communication (Table 6). The most common practice was keeping ingredient records for foods served in schools so that allergens can be tracked. Of particular concern is that school nutrition directors agreed that vendors often make order substitutions without notifying the school; a substituted product containing an allergen could have serious consequences. Directors also agreed that communication about allergies is effective and that they have adequate information on labels both on commercial and USDA Foods to identify food allergens.

Table 6. Attitudes and Practices for Managing Food Allergies (N=280)

	Mean ^a ± SD
We keep ingredient information records on all foods served in our schools so that we can track allergens.	4.5 ± 0.5
If allergen information is unavailable on the package, we contact the vendor or manufacturer to obtain this information.	4.4 ± 0.5
Vendors often make order substitutions without notifying the school.	4.4 ± 0.5
We request allergen information on products from our vendor before ordering.	4.3 ± 0.5
Maintaining student confidentiality requirements is easy to do.	4.3 ± 0.5
School foodservice employees are knowledgeable about the allergy management plan.	4.3 ± 0.5
Communication about food allergies within the foodservice operation occurs regularly and effectively.	4.3 ± 0.4
Communication about food allergies throughout the school happens regularly and effectively.	4.2 ± 0.4
Labels for USDA foods provide adequate information to identify food allergens.	4.2 ± 0.4
Labels for commercial foods provide adequate information to identify food allergens.	4.2 ± 0.4
Training volunteers regarding food allergies is manageable.	4.2 ± 0.4

^a A five-point scale was used for responses. *Strongly agree* was coded as a 5; *agree* as 4; *neither agree nor disagree* as 3; *disagree* as 2; and *strongly disagree* as 1.

One question explored methods used to track food allergen information. Data reported in Table 7 suggests that reading food labels was the primary method used for tracking allergens, but was used by only 50% of the districts. Although attitudes about food labels, as indicated in Table 6, suggests generous adequacy of information provided, there appears to be less actual use of labels to track allergens. Some variation is likely due to difference in response rates to these question sets. Other districts used food software or kept copies of labels. Tables 8 and 9 describe the personnel responsible for monitoring ingredients and report product substitutions.

Table 7. Methods Used to Track Food Allergens (N=480)

	Number (%)	
	Yes	No
Reading food labels	237 (49.4)	243 (50.6)
Keeping copies/photographs of food labels	182 (37.9)	298 (62.1)
Computer software (NutriKids, OneSource, KidServe, etc.)	133 (27.7)	347 (72.3)
Other	18 (3.8)	462 (96.2)

Table 8. Personnel Responsible for Monitoring Ingredients and Ingredient Changes in Purchased Products (N=266)

	Number (%)
Kitchen/Site Manager	98 (37)
District Nutrition Director	80 (30)
District Registered RD/RDN	47 (18)
Cooks	15 (6)
Purchasing Agent	13 (5)
Ordering/Receiving Employee	2 (1)
Other	11 (4)

Table 9. Personnel who Receive Information Regarding Product Substitutions (N=267)

	Number (%)
District Nutrition Director	108 (40)
Kitchen/Site Manager	61 (23)
District Registered RD	30 (11)
Purchasing Agent	21 (8)
Cooks	6 (2)
Other	16 (23)

Continuing Education and Training

Table 10 describes how much food allergy training school nutrition personnel have received during the past year. Most respondents (62%) did not participate in continuing education focused on food allergies during the previous year. Of those who indicated at least some degree of food allergy training (n=107), most (80%) reported attending five or fewer hours of training. The sources of food allergy training were mixed, but originated mostly from national or state-level school nutrition conferences and meetings.

Table 10. Frequency and Sources of Food Allergy Training (N=280)

	Number (%)
Attendance at continuing education focused on managing food allergies during the past year	
Yes	107 (38.2)
No	173 (61.8)
Number of hours devoted to food allergy continuing education during the past year	
1-5	81 (80.1)
6-10	15 (14.9)
10-15	2 (2.0)
16-20	3 (3.0)
Sources of continuing education	
School Nutrition Association meeting	19 (18.1)
State School Nutrition Association meeting	20 (19.0)
Academy of Nutrition and Dietetics conference/events	9 (8.6)
State Agency training	21 (20.0)
National Food Service Management Institute	9 (8.6)
Other	27 (25.7)

Table 11 provides information about the training topics discussed during foodservice employee training sessions. Of the common training topics listed, few were covered to any appreciable degree with school nutrition employees. In fact, *general food handling practices for reducing exposure to allergens* appeared to be the most prevalent training topic, but fewer than half of the school districts (43%) reported that employees had received training.

Table 11. Types of Food Allergy Training Topics for Foodservice Staff (N=480)

	Number (%)	
	Yes	No
General food handling practices for reducing exposure to allergens	206 (42.9)	274 (57.1)
Overview of food allergies and key terms	147 (30.6)	333 (69.4)
Potentially life-threatening food allergies	125 (26.0)	355 (74.0)
Signs and symptoms of food allergy reactions	125 (26.0)	355 (74.0)
The district's or school's emergency plans for allergic reactions	110 (22.9)	370 (77.1)

Conclusions and Recommendations

Conclusions

The results of this study suggest that many school nutrition programs must manage food allergies. School personnel practiced the important components of a food allergy management plan: maintaining ingredient records, using multiple communication channels, and conducting employee training programs. Operationally, about 74% of the schools reported *frequently* or *always* meeting the needs of students with severe food allergies with foods they normally purchase. This suggests that both the school districts and the food industry are responding to the changing needs of students and that those with menu planning responsibilities in schools develop reasonable meal choices with foods normally ordered for the school nutrition program.

Areas of opportunity mostly revolve around what remains unknown about food allergies in schools. For example, many respondents were “unsure” about the incidence of allergic reactions occurring in their district. It is unclear whether there are no allergic reactions, if school nutrition professionals are not part of the communication channel, if such a channel does not exist, or if there truly is unawareness about food allergies in some school nutrition programs. Managing food allergies clearly remains a multidisciplinary issue throughout school districts, which elevates the need for effective communication. Some findings suggest that school nutrition employees are not consistently oriented or trained regarding the severity of food allergies.

Recommendations

The Center recommends the following categorical recommendations:

1. *Center Research Opportunity:* Determine best practices associated with food allergy management across a continuum of school district sizes, production, and foodservice parameters. An assessment of best practices would assist school districts in customizing their food allergy management plans to best meet their needs.
2. *Center Research Opportunity:* Examine efforts taken or outcomes associated with food allergies as part of a master food safety or HACCP plan. We also recommend including food allergies as an important part of a positive food safety culture in schools.
3. *Center Research Opportunity:* Continue to examine specific barriers to completing and implementing food allergy management plans. Observational studies could identify real-time issues and allow researchers to work directly with those involved with food allergies.
4. *Education/Application Opportunity:* Regardless of the source of food items, continue to encourage school nutrition professionals to read labels and communicate with manufacturers directly with questions about ingredient substitutions and changes.
5. *Education/Application Opportunity:* Consider orientation/training materials that provide earlier exposure to food allergies for new school nutrition professionals. Training materials should reflect realistic and compelling issues about food allergies.
6. *Research Community Opportunity:* Assess the inherent risks associated with the multidisciplinary communication channels that relate to or that develop because of food allergies in the school environment. The consistency, type, and adequacy of communication about food allergies appear to need improvement, especially for risk reduction.

7. *Research Community Opportunity:* Discuss the merits of developing a centralized method of reporting or tracking severe or fatal allergic reactions in schools.
8. *Research Community Opportunity:* Determine best practices for administering, storing, and training in epinephrine use.

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Appendices

Appendix A:
Food Allergy Questionnaire

Q1 Does your district have students who require meal accommodations due to food allergies?

- Yes
- No (if selected, guided to conclusion screen)

Q2 Please indicate if your district has any students who require meal accommodations for the following food allergens: *Question is a conditional branch from the previous question with yes response*

	Yes	No	Not sure
Milk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eggs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crustacean shellfish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wheat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peanuts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tree nuts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 Please estimate the number of students your district currently accommodates for each food allergen.

Question is a conditional branch from the previous question with yes response

	0	1-10	11-25	26-50	51-100	101-150	151-200	>200
Milk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eggs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crustacean shellfish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wheat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peanuts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tree nuts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 Are there other special diet accommodations that you address in your district? If so, please indicate what they are and estimate the number of students for which each special diet is accommodated.

Q5 Typically, students with food allergies have:

- One allergy
- Two allergies
- Three or more allergies

Q6 How often can your team meet students' severe food allergy restrictions with foods that are normally purchased and available in-house?

- Always
- Frequently
- Half the time
- Rarely
- Never, we always make special purchases

Q7 Typically, a student with food allergies can have similar foods as those on the regular menu.

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

Q8 Over the past academic year, how many food allergy reaction incidences have occurred in your district? Of those, how many were anaphylactic reactions? Anaphylaxis is a severe, potentially life-threatening reaction to an allergen. Symptoms may include swelling of the throat, itchy rashes, and low blood pressure. Typically, epinephrine ("epi pen") is administered and medical attention is required.

Total food allergy reactions

Anaphylactic reactions

Q9 Does your state's laws allow foodservice employees to administer epinephrine ("epi pen") to students?

- Yes
- No

Q10 Who is allowed to administer epinephrine ("epi pen") in your district? (Check all that apply.)

- School Nurse
- School Administrator
- School Foodservice Employee
- Teachers
- Other: _____

Are foodservice employees allowed to administer epinephrine ("epi pen") to students in your state?

Q11 How many foodservice employees are trained and delegated to administer epinephrine ("epi pen") to students having anaphylaxis? *Question is a conditional branch from the previous question with yes response*

Q12 How many other school personnel are trained to do this?

Q13 USDA requires students who participate in Child Nutrition Programs to have the following documentation from the student's doctor:

- The child's disability (the allergy)
- An explanation of why the child's diet is restricted
- How the disability affects major life activities
- The food(s) that should be eliminated for the child's meals
- Appropriate substitutions for eliminated foods

Please estimate the percent of students with allergies who has met these documentation requirements (as a reminder, responses are kept confidential and anonymous):

_____ Percent WITH required paperwork

_____ Percent WITHOUT required paperwork

Q14 Who is primarily responsible for maintaining students' allergy paperwork?

- Registered Dietitian
- Registered Nurse
- District Foodservice Director
- School Foodservice Manager
- Other (please specify): _____

Q15 Do you have a food allergy management plan for your school district?

- Yes
- No

Do you have a food allergy management plan for your school district?

Q16 How would you describe the completeness of your district's allergy management program?

_____ Allergy Management Program *Question is a conditional branch from the previous question with yes response*

Q17 What barriers/challenges have you found to having a comprehensive food allergy management program in your district?

Q18 Which of the following policies has your school district implemented to help protect students with food allergies? (Check all that apply.)

- Specific-food bans on campus
- Allergen-safe zones on campus (i.e., areas in the cafeteria or a specified classroom)
- Food-free zones on campus (i.e., the library)
- Restrictions on food not included in a reimbursable program (e.g., vending machines, class parties, buses, school stores)
- None of the above

Q19 Please rate your agreement to the following food allergy statements.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Maintaining student confidentiality requirements is easy to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training volunteers regarding food allergies is manageable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School foodservice employees are knowledgeable about the allergy management plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication about food allergies within the foodservice operation happens regularly and effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication about food allergies throughout the school (school nurse, teachers, foodservice, administration, etc.) happens regularly and effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vendors often make order substitutions without notifying the school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q19 Please rate your agreement to the following food allergy statements (cont.)

Labels for USDA Foods provide adequate information to identify food allergens.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Labels for commercial foods provide adequate information to identify food allergens.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We keep ingredient information records on all foods served in our schools so that we can track allergens.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We request allergen information on products from our vendor before ordering.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If allergen information is unavailable on the package, we contact the vendor or manufacturer to obtain this information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q20 Have you attended continuing education focused on managing food allergies over the past year?

- Yes
- No

Have you attended continuing education focused on managing food allergies over the past year?

Q21 How many hours of food allergy continuing education have you attended over the past year?

Question is a conditional branch from the previous question with yes response

Hours:

Have you attended continuing education focused on managing food allergies over the past year? *Question is a conditional branch from the previous question with yes response*

Q22 From what source was your continuing education? (Please check all that apply.)

- School Nutrition Association meeting
- State School Nutrition Association meeting
- Academy of Nutrition and Dietetics sponsored events
- State Agency training
- National Food Service Management Institute
- Other: _____

Q23 What food allergy-related topics would be most useful for future training?

Q24 Of the following, please identify which topics are addressed in new employee orientation and training of foodservice staff. (Check all that apply.)

- An overview of food allergies and associated key terms
- The difference between potentially life-threatening food allergies and other food-related problems (like gluten or lactose intolerance)
- Signs and symptoms of food allergy reactions
- General food handling strategies for reducing and preventing exposure to allergens
- The district's or school's emergency plans for allergic reactions

Q25 Of the following, which methods does your district use to track food allergens in products you serve? (Check all that apply.)

- Computer software (NutriKids, OneSource, KidServe, etc.)
- Reading food labels
- Keeping copies/photographs of food labels
- Other (please specify): _____

Q26 Do any of your district's food purchasing specifications include allergen requirements?

- Yes
- No

Q27 How often are products checked for ingredient changes or potential allergen statement changes?
(Check all that apply.)

- When vendor alerts staff
- Receiver checks when products are delivered
- Employees check daily when food is prepared
- Quarterly
- Annually
- Other (please specify): _____

Q28 Who is primarily responsible for monitoring ingredients and ingredient changes in purchased products?

- District Registered Dietitian
- District Director
- Kitchen/Site Manager
- Purchasing Agent
- Ordering/Receiving Employee
- Cooks
- Other (please specify): _____

Q29 If vendors provide information regarding product substitution, who receives this information?

- District Registered Dietitian
- District Director
- Kitchen/Site Manager
- Purchasing Agent
- Ordering/Receiving Employee
- Cooks
- Other (please specify): _____
- Vendors do not provide substitution information.

Q30 Does your foodservice program employ a Registered Dietitian?

- Yes
- No

Q31 Please check ALL professional credentials you currently hold.

- Registered Dietitian (RD)/ Registered Dietitian Nutritionist (RDN)
- School Nutrition Specialist (SNS)
- Dietetic Technician, Registered (DTR)
- Certified Dietary Manager (CDM)
- Other (please specify): _____

Q32 What is your scope of responsibility with the Child Nutrition/School Foodservice Program?

- Director of Child Nutrition Program in a school district
- Manager of a Child Nutrition Program of a single school
- Coordinator of Child Nutrition Program over several schools
- Coordinator of a certain program (e.g., food safety) within a school district
- Supervisor within a single school

Q33 The foodservice in my district is:

- Self-operated
- Contracted

Q34 What is the total enrollment of your school district?

Q35 How many schools are in your district?

Q36 In which state is your school district? (drop down selection)

Appendix B:
Cover and Reminder Letter Notifications

Dear School Foodservice Director:

The incidence of food allergies seems to be increasing and schools are being asked to respond. There has been little research addressing food allergy management in schools and we are eager to learn from about food allergies in your district. Results of this research will help drive future education program development and will provide information to guide USDA Food and Nutrition Service in decisions related to food allergies.

Please respond to the following survey if you are responsible for managing food allergies or forward the survey to the person who is responsible. The survey will take approximately 10-15 minutes to complete.

Your participation is voluntary, refusal to participate will involve no penalty, and you may discontinue participation at any time without penalty. Individual responses will be completely anonymous and all results will be reported as group data.

Your participation is essential to the study's success. We greatly appreciate your time and assistance. Should you have any questions about the study, please contact Dr. Kevin Sauer at (785) 532-5581. If you have any questions about the rights of individuals in this study or about the way the study is conducted, you may contact the University Research Compliance Office at (785) 532-3224.

Thank you for your time and assistance. We value your input.

Here is the survey link: https://kstate.qualtrics.com/SE/?SID=SV_ezX6DJZKjcf7vff

Sincerely,

Kevin Sauer, PhD, RD
Center of Excellence for Food Safety Research in Child Nutrition Programs
Kansas State University

Emily Patten, MS, RD
Center of Excellence for Food Safety Research in Child Nutrition Programs
Kansas State University

Dear School Foodservice Director:

Recently you received an invitation to participate in a study we are conducting for USDA and we hope that you will consider participating in the survey because we are eager to learn from about food allergies in your district. Results of this research will help drive future education program development and will provide information to guide USDA Food and Nutrition Service in decisions related to food allergies.

Please respond to the following survey if you are responsible for managing food allergies or forward the survey to the person who is responsible. The survey will take approximately 10-15 minutes to complete.

Your participation is voluntary, refusal to participate will involve no penalty, and you may discontinue participation at any time without penalty. Individual responses will be completely anonymous and all results will be reported as group data.

Your participation is essential to the study's success. We greatly appreciate your time and assistance. Should you have any questions about the study, please contact Dr. Kevin Sauer at (785) 532-5581. If you have any questions about the rights of individuals in this study or about the way the study is conducted, you may contact the University Research Compliance Office at (785) 532-3224.

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