Nearly 50 million 5- to 19-year-olds attend public elementary and secondary schools, a number that represents more than 80 percent of all children in the United States. Given that children spend a significant amount of time at school most months of the year, they consume a substantial portion of their daily calories at school. Clearly, the school environment plays a critical role in the short- and long-term health behaviors among youth—including those associated with food and beverage choices and habits.

**Foods and Beverages—Beyond School Meals**

Child nutrition programs such as the National School Lunch Program (NSLP) and the School Breakfast Program (SBP) are important contributors to the overall dietary intake of children and adolescents. While meals served in these programs must meet specific federal nutrition requirements, “competitive foods,” which are foods and beverages sold on school campuses...
outside of these programs through vending machines, snack bars, à la carte, school stores and fundraisers, do not have to follow federal nutrition standards based on current science. In addition, competitive foods and beverages also significantly impact overall dietary intake.

Findings from the Third School Nutrition Dietary Assessment study (SNDA III) show that while many schools are continuing to improve the quality of competitive foods, more can and should be done. Key findings from SNDA III, outlined below, add to the growing body of research highlighting the need to improve the quality of foods and beverages beyond school meals, actions that will ultimately lead to improved child nutrition programs and healthier school environments.

The SNDA III found that:

- one or more sources of competitive foods were available in 73 percent of elementary schools, 97 percent of middle schools and 100 percent of high schools;
- 40 percent of students consumed one or more competitive foods on a typical school day;
- students who participated in the NSLP were significantly less likely to consume competitive foods and sugar-sweetened beverages at school;
- competitive food intake increase with grade level; and
- most common competitive foods were low in nutrients and high in energy, including candy, desserts, salty snacks, and sugar-sweetened drinks.

Local Wellness Policies and Nutrition Standards

Recognizing the importance of improving the school food environment, states, school districts, schools, and organizations, as well as the U.S. Department of Agriculture (USDA), have taken steps to establish nutrition standards for competitive foods and beverages that are available throughout the school campus. Many of the nutrition standards actions were accelerated by the passage of the Child Nutrition and WIC Reauthorization Act of 2004, which required school districts to establish local wellness policies (LWPs) by July 1, 2006. Among the specific policy components outlined in the law, one relates to nutrition standards and calls on school districts to include nutrition guidelines for all foods and beverages available at the school during the school day in the LWP.

At the time the LWP provision was enacted, there were no federal nutrition standards to assist districts in their efforts to establish nutrition guidelines for foods and beverages. In an effort to augment local, state, and federal initiatives, Congress called on the Centers for Disease Control and Prevention (CDC) to undertake a study, with the Institute of Medicine (IOM), to make national recommendations about nutrition standards for foods and beverages offered in competition with the federally reimbursable meals and snacks.

In April 2007, the IOM Nutrition Standards for Foods in Schools report was released. In addition to the IOM activities, national organizations, alliances, and the USDA were also taking steps to develop their own sets of nutrition standards. States were also playing an active role in establishing standards: as of November 2007, 29 states and the District of Columbia had adopted school competitive food standards. In addition, interest among members of Congress has resulted in a number of bills being introduced over the past several years to address competitive foods and beverages.

After examining the standards available from the different entities, four sets of standards are highlighted in this article for their evidence base, their reach, comprehensiveness, and ease of use by states, localities, and schools. These standards are:

- Institute of Medicine Nutrition Standards for Foods in Schools;
- USDA’s HealthierUS School Challenge Criteria (HUSSC);
- School Nutrition Association National Standards (SNA); and
- Alliance for a Healthier Generation School Beverage and Competitive Foods Guidelines (AFHKG).

While the USDA HealthierUS School Challenge Criteria, the School Nutrition Association National Nutrition Standards, and the Alliance for a Healthier Generation have standards that also address school meals, this article focuses on the standards established for foods and beverages served outside of the school meal programs. See Table 1 for a comparison of the four sets.

Institute of Medicine Nutrition Standards for Foods in Schools

The IOM standards were developed by a committee with the overarching goal of providing evidence based recommendations based upon the latest scientific literature on diet and health. The final recommendations are
based primarily on the Dietary Guidelines for Americans (DGA), with consideration given to other relevant science-based resources.

Perhaps the most notable outcome of the IOM report was the conclusion that federally reimbursable school nutrition programs should be the main source of nutrition at school, and opportunities for competitive foods should be limited. The committee went on to state that if competitive foods are available, they should consist of nutritious fruits, vegetables, whole grains, and non-fat or low-fat milk and dairy products, consistent with the 2005 DGA, to help children and adolescents develop healthful, lifelong eating patterns.

The IOM standards recommend that only fruits, vegetables, whole grains, and low-fat dairy be allowed during the school day for all grades. No other standards adhere as closely to the DGA in promoting these key food groups exclusively during the school day in all schools. IOM orga-

Table 1. Foods (Non à la Carte Entrées)

<table>
<thead>
<tr>
<th>IOM Tier 1</th>
<th>IOM Tier 2</th>
<th>HUSSC</th>
<th>SNA</th>
<th>AFHG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows only fruits, vegetables, whole grains, and related combination products (combination products must contain a total of one or more servings as packaged of fruit, vegetables, or whole grain products) and nonfat and low-fat dairy that are limited to 200 calories or less per portion as packaged, and:</td>
<td>Must meet the nutrient requirements for Tier 1 but do not have to meet the serving of fruit, vegetable or whole grain requirement. Tier 2 foods are only allowed after school in high schools.</td>
<td>(Applies to elementary school only):</td>
<td>&lt;200 calories; ≤35% total calories from fat; &lt;10% calories from saturated fat; ≤0.5 grams trans fat. Nuts, seeds, and cheese (one ounce of each) are exempt from fat, saturated fat standards.</td>
<td>Fruit packed in own juice and dried fruit:</td>
</tr>
<tr>
<td>► no more than 35% total calories from fat (the fat content of nuts and seeds will not count against the fat limit, but all other nutrition standards apply)</td>
<td>► less than 10% of total calories from saturated fats</td>
<td>&lt;200 calories</td>
<td>&lt;200 calories from saturated fat; ≤0.5 grams trans fat.</td>
<td>&lt;200 calories for high school;</td>
</tr>
<tr>
<td>► zero trans fat (≤0.5 grams-serving)</td>
<td>► 35% or less of calories from total sugars, except yogurt with no more than 30 grams of total sugar per eight-ounce portion as packaged</td>
<td>&lt;10% calories from saturated fat; &lt;0.5 grams trans fat; excludes nuts, seeds, nut butters, and reduced-fat cheeses; &lt;35% total sugars by weight (includes naturally occurring and added sugars; fruits and vegetables are exempt); &lt;200 mg sodium per portion as packaged (gold level with distinction) or ≤480 mg of sodium per portion as packaged (gold level).</td>
<td>&lt;230 mg sodium per portion as packaged.</td>
<td>&lt;180 calories for middle school;</td>
</tr>
<tr>
<td>► sodium content of no more than 200 mg or less per portion as packaged.</td>
<td></td>
<td></td>
<td>&lt;250 mg sodium per portion as packaged.</td>
<td>&lt;150 calories for elementary school;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Other foods must meet one of the following requirements:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>► ≤100 calories</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>► ≤150 calories for vegetables with sauce and soups that also meet two more nutrient requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>► Meet two of the following requirements: &lt;150 calories (elementary), &lt;180 calories (middle), &lt;200 calories (high school), and either 2 g of fiber; ≥5g protein; 10% DV of Vitamin A, C, E, folate, calcium, magnesium, potassium, or iron; or one-half serving of fruit or vegetables.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>≤35% total calories from fat; &lt;10% calories from saturated fat; 0 grams trans fat; nuts, nut butters, and seeds as well as reduced-fat or part-skim cheese (1.5 oz) and any one egg with no added fat are exempt; &lt;35% total sugars by weight; &lt;230 mg sodium per portion as packaged; &lt;480 mg sodium if they meet the following requirements: 1) Low fat and fat-free dairy, and 2) Vegetables with sauce and soups if they contain one or more of the following: ≤2g fiber; or ≤5g protein; or ≤10% Daily Value of Vitamin A, C, E, folate, calcium, magnesium, potassium, or iron; or ≤1/2 serving (1/4 cup) of fruit or vegetables.</td>
</tr>
</tbody>
</table>
nized foods and beverages into two tiers according to their consistency with the DGA.

Tier 1 foods and beverages provide at least one serving of fruit, vegetables and/or whole grains, or non-fat/low-fat dairy products and are foods to be encouraged. Tier 2 foods and beverages fall short of meeting Tier 1 criteria, but they do not fall outside the DGA recommendations, and so are allowed, but only in specific circumstances such as in the after school setting in high schools. The standards do include limits on calories, total saturated and trans fats, sugar, and sodium.

USDA HealthierUS School Challenge Criteria

Developed in 2008, the HUSSC was established to recognize elementary schools that are creating healthier school environments through their promotion of good nutrition and physical activity. Four levels of superior performance are awarded: Bronze, Silver, Gold, and Gold of Distinction. To qualify for an award, a school must submit a formal application and meet basic criteria set forth by the Food and Nutrition Service (FNS). The HUSSC criteria reflect the recommendations of the 2005 Dietary Guidelines for Americans, as well as the IOM recommendations for foods and beverages served outside of the school meal programs.

While the HUSSC standards do not involve a tiered approach, the various award levels are based on increasing compliance with the DGA. For example, sodium levels for bronze, silver, and gold are identical (< 490 mg per non-entrée and < 600 mg per entrée), while the Gold Award with Distinction specifies a stricter standard (< 200 mg per non-entrée and < 480 mg per entrée).

In addition, HUSSC includes other areas on which schools are graded, such as physical activity and nutrition education, so a direct comparison of the nutrition standards alone is difficult. Perhaps the biggest difference between HUSSC and the other sets of standards is that HUSSC is only for elementary schools and the standards only apply from bell to bell, which excludes after-school programs, after-school fundraisers, off-campus fundraisers, and concession stands.

School Nutrition Association National Nutrition Standards

In spring 2007, SNA established a task force to develop a set of nutrition standard recommendations for both reimbursable meals and competitive foods. The task force was composed of school nutrition directors, state agency directors, industry representatives, and academic experts in the nutrition field. SNA used the Institute of Medicine Nutrition Standards for Food in Schools and the Alliance for a Healthier Generation Competitive Foods and Beverage Guidelines in the development of its standards.

While the SNA standards are closest to the IOM in that Tier 1 products are only fruits, vegetables, whole grains, and low-fat dairy, the SNA Tier 1 only applies to elementary school; SNA Tier 2 items are allowed in middle and high school and the standards allow other items as long as certain nutrition specifications (such as limits on fats, sodium and sugar) are in place. SNA further recommends that local districts should develop standards for classroom parties and celebrations. After-school programs should follow guidelines for Tier 1 and Tier 2 foods unless the foods are part of the after-school reimbursable snack or dinner program. In that case, the SNA after-school reimbursable snack and dinner standards should be followed.

Alliance for a Healthier Generation School Beverage and Competitive Foods Guidelines

The Alliance for a Healthier Generation is a partnership between the American Heart Association and the William J. Clinton Foundation. The Alliance’s Healthy Schools Program began in 2006 and aims to improve schools in the areas of nutrition, physical activity, and staff wellness. A component of the Healthy Schools Program includes beverage and competitive foods guidelines that were developed with the active involvement and support of the food and beverage industry.

Several of the Alliance food and beverage standards vary based on age and school level. For example, fat free and low-fat milk sizes range from eight ounces for elementary school to 12 ounces for high school. Zero- or low-calorie beverages are not allowed in elementary or middle school, but are in high school. Sweetened beverages are allowed in high schools at up to 66 calories per eight ounces, with the maximum size of 12 ounces. Calorie recommendations also vary from 150 in elementary, 180 in middle, and 200 in high school.

The Alliance recommends that after-school programs at the school should follow the Alliance competitive food and beverage guidelines as well (unless they are part of the USDA Reimbursable Snack program, which follows the USDA guidelines).
Comparison of Specific Areas

Beverages

**IOM Tier 1:** allows only water, 100 percent juice, and low- or non-fat dairy or soy-based beverages in all schools throughout the school day. Limits are placed on the portion sizes for juice (four ounce portions in elementary school and up to eight ounces in middle and high school) and milk is capped at eight ounces, with limits on total sugar not to exceed 22 grams.

**IOM Tier 2:** Decaffeinated diet drinks are allowed in high school, after school hours.

**HUSSC** (applies to elementary school only): allows only water, 100 percent juice up to six ounces, and low-fat or non-fat flavored or unflavored milk up to eight ounces, with no sugar limit.

**SNA:** allows only water, 100 percent juice or juice/water blends with no added sugar (up to 10 ounces for all grade levels), and up to eight ounces of low- or non-fat milk, flavored or unflavored, with a calorie cap of <170.

**AFHG:** allows water, juice, and low or non-fat dairy or soy based beverages in all schools, as well as other beverages in high school. Elementary schools can serve up to eight ounces of juice; middle schools—10 ounces, and high school—12 ounces. There is a calorie limit for juices of <120 calories per eight ounces and a requirement for at least 10 percent of recommended daily value of three or more nutrients.

Low-fat and non-fat milk are allowed with an eight ounce limit in elementary, 10 ounces in middle, and 12 ounces in high schools with no sugar limit but a calorie cap of <150 per eight ounces. Other beverages are allowed in high school including no or low calorie beverages and other beverages as long as they do not exceed 12 ounces and have <66 calories per eight ounce portion.

Entrees Served à la Carte

**IOM** (no tiers for entrees served à la carte): sets limits for total fat (<35 percent), saturated fat (<10 percent), total sugars (<35 percent) and sodium (<480 mg per portion).

**HUSSC:** not to exceed portion size of food served in NSLP and sets sodium limits for gold with distinction (<480 mg) or gold (<600 mg).

**SNA:** allows any entree to be served à la carte that is on the menu cycle with no specific nutrient limits.

**AFHG:** no standards apply to entrees sold as à la carte.

Fundraising

**IOM:** Fundraising held on campus during the school day should consist of only Tier 1 foods; high schools only may provide Tier 2 foods only after school.

**HUSSC:** primarily non-food items should be sold during the school day; if food is served, should follow competitive food guidelines.

**SNA:** no standards for fundraising.

**AFHG:** Time of day guidance includes fundraising, school parties, etc.

Implementing Comprehensive Nutrition Standards

Many local districts and states have implemented guidelines more closely aligned with some of the national standards described in this article. The SNDA III research found that students who attended middle and high schools with more restrictive competitive foods policies consumed fewer calories from sugar-sweetened beverages. Clearly, creating the policy is a crucial first step in making school environments healthier, and much has been learned from the successes and challenges of innovators across the country.

- Comprehensive policies implemented at the state level can impact the availability of unhealthy foods offered at the local level. In Connecticut, Marlene Schwartz, deputy director of the Yale University Rudd Center for Food Policy, and colleagues found that when schools used the state nutrition standards over local wellness policy standards, there was a dramatic drop in overall unhealthy foods served. In middle schools, more than 80 percent of schools were offering unhealthy food items in the à la carte lines. After one year, fewer than 10 percent of schools implementing the state's standards were serving unhealthy foods compared to 60 percent following local wellness policies.

- Healthy nutrition policies are cost neutral changes. In West Virginia, 80 percent of principals surveyed found little or no change in revenue once they implemented the state board of education’s new nutrition standards. In Massachusetts, a survey of 296 food service directors and principals found reports of little or no fiscal impact and some increased revenue when they changed the healthy food options and/or marketing. The USDA/CDC Making It Happen report found that of 17 schools or districts surveyed, 12 schools...
and districts increased revenue and four reported no change after improving school foods.\textsuperscript{5}

Training and marketing the new policies to the food service staff, school administration, and the community must occur for new policies to succeed. Competitive foods are governed by a wide variety of interests, including parent-teacher organizations, school administrators, students, and outside vendors. An audit of the Los Angeles Unified School District nutrition policies found that schools were not following the competitive food standards. In most cases, school administrators, local food vendors, and others outside of food service were not even aware of their existence.\textsuperscript{6}

After the West Virginia State Board of Education created its new set of state-wide comprehensive nutrition standards that were more closely aligned with the Institute of Medicine, the executive director of Child Nutrition created and implemented a plan to ensure the new policies would succeed. This included training school and food service staff, disseminating implementation memos, making presentations to superintendents, principals, and school boards, and increasing public awareness through radio ads, parent brochures, and other marketing materials.

**Conclusion**

While there is considerable variation on the content of the four sets of standards reviewed, there are many similarities and consistencies. All standards address fats with the same numerical standard, but differ in the exemptions to nuts and dairy. Sugar is addressed by all standards, but the IOM and School Nutrition Association use calories in their calculation compared to the AFHG and the HUSSC, which use weight in the calculation. The IOM and HUSSC gold distinction sets the sodium limit to 200mg per package, while the SNA and AFHG is at 230mg.

Only the IOM standards exclusively promote fruits, vegetables, whole grains, and low- and non-fat dairy products in all schools throughout the entire school day and campus. Entrees served à la carte is one of the areas greatest difference among the four standards reviewed; the IOM standards are the strongest, with limits on a number of key nutrients, while AFHG does not specify any limits on such entrees.

For beverages, all standards encourage water and do not allow water with added flavoring and/or with non-nutritional sweeteners to be served. The four national standards reduce the portion of juice, though AFHG offers larger portions to middle and high schools. For milk, all standards require one percent or non-fat milk, but IOM specifies sugar and portion limits and SNA and AFHG lists a calorie and portion limit, with AFHG allowing larger portions for middle and high school. The HUSSC only limits the size of the milk and fat content. All standards ban sugary beverages from all schools; however, AFHG allows high schools to serve no and lower-calorie drinks (up to 66 cal/serving) during the day. IOM allows zero-calorie beverages in high schools after the school day.

While the standards differ, they all attempt to better align offerings with recommended dietary guidance to promote a healthy nutrition environment. With the alarming number of children and youth at high risk for health issues, states and districts must take action and move forward with updating standards that are comprehensive and adhere to science and best practice guidelines.

It is important for policymakers, school nutrition personnel, and others involved in improving the school environment to look closely at the standards they adopt, ensure that the overall school environment is considered—from à la carte entrees to fundraising to parties to rewards, as well as implementation, training, and monitoring, to ensure that the intended results will positively change the entire school environment—thereby affecting all children and members of the school community.

Tracy Fox is a registered dietitian and nutrition policy consultant in Washington, DC. Elizabeth Walker is director of NASBE’s Healthy Eating Project.

\begin{itemize}
\item \textsuperscript{1}Committee on Nutrition Standards for Foods in Schools, *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth* (Washington, DC: Institute of Medicine, 2007).
\item \textsuperscript{2}M. Schwartz, *School Wellness Policies: Opportunities for Public Policy* (New Haven, CT: Rudd Center for Food Policy and Obesity, Yale University, 2009.)
\item \textsuperscript{6}M. MacVean, “L.A. Unified Schools Violate Junk Food Ban, Audit Finds Unhealthful Food Being Sold in Vending Machines and by Pushcart Operators Taking on School Food Marketing.”
\end{itemize}