

Sodium



ISSUE

How have school food service directors implemented the sodium requirements related to the Healthy, Hunger-Free Kids Act of 2010 (HHFKA)?

BACKGROUND

The 1995 School Meal Initiative (SMI) standards encouraged reduced levels of sodium in school meals, but did not specify target levels. HHFKA required the U.S. Department of Agriculture (USDA) to revise the SMI standards to align with the 2010 Dietary Guidelines for Americans.

“[Prior to HHFKA] I think there was a conscious effort. However, it was not going towards a specific target, because ... the general targets were out there, but there weren’t any specific targets, particularly for age groups.”

HHFKA required USDA to issue new science-based nutrition standards to improve the nutritional quality of school meals. The standards are based on the recommendations of the Institute of Medicine¹ and are aligned with the 2010 Dietary Guidelines for Americans. The lunch standards specify weekly and daily requirements for low/non-fat fluid milk, fruits, vegetables, meat/meat alternates, and whole grain-rich items. The standards also set specifications for calories, sodium, saturated fat, and *trans* fat. Similar requirements apply to school breakfasts.

USDA’s updated school meal nutrition standards established three sodium targets to be phased in over a 10-year period, with specific levels for students in three grade ranges. Schools were expected to comply with the sodium Target 1 levels by school year 2014-2015, the Target 2 levels by school year 2017-2018, and the final Target levels by school year 2022-2023 (see Table 1). USDA continues

to provide schools with technical assistance resources to help align school meals with the new sodium targets.²

This research brief presents an overview of school food service directors’ experiences in transitioning to sodium Target 1, a summary of the strategies that directors have used to overcome challenges and serve meals in their school districts that meet the targets, and recommendations for technical assistance. The information comes from semi-structured discussions conducted by telephone (focus group or individual interview) with nine school food service directors in April and May 2015. Although the participants are not statistically representative of all directors, the qualitative data collection technique was particularly suited to gaining in-depth understanding of how directors implemented HHFKA. See Figure 1 for a summary of the size and poverty level of the school food authorities represented by these directors.³

Table 1. Sodium Targets Specified by USDA

Grades	School Years and Targets		
	2014–2015 Target 1	2017–2018 Target 2	2022–2023 Final Target
	Lunch Target Levels (mg)		
K-5	≤1,230	≤935	≤640
6-8	≤1,360	≤1035	≤710
9-12	≤1,420	≤1080	≤740
	Breakfast Target Levels (mg)		
K-5	≤540	≤485	≤430
6-8	≤600	≤535	≤470
9-12	≤640	≤570	≤500

K = Kindergarten

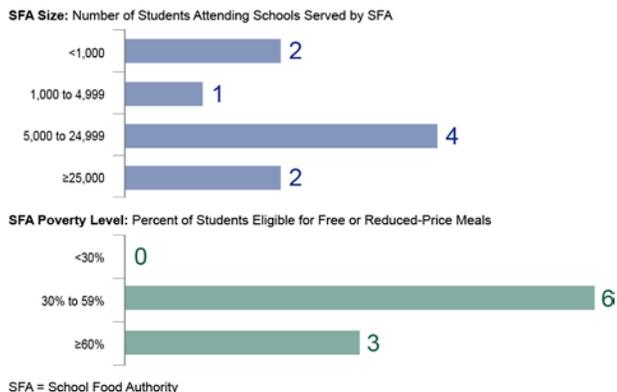
2. U.S. Department of Agriculture, Food and Nutrition Service, Tools for Schools: Reducing Sodium, <http://www.fns.usda.gov/healthier schoolday/tools-schools-sodium>.

3 This brief also includes strategies cited by directors who participated in focus group discussions and telephone interviews for research briefs in this series on other aspects of HHFKA implementation, including whole grain-rich foods, fruits and vegetables, Smart Snacks, plate waste, food service revenue, and childhood obesity.

1. Renamed the National Academy of Medicine effective July 1, 2015.



Figure 1. Characteristics of School Food Authorities (SFAs) Represented by Participating School Food Service Directors



KEY FINDINGS

School food service directors in this study said that prior to HHFKA they had worked to reduce sodium levels in school meals; following HHFKA, they intensified their efforts and made progress toward achieving the new sodium targets. The directors cited four main challenges in meeting the sodium Target 1 levels: (1) identifying and using products that comply with the lower-sodium requirements, (2) identifying venues for staff training to prepare and serve lower-sodium menu items, (3) using diverse cooking methods to enhance the flavor of foods, and (4) improving student uptake of low sodium menu items.

School food service directors described successful strategies that helped them address these challenges, including:

- Identify lower-sodium products through trade shows, discussions with vendors, and joining a food buying co-op.
- Send school nutrition staff to culinary training, conduct in-house training, and bring in local chefs.
- Prepare dishes using recipes available through the State agency and USDA, roast vegetables to bring out flavor, and replace salt with herbs and spices to flavor foods.
- Obtain student feedback on new menu items, provide students with more choices, serve items on multiple days to encourage uptake, implement a condiment station, and use *Smarter Lunchrooms* strategies.

Technical assistance in implementing the sodium targets should include strategies for obtaining compliant lower-sodium products; staff training on using more fresh and frozen products, cooking with herbs and spices, and roasting vegetables to enhance flavor; and strategies for marketing new foods and condiments to students.

OVERVIEW OF THE TRANSITION PROCESS

Sodium in School Meals Prior to HHFKA

School food service directors who participated in this study agreed that prior to HHFKA, they had policies for fat, saturated fat, and added sugar in school meals, but they did not have specific sodium policies in place.

“When we came ... in the mid 90’s to the new meal pattern and the new meals ... we already had started looking at reducing the amount of sodium.”

Despite the absence of a target, all school food service directors said they had worked to find ways to reduce sodium levels. Most directors said they did not make a concerted effort to identify and use only lower-sodium products; however, two directors said they reviewed their menus and asked suppliers for lower-sodium (and low-fat) products. One director said their food supplier had been developing and testing lower-sodium products even prior to HHFKA. This director believed that their district had achieved compliance with the sodium Target 1 values about 5 years ago.

“I’ve been in the industry long enough where I remember taking salt shakers away. ... I know our district, even before all of this started taking place, we were already getting ready, and looking at our menus and analyzing those and saying, you know this is a little high in this area and that area, and how can we reduce that?”

School food service directors said their pre-HHFKA efforts to reduce sodium levels in school meals included using more fresh fruits and vegetables instead of canned products, using dried beans instead of canned beans, switching to scratch cooking and purchasing fewer pre-made items, serving lower-sodium ketchup, and using more spices and herbs.

Transitioning to Sodium Targets

School food service directors in this study generally described their recent efforts to reduce sodium in school meals as being similar to their efforts prior to HHFKA. The key difference has been the increased intensity with which they pursued the changes.

All but two school food service directors said it had been important to have lead time to prepare for the transition,



noting that the time required to develop menus that aligned with sodium Target 1 ranged from 12 to 18 months.

“Admittedly it wasn’t the only thing that they [staff] were working on, but it took about a year and a half to plow through everything and work with our chefs and staff to go through and decide what was staying, what was going, what of our own recipes we needed to tweak, or to come up with alternative recipes or alternate products.”

School food service directors started the process by reviewing the sodium content of their recipes and overall menus in order to identify the recipes and products that were higher in sodium.

“I personally found that it’s a challenge to get my menus together. I was constantly tweaking my menus. Even though I’ve done it now for quite a while, I still continue to look at my menus and tweak ... when I can.”

Most school food service directors said that although there was lead time to comply with the sodium target, it was difficult at the onset to find lower-sodium products and to plan menus that appealed to children. Directors recalled attending trade shows, having discussions with vendors, and spending considerable time to identify lower-sodium products. A few directors said it appeared that manufacturers had responded to the new meal requirements, but had focused on reformulating the whole grain-rich products. These directors expressed the view that manufacturers were still trying to reformulate products to make them lower in sodium. Given the difficulty of obtaining suitable products, one director expressed a preference for buying reduced-sodium products that could be used to prepare multiple menu selections.

“They [vendors] made some tremendous changes in the types of foods they offer us to be able to purchase. ... Many of the manufacturers have stepped up to the plate. ... We tell our brokers the instructions they have for my school district. If you can’t show me an item that I can use three different ways in my school meal programs, don’t show me the item. Don’t waste my time, because I don’t want to see it and I don’t want to hear about it.”

Some school food service directors switched to fresh or frozen products instead of canned products, particularly with fruits and vegetables. Directors noted that although they had a central warehouse, moving from canned items to fresh and frozen items required them to purchase additional freezers for their schools.

Training Staff to Prepare Meals That Comply With Sodium Target 1

After developing a menu and finding suitable products, school food service directors in this study used a range of strategies to train school nutrition staff and managers. A few directors said their school nutrition team included chefs who conducted training. One director had a 3-year grant to bring in chefs to conduct staff training.

Other school food service directors also said they worked with local area chefs to train their school nutrition staff, and a few others sent their staff to trainings offered by their State agency or the Institute of Child Nutrition (formerly the National Food Service Management Institute). In addition to providing tested recipes, these trainings offered ideas for the creative use of spices and condiments. All directors praised the workshops offered by their State agency.

“Our State agency did a wonderful job of organizing workshops throughout [the State] both in terms of what they presented and from the collaborative work that was going on at those workshops.”

Introducing New Standards to Staff, Parents, and Students

School food service directors in this study said they did not specifically engage school staff to discuss implementation of the sodium targets. A few directors noted that even though adult participation in school meals dropped initially, the variety of products offered subsequently resulted in school staff frequently eating and praising school meals. Directors who had in-house chefs also said that serving meals at school events (such as staff meetings and parent-teacher organization meetings) helped to improve adult acceptance of school meals.

All school food service directors informed parents about the sodium-related menu changes through school newsletters. One director used parent newsletters to market the menu changes to parents and to inform them about the role of school meals with reduced sodium content in supporting their children’s health. Directors noted that parents are not aware of the complexity of school menu planning, and become more accepting of the changes once they understand the new focus on healthier school meals.



“The parent reaction is only going to be the reaction they get from their students. Otherwise when I have parent advisory groups, most of them are just shocked at the requirements that we have to meet and what that encompasses when we’re creating a student meal.”

In general, school food service directors agreed that parents approached them only if they had a complaint about the food, and this did not happen often. Most parents complained about insufficient portion size, with a few complaining about lack of flavor in meals. In response, directors invited parents to eat school meals, or eased parent concerns by discussing the reasons for the changes.

School food service directors did not have discussions with students about the changes in the sodium content of school meals. They did conduct taste tests and obtain student feedback through the school nutrition managers.

Planning for Sodium Target 2: School Year 2017-2018

One school food service director in this study said that their district had already achieved sodium Target 2. He attributed this to the vendor’s ability to provide suitable products, and emphasized that the vendor had a system to conduct taste tests and develop products that students would accept. This director also stressed the value of using spices and herbs to flavor food.

“We are ahead of the curve. We’ve been compliant with Target 2 requirements about a year. It was not a problem to get the lower-sodium products from the vendor. We’ve always used quality products. It’s just the amount of sodium and the taste in it. That’s where we use different ingredients other than sodium to make it more palatable.”

Other school food service directors expressed concern about being able to achieve sodium Target 2. These directors said they would face a challenge in planning meals with sodium content within the Target 2 limits, considering the high sodium content of many currently available products.

“You take a hamburger bun and the hamburger and you put them together and you are already a little

over 900 mg before you add anything else on the plate.”

Despite the concerns about meeting sodium Target 2 levels, school food service directors were optimistic that collaboration, teamwork, and due diligence could help them meet this challenge. They emphasized that directors must continue to work toward achieving sodium Target 2.

“My tip would be to just hang in there and work it as best you can, be creative, and keep your eyes open. We’re not the only ones in the world that are probably having some challenges with what we’re serving and see what other people are doing. Hopefully we can make the cultural change with our parents and other people in the society so that some of these targets are more accepted and we can be healthier.”

STRATEGIES FOR SUCCESS IN IMPLEMENTING SODIUM TARGET 1 LEVELS

School food service directors who participated in this study cited four main challenges in achieving compliance with the sodium Target 1 requirements:

1. Identifying and using products that comply with the lower-sodium requirements,
2. Identifying venues for staff training to prepare and serve lower-sodium menu items,
3. Using diverse cooking methods to enhance the flavor of foods, and
4. Improving student uptake of lower-sodium menu items.

Directors described successful strategies that helped them address these challenges, as summarized below.

Challenge 1: Identifying and using products that comply with the low-sodium requirements

✓ **Attend trade shows.** Trade shows geared toward school meal programs offer a convenient venue to identify lower-sodium products. School food service directors who attended trade shows identified new products that would work in their district, and brought back food samples for student taste tests. One director described going to food shows and bringing product samples to schools, where staff would “let the students sample and give us their reactions.” Directors who attended trade shows also could obtain catalogues from several manufacturers, then review and order relevant products.



✓ **Ask vendors for lower sodium products.** In addition to attending trade shows, a few school food service directors said they specifically asked vendors for lower-sodium versions of whole grain-rich breads and rolls and meat products. One director invited all vendors to a meeting and informed them that going forward the school district would be purchasing only lower sodium products.

“We had to go back to our vendors – and everybody in the industry was doing this – and say, ‘Hey, that chicken patty you’ve been selling me doesn’t cut it anymore. You’ve got to come up with a low-sodium version of it.’”

All school food service directors agreed that it was important to let brokers know about products that were not well received by students, so the brokers could track the responses and adjust their products accordingly.

“It doesn’t matter if you are a small district with one or two schools or a large district with 50 or 150 schools, we have a say, and if we tell our brokers and vendors that we don’t like something, or if we need something different, they will listen. Because they know that it’s not just one voice, it’s a lot of voices across the United States.”

✓ **Participate in a food-buying co-op.** Joining a food-buying co-op helped school food service directors expand their selection of lower-sodium products. Several directors pointed to the advantages of purchasing food products through a regional co-op, rather than doing so independently. These directors said that participating in the co-op helped them to find suitable products. Teaming up with other districts to purchase products enabled the directors to request a greater number of bids, be selective, and get the best products at lower costs.

“We put out what we’re calling our big commercial bid. We will probably get 80 different vendors who respond to that. It’s a gradual shift in who can bid, because of the products we’re putting out for bid and who’s getting the bid.”

Some directors also noted that being a part of the food co-op simplified the process of reviewing product ingredients, because this task could be split among the co-op members.

“The nice thing is the school districts being all on the same page. We all take an area of the large bid, and we ... look at the ingredient labels. We kind of share that responsibility, so I don’t have to look at all 250 items that I’ve purchased on a separate, individual basis. That’s one advantage of belonging to a co-op, having the support from other directors.”

✓ **Choose fresh and frozen products.** Several school food service directors whose kitchen staff engaged in scratch cooking achieved sodium Target 1 by switching to lower-sodium alternatives and using more fresh and frozen products. One director who began purchasing more fresh and frozen rather than canned products said he increased the frequency of purchases so there is now one delivery per week, a change that was necessitated by the limited storage space for fresh produce.

A few school food service directors highlighted the need for additional freezer space as a result of the shift toward buying more fresh and frozen produce. Two directors said they obtained grants to buy a freezer or establish a central kitchen.

“A lot of canned vegetables went away and have been replaced with frozen products or fresh deliveries from our local distributor. ... Nobody anticipated that we would need to store that many servings ... in the form of frozen products. We got a little bit of grant from the State [to help purchase freezers].”

Challenge 2: Identifying venues for staff training to prepare and serve lower-sodium menu items.

✓ **Send school nutrition staff to culinary training or invite a local chef to provide hands-on instruction.** Most directors agreed that they had increased their scratch cooking practices, particularly for frozen and fresh vegetables, beans, and soups.

Some school food service directors obtained a grant to engage a local chef and train kitchen staff in schools across the district. A few directors also sent their staff to culinary training camp, where they received hands-on instruction. Directors said that such training emphasized the creative use of herbs and seasonings to enhance the flavor of foods.



“We actually had chefs come in and do hands-on training with all of our employees to simplify techniques in the kitchen, and then to also turn around and show us some items that could be made simply in the kitchen that would meet the [sodium] guidelines.”

One school food service director received a 3-year grant to bring in a local chef to train the district’s nutrition staff.

“The first grant for the last three years, we had the use of chefs on a continual basis to be out there working in our kitchens with our staff to help with their production skills. In our district, we can’t afford to hire chefs in all 50 of our schools. Some of our employees ... have never worked in food service before, but we want them to do a good job.”

Challenge 3: Using diverse cooking methods to enhance the flavor of foods.

✓ **Use standardized recipes.** Although some school food service directors developed new recipes for scratch cooking, they also obtained standardized recipes from their State agency and USDA that complied with the requirements and have been tested for use. A few directors noted that they had a simple Excel tool that allowed them to review the sodium content of all menu items, allowing them to pinpoint the items that contributed the most sodium. This allowed them to reformulate items or find replacements.

“The nice thing about the USDA recipes is they’ve been tested. They’ve been tried over and over again, and they looked at all the components that they need to look at. In the years that I have been in food service, there’s some really good USDA recipes there. They never fail, and anybody who prepares one of those recipes can be successful, because they know that they work, so having more resources in those USDA recipe files is always a plus.”

“I also implemented the State recipes, the fall and spring recipes that they have. A lot of that has no sodium or salt added to it. They have other ingredients to help.”

One school food service director noted that such recipes have been analyzed for nutritional content, an advantage that reduces the time required for menu planning. Another director noted that their State agency Web site contained recipes in a format that allowed directors to search recipes based on sodium content or other nutrients, as well as by meal (breakfast or lunch) or food group (meat, fruits, vegetables, etc.).

✓ **Roast vegetables to bring out the flavor.** Several school food service directors whose kitchen staff engaged in scratch cooking recommended roasting vegetables to bring out the flavor. Directors said that serving roasted vegetables helped them achieve good results during the transition. They noted that children were accustomed to eating roasted vegetables at home and therefore readily accepted these foods. Directors added herbs and spices during the roasting process in order to enhance flavor. One director who sent her staff to an annual culinary training program commented that her staff learned about roasting and other ways to cook vegetables so as to retain their original color.

✓ **Replace salt with herbs and spices to flavor foods.** School food service directors discussed using a variety of alternatives to flavor foods. Commonly used alternatives included orange juice, salsa, and sriracha sauce during the cooking process, and flavoring heat-and-serve items with garlic powder, red pepper flakes, and cilantro.

“Probably the greatest thing on earth is crushed red pepper flakes, because it’s amazing, the taste that it adheres to. Whether you are having an Asian dish or an Italian dish, it certainly enhances the flavor and kids realize that. Plus they [older children] just gear towards anything that is really hot and spicy.”

Challenge 4: Improving student uptake of lower-sodium menu items.

✓ **Obtain feedback on new menu items.** All school food service directors noted that students expect foods that look and taste familiar, and don’t like foods that taste different. To get student buy-in, directors obtained



student feedback on reformulated products as well as new products. Directors conducted taste tests to help ensure student acceptance. One director invited vendors to bring in products, then asked students to sample the products and select the one they liked the best.

“We let them [students] know we are doing sampling of a new item or a special promotion that we have and we serve it in soufflé cups – a little sample. And they take it and let us know if they like it or not.”

A few school food service directors who participated in a food-buying co-op often split new products across districts in order to expedite the process of conducting taste tests and identifying suitable products. Directors also said it’s helpful to encourage and learn from interactions between children and school nutrition staff. When children talk with staff while choosing foods for their plate, staff gain insights about which products are better accepted, and why.

✓ **Offer more choices.** One school food service director noted that offering a wide variety of foods led to increased student participation and reduced plate waste. A few directors commented that although offering a wider variety of foods led to more storage needs (for leftovers), they found ways to recycle foods from one meal to the next.

“Oh, we are constantly recycling foods. So if I have leftover apples, we make coleslaw with apples in it. If we have leftover salsa from lunch, we might use it for breakfast the next day and serve it with eggs as a different product. My staff is very creative and we don’t throw [away] food. We find ways to use it.”

One school food service director said that she was looking into offering students sriracha sauce, an option that she learned about at an annual conference. She recalled a vendor’s comments about how successful the sauce had been in another State, and how it made the flavor “pop.”

✓ **Serve items on multiple days.** To encourage student acceptance of reduced-sodium foods, school food service directors expanded their offerings, particularly with the fruits and vegetables at salad bars. Directors saw improved product acceptance when students could select from a colorful array of foods. All directors agreed that it was important to start slow and retain an item on the menu for several days to gain student acceptance.

“[We] just implemented different items at different times. We didn’t do it all at one time. We didn’t want to get a revolution going on here, a revolt. We slowly implemented different menu items to meet the standards.”

A few school food service directors noted that children are not accustomed to the experience of tasting new products. One director noted that manufacturers often formulate products for schools that are not available on retail store shelves. When children are exposed to these new items only at school, it is especially important to cultivate acceptance through repeated exposure.

“The taste is so different than anything that they’ve known before, because of the types of foods that we have out in our society today are highly seasoned, highly salted, high in fat, and high in sugar. It’s difficult to sway those students. There is a lot of truth in making the product appear in front of them multiple times. Put the vegetable in front of the kid nine times and they will like it.”

✓ **Implement a condiment station.** Several school food service directors said they set up condiment stations in their schools, an approach that is especially suitable for older students. In elementary schools, directors have moved away from pump bottles, and instead offer students a limited number of pre-packed condiments—primarily lower-sodium ketchup, mustard, and mayonnaise. With older children, directors have been successful in setting up condiment stations that middle school and high school students can access at any time.

“I have ... pumps filled with low-sodium ketchup, low-fat ranch dressing, mustard. And then I have cinnamon chipotle, lemon pepper, five-spice, and [pepper] sauce. Did you know that [pepper] sauce is lower in sodium than ketchup and you need just a bit of it?”

School food service directors noted that younger children prefer simple foods but older children generally like spicy foods. Directors said that in the early stages, children would bring in salt and other condiments from fast food restaurants, but implementing the condiment station has worked well. Students no longer bring their own condi-



ments to school and are happy with the choices available at the condiment station.

“It’s just different spice bottles with a label. They [students] put them on their different vegetables and different things like that, and that’s been successful.”

✓ **Use *Smarter Lunchrooms* strategies to encourage selection of healthy food options.** School food service directors said they arranged items in the lunch line to bring out the color and encourage students to select the fresh fruits and vegetables, which are naturally lower in sodium. For example, one director suggested using smaller serving containers and placing the same product in two locations on the serving line to draw attention to the appealing color. Another director described achieving great success by offering a variety of fruits and vegetables to students, noting that the new guidelines allowed her to expand the products she could offer in the lunch line.

TECHNICAL ASSISTANCE RECOMMENDATIONS

School food service directors in this study have used a variety of strategies to achieve success in meeting USDA’s sodium Target 1 requirements for school meals. Their experiences and approaches provide relevant insights that can be applied in developing training and technical assistance materials. Such materials should focus on the

following areas:

1. **Product purchasing:** Offer strategies for identifying and obtaining lower-sodium products, such as joining food-buying co-ops and attending trade shows.
2. **Providing staff training and support:** Conduct hands-on training for kitchen staff. Training sessions can involve inviting local chefs to provide instruction at school, or sending kitchen staff to training offered by a State agency or a national organization. Focus training on using more fresh and frozen products; adding herbs, spices, and lower-sodium condiments; and roasting vegetables to enhance flavor. Provide step-by-step recipes and standardized cycle menus that meet the sodium requirements.
3. **Using a variety of cooking methods:** Provide guidance for offering a wide variety of foods; using more fresh and frozen products; adding herbs, spices, and condiments; and roasting vegetables to enhance flavor.
4. **Marketing to students:** Offer strategies for encouraging students to taste new foods and condiments that are different than those they are accustomed to eating at home or in other settings.

This research brief was produced by Westat under contract with the USDA Food and Nutrition Service.

USDA is an equal opportunity provider and employer.