

athletic and other noncurricular programs. Many administrators assume that switching to more healthful options will result in income loss; however, evidence suggests that some schools have managed to make the switch from less healthy to more healthy competitive food venues without a significant negative impact.⁶

Resources are available for schools to help make the necessary changes. The USDA offers “Smart Snacks in Schools” to help administrators and food service staff understand how to make the switch to healthier foods (<http://www.fns.usda.gov>). Action for Healthy Kids⁴ offers tools to schools for creating wellness policies, maintains a clearinghouse of programs, and offers school grants to jump-start environmental changes. The Alliance for a Healthier Generation⁵ offers access to a school health expert, an Alliance Smart Snack Product calculator, and a product navigator. In addition, incentive systems are in place to award schools for making changes. The USDA runs a Healthier School Challenge and the Alliance for a Healthier Generation runs a Healthy School Program. Both agencies incentivize school change with bronze, silver, and gold awards that come with small monetary awards and public recognition.

Still, the implementation of this federal policy will be a significant challenge for many schools. The authors acknowledge that full implementation will likely require additional training, support, and incentives from the state and federal governments. However, these types of support and incentives have

not been provided adequately in the past when federal regulations have been established.

The success of the policy will be evaluated by the level of implementation achieved and by its impact in achieving positive health outcomes. In addition, the unintended consequences of these new federal guidelines need to be considered and examined with care as the guidelines are enacted. The following questions need to be considered: Will schools respond by finding more healthful food options to offer students outside of the federally subsidized breakfast and meal programs? Will students accept the healthier options? Will valuable school programs suffer if competitive revenue streams are disrupted? Might some school districts decide to drop their participation in the National School Lunch Program and the School Breakfast Program, deciding that offering students meals and foods divorced from federal regulations is more cost-effective and easier? Will student nutrition improve and obesity rates decline as a result of these policies?

School administrators have been slow to adopt the belief and related policies and practices that unhealthy foods that are high in sugar, fat, and empty calories do not belong in a school and that providing fruit, vegetables, and whole-grain products throughout the school is important. The new federal policy may be the carrot at the end of the stick that drives schools to make these important changes. In addition to the stick-and-carrot, substantial tangible help in making the switch and incentives to sweeten the deal from state and federal sources are likely needed.

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Is Lunch From Home Better Than the School Cafeteria? A Look at the New School Lunch Criteria

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In this issue of *JAMA Pediatrics*, Caruso and Cullen¹ describe the nutritional quality and cost of lunch brought from home by elementary and intermediate school-aged children in Houston, Texas. As they remind us, this component of the school food environment is basically avoided by public health policy and rarely addressed by inves-

tigators. The authors conducted an observational study in 1 school district including 12 schools (8 elementary, 4 intermediate) in the fall of 2011. A total of 243 elementary and 95 intermediate school student meals from home were assessed in both low-income and middle-income schools. Foods and the amounts eaten were documented with direct observation by well-trained observers. The nutrient content and the food groups



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were compared with the US Department of Agriculture guidelines released in 2012 for the National School Lunch Program (NSLP).² These new national guidelines are in a several-year implementation phase. Federal reimbursement for school lunch requires that schools adhere to these national guidelines; more than 99% of public schools and most private schools participate in this important child nutrition program.³ However, lunch brought from home is not addressed by federal guidelines; the general assumption is that home-prepared lunch will be as healthful as school lunch and possibly better.

The key study questions concerned lunch quality and lunch cost. How did home-prepared lunches compare with cafeteria lunches using the NSLP benchmarks recently established to support child health and development? Home lunches were of lower quality in several important health and nutrition dimensions. Home lunches contained more sodium and fewer servings of vegetables and fat-free or 1%-fat milk. Vegetables were rarely included in home lunches and only about 75% of this small amount was consumed by the students. Home lunches rarely included milk (nor was it purchased at school). Home lunch beverages were mostly non-100% juice or other sweetened drinks. Reduced milk and vegetable intake at lunch results in an overall lower intake of many vitamins and minerals. About 90% of home lunches contained sweetened beverages, chips, and desserts, none of which are allowable in the federally reimbursed school lunch program and are not allowed to be sold in the cafeteria or on campus (eg, stores, vending machines).^{1,4} Not surprisingly, home-brought sweetened beverages, chips, and desserts were fully consumed when provided (90%-100% by both elementary and intermediate school students). On average, elementary school students consumed about 85% of calories provided by the home lunches and intermediate school students consumed about 98%.

The costs were calculated from regular grocery store prices in the school communities. Food-only cost comparisons suggested that home lunches were somewhat less expensive for older children in intermediate schools (about 14%) and more expensive for elementary school children (about 7%). In the lower-income older-school group, home lunches were less expensive by about 20%. Full-cost school lunches at the time of the study were \$1.80 and \$2.05 for elementary and intermediate schools, respectively. Participating schools receive reimbursement for each lunch served based on family or school income status to qualify for free, reduced-cost, or full-pay meals. In the 2013 to 2014 academic year, lunch reimburse-

ment to schools was \$2.93 for each free lunch, \$2.53 for reduced-cost, and \$0.28 for full-pay lunches. The combined money from student cost and school reimbursement is used to purchase food and pay other school meal program expenses (eg, kitchens, labor). Future studies and educational activities are needed to encourage families who choose to provide lunch from home to prepare meals that are similar to the NSLP diet patterns and the health promotion goals. Little contemporary information is available about families and students who choose not to participate in the school lunch and may result in less healthful lunch alternatives or skipping lunch.

The new NSLP guidelines¹ were passed by the 2011 Congress as the Healthy Hunger-Free Kids Act and were a much-needed health and nutrition update for child nutrition programs. The changes were based on the 2009 Institute of Medicine⁵ recommendations that the child nutrition programs meet the Dietary Guidelines for Americans and the Dietary Reference Intakes. Prior to this, school breakfast and lunch programs had not been fully updated for about 30 years. The related pediatric public health concerns (including childhood obesity) and evidence regarding health promotion and disease prevention are very different now than in the 1970s and 1980s. The new NSLP regulations provide both minimum and maximum calorie allowances and limits for saturated fat, trans fat, and sodium content. However, the clear focus on increased servings and variety of vegetables, whole fruit (not just juice), whole grains, and nonfat or low-fat milk has the potential to fundamentally change the diet quality and food variety of school-aged children. The positive nutrition and health impact will likely be higher for children from lower-income families, especially families who experience periods of food insecurity.

Breakfast and lunch programs are undergoing major changes. The changes will result in improved diet quality, healthful eating behavior, and enjoyment of a variety of foods during the school day. School administrators, teachers, food and nutrition professionals, innovative school food companies, parents, and students are working together to implement regulations and develop and share the best practices. Change is hard but the new school food environment will support child health. Children must have a healthful breakfast and lunch to be ready to learn. School is a place where children learn about healthful foods both in the classroom and cafeteria. These experiences are the foundation on which students establish food preferences and behaviors that contribute to lifelong health outcomes.

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