

The CDC Guide to Strategies to Decrease the Consumption of High-Energy-Dense Foods



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Strategies to Prevent Obesity and Other Chronic Diseases

The CDC Guide to Strategies to Decrease the Consumption of High-Energy-Dense Foods

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR CHRONIC DISEASE PREVENTION AND HEALTH PROMOTION
DIVISION OF NUTRITION, PHYSICAL ACTIVITY AND OBESITY**

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Using This Guide

This document provides guidance for program managers, policy makers, and others on how to select strategies to reduce consumption of high-energy-dense foods. It offers the most relevant information on each type of strategy. The discussion of each strategy follows the outline defined here.

Strategy

Describes an environmental change or policy-related activity intended to prevent disease or promote health in a group of people, also referred to in the literature as an *approach*. Criteria for inclusion of a strategy in this document are a rationale supporting the strategy and examples of implemented programs.

Definition

Briefly describes the strategy.

Rationale

Explains why the particular strategy is important to efforts to reduce consumption of high-energy-dense foods.

Evidence of Effectiveness

Draws on peer-reviewed literature and current practice to summarize the evidence of the strategy's effectiveness.

Key Considerations

Includes information that may be important to keep in mind during the planning, implementation, or evaluation phases of a strategy.

Action Steps

Identifies specific activities for each strategy that public health professionals can take to implement strategies in specific settings, including communities, schools, child care facilities, work sites, and medical care facilities.

Program Examples

Includes examples of programs that use the strategy as a way to decrease consumption of high-energy-dense foods. Program examples were selected from interventions described in other publications, such as peer-reviewed journals or program reports, or identified by key informants and through Internet searches.

Resources

Guides the reader to further materials and information that might be useful in planning, implementing, or evaluating the recommended strategy.



Introduction to Energy Density

Research shows that people eat a fairly consistent amount of food on a daily basis. This finding holds true whether the amount of food contains many or few calories. Therefore, the number of calories in a particular amount or weight of food—the food’s energy density—affects the total number of calories a person consumes. Energy density is the amount of energy (measured in kilocalories [kcal]) in a gram (g) of food.¹

Foods with lower energy density have fewer kilocalories per gram than those with higher energy density. Energy density is affected by the amount of water in foods and their macronutrient contents. For example, water has 0 kcal per gram, fiber has 1.5–2.5 kcal per gram, carbohydrates and proteins have 4 kcal per gram, and fat has 9 kcal per gram. Thus, foods with a higher fat content will generally have a higher energy density. However, the addition of water or fiber-rich ingredients will lower the energy density of higher-energy-dense foods.¹

Observational studies among adults have shown that diets primarily consisting of lower-energy-dense foods are associated with lower energy intakes.^{2–11} These lower energy intakes are achieved when people eat the same amount or even more food by weight (or volume) than people who eat higher-energy-dense diets.^{2,3,5,6,9} In addition, the nutritional quality of the diet is generally higher for adults consuming lower energy dense diets. Lower energy dense diets are generally higher in vitamin A, vitamin C, vitamin B6, folate, iron, calcium and potassium.^{5,7,12,13}

Experimental studies have reinforced many of the findings noted in observational studies. For example, adults who eat diets lower in energy density exhibited lower energy intakes,^{14–17}

ate a comparable amount of food by weight,¹⁴ and reported no increase in hunger.^{14,15} Similar findings have been observed among children. In experimental trials among preschool-aged children (aged 2–5 years), the energy intake of an entrée and of a meal were reduced by decreasing the energy density of the entrée.^{18,19} In addition, some studies have shown that satiety is enhanced and meal energy intake is reduced when people eat a large portion of a low-energy-dense food at the start of a meal.^{20,21}

Observational studies also have shown associations between energy density and body weight or body mass index (BMI). The diets of adults with normal weights are lower in energy density than the diets of adults who are obese,⁶ and higher-energy-dense diets are associated with higher BMIs^{6,8,9,22} and a higher risk of being overweight or obese.^{5,10,23} In addition, women who eat lower-energy-dense diets gain less weight,^{2,9} and weight gain during pregnancy is positively associated with increased energy density.²⁴

In terms of weight loss, clinical studies have shown that obese adults counseled to eat a reduced-energy diet lost 6.3 kg over 7 months²⁵ and that incorporation of a lower-energy-dense food into a reduced-energy diet led to a 7.2 kg weight loss among overweight or obese adults over 1 year.²⁶ Additionally, obese women counseled to eat more fruits and vegetables and less fat lost 7.9 kg over 1 year.²⁷

A recent prospective study among children showed that a high-energy-dense diet is associated with a higher risk for excess body fat during childhood.^{28,29}





In recent years, public health professionals have focused on environmental and policy strategies designed to reduce the consumption of high-energy-dense foods at the population level because studies have linked lower-energy-dense diets to decreased energy intake, lower levels of overweight and obesity, and improved nutritional quality of the foods people eat.

This publication, *The CDC Guide to Strategies to Decrease the Consumption of High-Energy-Dense Foods*, is intended to be used by public health professionals who are involved in making policies and implementing programs to prevent or reduce overweight and obesity by helping people reduce the energy density of the foods they eat.

The specific strategies described in this guide can be framed within at least one of three overarching strategies designed to reduce the consumption of high-energy-dense foods that are of low nutritional value. These overarching strategies are to

- Substitute low-energy-dense foods for high-energy-dense foods.
- Decrease the portion sizes of high-energy-dense foods.
- Limit the availability of high-energy-dense foods.

The interventions described in this guide come from a variety of studies and program examples that were designed to improve dietary quality in general, not to specifically reduce energy density. However, energy density is affected by interventions that help people reduce the amount of fat, sugar, and calories in their diet, as well as those that help people to increase

their intake of fruits and vegetables. Therefore, inclusion of the specific environmental and policy approaches described in this guide is warranted.

The term *healthier foods* will be used throughout this guide to describe foods with low-energy density and low content of calories, sugar, fat, and sodium.³⁰ In general, healthier foods include fruits and vegetables; low-fat dairy products; whole-grain products; and lean meats, fish, and poultry. Although definitions (i.e., numeric ranges of kilocalories per gram) for various categories of energy density have been proposed,³¹ these have not typically been used in specific interventions.

For this guide, foods should be considered as existing along a continuous spectrum of energy density, and efforts should be made to increase availability and consumption of foods at the lower end of the spectrum and to limit availability and consumption of foods at the higher end.

Strategies to reduce the consumption of high-energy-dense foods have been identified for specific settings for obesity prevention. These settings include restaurants, retail food stores, schools, child care facilities, and workplaces.

The selection of these intervention strategies is based on a rationale supporting the strategy. Strategies were selected on the best available evidence, as well as the knowledge and expertise of the authors and Centers for Disease Control and Prevention (CDC) partners.



Strategies to Decrease the Consumption of High-Energy-Dense Foods, by Setting

Strategy	Setting				
	Restaurants	Retail Food Stores	School	Child Care Facilities	Workplace
1. Promote menu labeling in restaurants	◆				
2. Support restaurant programs that offer and promote healthier food choices	◆				
3. Improve supermarket access in underserved areas		◆			
4. Improve existing small stores in underserved areas		◆			
5. Ensure that students have only appealing, healthy choices in foods and beverages offered outside of the school meals program			◆		
6. Expand curriculum-based strategies that support nutrition standards in child care settings				◆	
7. Ensure that regulations, policies, and legislation at all levels promote healthier foods in child care settings				◆	
8. Promote healthful foods at workplace cafeterias, in workplace vending machines, and at meetings and conferences					◆



Strategy 1. Promote menu labeling in restaurants

Definition

Menu labeling involves providing the nutritional content of foods on menus, menu boards, and item tags at the point of purchase in fast-food and full-service restaurants. Examples of menu-labeling legislation include the Common Sense Consumption Act and the Menu Labeling and Education Act (MEAL), both which have been introduced at the federal level. The State of California and four local municipalities (Philadelphia; New York City; Seattle/King County, Washington; and Multnomah County, Oregon) have passed similar legislation.

Common features of these ordinances require that menu boards post calorie information adjacent to food items in a font, format, and size that it is visible from the ordering line and as prominent as the name and price of the food item. New York City and Philadelphia require that nutrition information also be posted on drive-through menu boards. These ordinances include exemptions for self-serve condiments, daily specials that appear for short periods of time (defined by the ordinances), alcoholic beverages, and custom orders.

Rationale

People who eat frequently at fast-food and full-service restaurants are more likely to eat large portion sizes and significantly underestimate the caloric content of the portions they eat, particularly for higher-calorie foods. In one study, the average calorie level for less healthful items (e.g., hamburger with fries, fettuccine alfredo, chicken fajitas, chef salad, patty melt and fries) was almost twice as high as consumers' estimates (1,336 versus 694 calories).³² Thus, clear, easy-to-use nutrition information at the point of ordering can help people make informed menu choices at restaurants.

Evidence of Effectiveness

Data on the effectiveness of menu labeling are limited. Before menu labeling was mandated in New York City, one research study showed that Subway patrons who saw calorie information at the point of purchase ordered food with 52 fewer calories than patrons who did not see this information.³³ A recent review of six published studies also found evidence of the positive effects of comprehensive menu labeling.³⁴ Five of the studies in this review showed that providing

Restaurants

Restaurants are broadly defined to include full-service restaurants, fast-food restaurants, food courts, lunch wagons, deli counters, and coffee shops that serve food.³⁵ In the past 30 years, the number of food establishments in the United States has doubled.³⁶ Compared with food prepared at home, the types of food sold in fast-food and full-service restaurants tend to be higher in calories and fat.^{37,38}

However, dining out has become popular in the United States, and about half (48.6%) of all household food dollars were spent on foods prepared away from home in 2009.³⁹ U.S. adults and children now eat nearly six meals and snacks per week at a restaurant,⁴⁰ and according to data collected in 1995 (the most recent data available), 27% of all meals and 34% of total calories are eaten away from home.³⁸



nutrient information affected food choices among adults eating at work-site cafeterias and among adolescents (middle and high school students) eating at select chain restaurants, although the effects were small in magnitude.

Another study showed that small changes in the purchasing habits of individuals as a result of menu labeling can have population-level effects.⁴¹ As part of a health impact assessment of Los Angeles County, researchers estimated that nearly 39% of the average weight gain of the total county population (6.75 million pounds) could be averted if only 10% of patrons of large chain restaurants ordered an average of 100 fewer calories per meal as a result of menu labeling.⁴¹ Additional studies that examine the effect of menu labeling on food purchases at restaurants are needed.

Key Considerations

When proposing menu-labeling legislation, several potential legal and public health challenges should be considered, and care should be taken in how ordinances are written.⁴² These challenges can affect the success and reach of menu-labeling laws.

Examples of these challenges include

- Preemption of local and state laws by federal laws.
- Industry claims that first amendment rights to commercial speech or equal protection rights are being violated.
- Industry claims that menu-labeling laws overburden their interstate commerce, thus violating the Commerce Clause of the Constitution.

In addition to legal challenges, other issues to consider when writing policies for menu labeling include the need to

- Review the characteristics and language of proposed or implemented policies in other states and localities for examples of how menu-labeling requirements might be written or adapted for a given locality.
- Define terms such as “standard food item” and “restaurant” in the proposed legislation.
- Specify how nutritional information will be displayed and distributed.

Action Steps

1. Develop educational materials for the public that outline the link between eating out, weight gain, and chronic disease.
2. Establish partnerships with local and state restaurant associations, health promotion practitioners, nutrition advocates, and public health organizations that can support your efforts.
3. Provide information about the benefits of menu labeling to state officials.



Program Example

New York Menu Legislation

The New York City Department of Health and Mental Hygiene's (DOHMH) Physical Activity and Nutrition (PAN) Program has instituted a law that requires all food service establishments in New York City with 15 or more locations nationwide to post the number of calories in each menu item on their menus and menu boards.

Requirements of the regulation are detailed and include the following:

- Food service establishments subject to this regulation must post calorie information on all menu boards and menus that include prices, item tags, lists, or pictorial displays of food items.
- Prices must be posted and visible on menu boards or at adjacent stations at or before the point of ordering for drive-through windows.
- Menu items with different flavors and varieties must show the calorie range for all variations.
- Menu items that come with choices of sides or drinks must display the calorie range for all items.
- The regulation does not apply to menu items listed for less than 30 days in a calendar year.

The DOHMH conducted a community-wide campaign to promote the availability of better information on restaurant menus to help consumers make healthier choices. The campaign included Spanish and English advertisements throughout the city subway system. The DOHMH first

proposed menu labeling in September 2006, but the New York State Restaurant Association filed lawsuits to overturn the proposals. After delays due to this litigation, the requirements were enforced beginning May 5, 2008.

Source: Kettel Khan L, Dawkins N, Leviton LC. The systematic screening and assessment method: finding innovations worth evaluating. *New Directions for Evaluation*. 2010(125).

Resources

Be Informed Be Healthy

Learn about this campaign to get chain restaurant customers in Seattle and King County, Washington, to read menu labels and make healthier choices.

<http://www.kingcounty.gov/healthservices/health/nutrition/healthyeating/menu/campaign.aspx>

Healthy Eating Research

Robert Wood Johnson Foundation

This research brief synthesizes the research on restaurant menu labeling.

http://www.healthyeatingresearch.org/images/stories/her_research_briefs/her_menu_labeling_brief_06_29_09_final.pdf





***Menu Labeling In Chain Restaurants:
Opportunities for Public Policy***

Rudd Center for Food Policy & Obesity
Use this publication to determine if menu labeling is a viable alternative for your community or constituents.
<http://www.yaleruddcenter.org/resources/upload/docs/what/reports/RuddMenuLabelingReport2008.pdf>

Policy Position Statement on Menu Labeling

American Heart Association
Supports providing calorie information on menus and menu boards at point of purchase.
<http://www.americanheart.org/presenter.jhtml?identifier=3054233>

The Keystone Forum on Away-From-Home Foods: Opportunities for Preventing Weight Gain and Obesity

The Keystone Center
Recommendations from experts on how to improve consumers' ability to manage calories.
http://keystone.org/files/file/about/publications/Forum_Report_FINAL_5-30-06.pdf

Center for Science in the Public Interest

Consumer-advocacy organization that focuses on health and nutrition issues.
<http://www.cspinet.org/>

California Center for Public Health Advocacy

Resources to promote healthy eating and physical activity through state and local public policies.
http://www.publichealthadvocacy.org/resources_menulabeling.html

Strategy 2. Support restaurant programs that offer and promote healthier food choices

Definition

Restaurant programs that offer and promote healthier food choices are environmental and policy strategies designed to improve the health of all people by improving the nutritional quality of their diets. These programs affect individuals by influencing availability, access, pricing, point-of-purchase information, and promotion and communication activities. They can use single components of this strategy or a combination of approaches.³⁵

Examples of restaurant program activities³⁵ include the following:

- **Increased availability:** Offering a greater variety of healthful foods to consumers.
- **Increasing access:** Making healthier food or meal items easier to find on menus and serving healthier items in restaurants with multiple locations.
- **Reduced prices and coupons:** Reducing prices or providing discount coupons for healthier menu items.
- **Point-of-purchase information:** Providing signs or labels on menus that identify healthier menu options.
- **Promotion and communication:** Using communication media (such as advertising or posters) to encourage consumption of healthier foods.

Rationale

According to the National Restaurant Association, restaurant sales in the United States typically reach \$1.5 billion per day.⁴³ The percentage of household food dollars spent on the consumption of foods away from home increased from 25% in 1955 to 48% in 2009.⁴³ Foods consumed outside the home typically contain more calories⁴⁴ and lead to higher calorie intakes³⁷ compared with foods prepared and consumed at home.

The portion sizes of foods offered at fast-food and chain restaurants have increased over time and often exceed federal recommendations for serving sizes.⁴⁵ Thus, restaurant strategies that include policy and environmental approaches may do more to improve the nutritional quality of people's diets and overall population health because of their greater reach.³⁵ They also are less costly than clinical or educational interventions that focus on small groups of people.³⁵

Evidence of Effectiveness

Restaurant programs designed to improve the diets and health of the general population have primarily used point-of-purchase campaigns. These campaigns have used several different approaches, including

- Emphasizing healthful foods (e.g., yogurt, pretzels, whole fruit) on a college menu board.⁴⁶
- Placing a red heart next to low-fat, low-cholesterol entrées on the menu board at a family-style restaurant.⁴⁷
- Labeling low-fat sandwiches, salads, pizzas, snacks, and desserts with a green check at retail store cafeterias.⁴⁸

Overall, providing point-of-purchase information in restaurants was associated with the increased purchase of the intended items.⁴⁹



One study promoted various lunch specials in a full-service restaurant by using messages that either stressed the taste or healthfulness of the special or simply listed which items were on special.⁵⁰ Researchers found that taste was the most important factor associated with customers' selection of menu items. Further research is needed in this area to determine whether increased promotion, purchase, and consumption of healthier foods lead to improved health outcomes.

Key Considerations

When developing a restaurant program, think about what is needed to successfully plan and implement the program, as well as what challenges could arise. Factors to consider include the need to

- Develop criteria for healthier menu items, such as food cooked with less fat, prepared with less salt, or prepared with low-fat or fat-free dairy products.
- Identify what resources are needed to implement and sustain your program strategies.
- Conduct formative research to guide program planning (e.g., conduct a needs assessment or visit restaurants with existing programs).

- Negotiate with restaurant owners on the placement of point-of-purchase items and address any concerns they have about potential profit losses.

Program Examples

Bronx Healthy Hearts Restaurant

Supported by funding from New York's Healthy Heart Initiative, this program recruits and promotes restaurants that are willing to modify recipes or cooking techniques, add healthier foods, or offer reduced portion sizes. Collaborating with small, family-owned neighborhood restaurants, the program established criteria for healthier menu items and promoted healthier choices on materials displayed throughout the restaurants.

Monitoring and evaluation of the program identified some challenges that have since been addressed. For example, point-of-purchase materials have been adapted for limited spaces, and the program is placing more emphasis on highlighting healthy items already on menus rather than encouraging the addition of new items.

Other challenges have been harder to overcome. For example, some restaurant owners are not motivated to participate because of limited consumer demand for healthier options. Some

Action Steps

1. Convene meetings with all stakeholders to determine the most effective way to implement, monitor, and evaluate restaurant programs that offer and promote healthier food choices.
2. Determine what strategies will be included in the restaurant program.
3. Determine what nutritional criteria will be used.
4. Work closely with restaurant owners to gain their support and overcome barriers to participation.



consumers actively resisted some changes, such as smaller portion sizes, even when they were offered at a reduced cost. Many small family-owned businesses operate with low profit margins and have limited capacity for refrigeration and storage. Some owners were wary of offering more perishable items such as fresh fruits or vegetables if they could not sell them quickly.

Source: Kettel Khan L, Dawkins N, Leviton LC. The systematic screening and assessment method: finding innovations worth evaluating. *New Directions for Evaluation*. 2010(125).

Colorado Smart Meal™ Seal

The Colorado Physical Activity and Nutrition Program developed the Smart Meal™ Seal restaurant program to help restaurant patrons identify healthier food options. The program established nutrition standards for foods that merit the Smart Meal Seal, which is displayed next to menu items that meet the standards.

Restaurants submit recipes to an approved vendor for nutritional analysis, and at least *two* main course menu items must meet the following criteria to participate in the program:

- Two or more servings of beans, whole grains, fruits, or vegetables. One serving can be substituted with a serving of fat-free or low-fat milk or equivalent product.
- No more than 700 calories.

- No more than 30% of total calories from fat or 23 grams of total fat.
- No more than 10% of calories from saturated fat or 8 grams of total fat.
- No more than 0.5 grams of trans fat.
- No more than 1,500 milligrams of sodium.

Participating restaurants sign a compliance agreement, and the program trains restaurant owners and partner organizations that recruit restaurants. Collaborations and local partnerships are key to the program's success and sustainability. More than 1,600 Smart Meal™ menu options are available in 200 locations in Colorado. In McDonald's restaurants, the program has resulted in increased sales of Smart Meal™ menu items and other healthier food options and decreased sales of non-Smart Meal™ menu items.

Source: University of North Carolina Center of Excellence for Training and Research Translation.





Resources

Bronx Healthy Hearts Restaurant

Learn more about this program.

http://www.institute2000.org/bhr/work/nutrition_and_fitness/bronx_healthy_hearts

Colorado Smart Meal™ Seal Program

Learn more about this program.

<http://www.smartmealcolorado.com/home.aspx>

Shape up Somerville Initiative

Learn about this program that assessed the feasibility of a community restaurant initiative designed to reach families and young children.

http://www.cdc.gov/pcd/issues/2009/jul/08_0165.htm

Programs: Restaurant Award

Arkansas Department of Health

Learn about this program that recognizes restaurants that are helping Arkansans live healthy lifestyles.

<http://www.healthy.arkansas.gov/programs/Services/lifestageHealth/Nutrition/Pages/Programs.aspx>

Healthier Dining Restaurant Program

Steps to a Healthier Rockland County

Learn about this program that encourages restaurants to label healthier menu options for adults and children.

<http://rocklandsteps.org/restaurant-program>

Dietary Guidelines for Americans 2005

Dietary advice for health promotion and reduction of chronic disease risk.

<http://www.health.gov/dietaryguidelines/dga2005/document/pdf/DGA2005.pdf>

Smart Meal™ Seal Program

University of North Carolina Center of Excellence for Training and Research Translation Resources that support the planning, implementation, and evaluation of evidence-supported nutrition, physical activity, and obesity prevention interventions, including the Smart Meal™ Seal program.

http://www.center-trt.org/index.cfm?fa=op_interventions.intervention&intervention=smart_meal&page=intent

Strategy 3. Improve supermarket access in underserved areas

Definition

Conventional supermarkets are an important source for affordable, healthier foods. They typically sell a full line of at least 15,000 products, including meat, produce, and dairy products, as well as general merchandise. They usually range in size from 30,000 to 45,000 square feet, and some stores include a deli and bakery.⁵¹ Because of the volume and variety of foods available, supermarkets can typically offer healthier foods at a lower cost than smaller stores.

Policy initiatives and other intervention strategies designed to increase the availability and affordability of healthier foods are needed to provide more equitable access to healthier foods across the United States.

Rationale

Studies have shown that residents with better access to supermarkets and limited access to convenience stores have lower levels or reduced risk of obesity, as well as healthier diets.^{52–55} A recent review of retail food stores and access inequalities concluded that poor access to supermarkets and healthier foods primarily affected residents in rural, low-income, and minority communities.⁵³ Low-income neighborhoods had 75% as many chain supermarkets as middle-income neighborhoods.⁵⁶

Predominantly African American neighborhoods had only 52% as many supermarkets as white neighborhoods, and Hispanic neighborhoods had only 32% as many supermarkets as non-Hispanic neighborhoods.⁵⁶ Rural areas had only 14% as many supermarkets as urban areas.⁵⁶

Another study showed that increased household consumption of fruits was significantly associated with better access to supermarkets among participants in the National Food Stamp Program.⁵⁷ The pattern of household consumption of vegetables among this population was similar, although a significant association was not observed.⁵⁷ Improving access to supermarkets in underserved areas would address the public health concern of poor access to healthier foods.

Evidence of Effectiveness

Supermarket access is associated with a reduced risk for obesity.⁵³ Studies involving adolescents and adults have found that supermarket access is associated with a lower prevalence of overweight and obesity, whereas access to convenience stores is associated with a higher prevalence.^{52,54,55}

Several studies have used geographical mapping to examine associations between neighborhood access to food stores or in-store availability of healthier foods and dietary intake of fruits and vegetables or overall diet quality.^{58–62} One cross-sectional study found that supermarket access was associated with a 32% increase in fruit and vegetable intake among black Americans and an 11% increase among white Americans.⁵⁹

Other studies have investigated the association between distance to the closest supermarket and a composite measure of diet that includes servings of grains, vegetables, and fruits; percentage of calories from fat; and meal patterns.^{60,61} Although a variety of indexes for diet quality were used, all of the studies found that adults with better access to supermarkets had healthier diets.

Policy initiatives designed to introduce supermarkets to underserved areas have been shown to improve food access and availability in



communities. For example, the Pennsylvania Fresh Food Financing Initiative (FFFI), a public-private partnership created in 2004 by the state, helps build new supermarkets and refurbish existing ones.⁶³ Eligible stores must be located in low- to moderate-income areas that are currently underserved, and they must provide a full selection of fresh foods.

In 4 years, FFFI has funded more than 83 projects across Pennsylvania, some with major, national supermarket chains and others with smaller, independently operated stores. These projects have created or retained about 5,000 jobs and 1.4 million square feet of retail food space. A case study by an FFFI partner, The Reinvestment Fund, found that adding a supermarket to an underserved area improved the availability of a variety of healthy foods in the community.⁶⁴

As part of a retail store intervention in the city of Leeds, England, a major supermarket was



built in an area considered to be a “food desert” because access to healthy, affordable food was limited. Evaluation of the Leeds intervention showed no overall effect on fruit and vegetable consumption among community members.⁶⁵ However, when use of the new store was considered, survey respondents who reported switching to the new store were found to have increased their consumption of fruits and vegetables, while those who did not switch to the new store showed no change in consumption.

Retail Food Stores

Food can be sold at a variety of retail venues in a community, including supermarkets, grocery stores, convenience stores, corner stores, specialty food stores, and farmers’ markets. To reduce the energy intake of individuals and decrease the risk for obesity in an overall population group, people must have access to lower-energy-dense foods that are affordable.

This goal can be achieved in several ways, including

- Attracting new food stores to underserved areas through financial incentives.
- Improving public transportation to retail food stores and encouraging business owners to provide transportation for customers.
- Upgrading the facilities at existing stores to enable them to carry all forms of fruits and vegetables and healthier foods.
- Increasing the supply of and shelf space dedicated to high-quality, affordable healthier foods at existing stores.



We were unable to find similar published evaluations on these types of interventions in the United States to assess what effect they might have on fruit and vegetable consumption by community members.

Key Considerations


- Community food assessment instruments can be used to assess the food environment to determine adequacy of healthy food accessibility, availability, and affordability.
- If assessment reveals a lack of food stores, community efforts are needed to

encourage investment in food stores that provide affordable healthy foods. These efforts can include supporting policies that provide incentives to food retailers to locate in underserved areas and land for new retail development.

- Successful efforts to bring supermarkets to underserved areas have had significant community and business involvement, as well as support from political leaders. Thus, it is important to convene and obtain support from multiple stakeholders, such as local and state health departments; local and state governments; advocacy groups;

Action Steps

1. Use community food assessment instruments to assess the food environment to determine the adequacy of healthy food accessibility, availability, and affordability.
2. Develop a report that states the public health need and describes the relationship between health, income, and supermarket access at the community level. This report can serve as a powerful tool for communication and advocacy with key stakeholder and political leaders.
3. Conduct community outreach to obtain buy in and establish task forces so that neighborhoods can take ownership of the process. Bring together resources and leaders from a variety of partners, including universities, colleges, local and state health departments, local governments, advocacy groups, trade associations, community-based organizations, neighborhood associations, private-sector businesses, and grocery retailers.
4. Work with a local or regional food policy council to develop an FFFI for your area. These initiatives can provide grants, low-interest loans, training, and technical assistance to improve or establish stores in underserved areas.
5. Support and promote policies and legislation at all levels that offer retailers incentives such as a streamlined development process, tax exemptions and credits, and assistance with land acquisition. These incentives can be balanced by requirements that the retailers dedicate a certain amount of shelf space to healthier foods.
6. Sponsor a summit with urban and transportation planners and local officials to discuss and plan for transportation routes that offer better access to healthier food.
7. Work with community leaders to consider venues for healthier food retail when making general community plans and land-use decisions.
8. Work with a community group to help provide technical assistance and workforce development to store operators and sufficient job training (e.g., in customer service) for potential employees who have never held a job.



trade associations; grocery retailers; local universities; and community-based businesses, organizations, and associations.

- Working with stakeholders who understand the retail market is important. Many factors should be considered when defining the market segment (i.e., customer type) that the proposed store is intended to reach.
- Community leaders can work to recruit more retail food stores to locations that are centrally located or easily accessible by public transportation.⁶⁵ They also can work with transportation officials to plan public transit routes to retail food stores and work with developers to include retail stores that sell healthy food in community plans.
- Zoning codes can present a barrier to bringing new food stores to a neighborhood. Understanding what barriers exist and working with partners to overcome these barriers will help improve the retail food environment.

Program Examples

The Food Trust's Pennsylvania Fresh Food Financing Initiative (FFFI)

The purpose of the Pennsylvania FFFI is to improve food access in underserved areas—both urban and rural—by increasing the number of supermarkets in these areas.⁶⁶ The second goal of the FFFI is to provide an economic stimulus for communities in need.

After a report that used GIS mapping to show the relationship between supermarket access and health, the Philadelphia City Council directed The Food Trust to convene a task force to identify policy changes that could increase the number of supermarkets in underserved areas of Philadelphia. Sustained public attention in

Philadelphia generated interest from three state legislators, who worked to obtain funding for the FFFI. In 2004, legislation was passed to create an economic infrastructure for the FFFI loan/grant program and to fund building projects. The public-private partnerships established as part of this program have leveraged the initial \$30 million funding pool to \$120 million. Since the program began, the FFFI has committed funding for 83 supermarket projects in underserved rural and urban areas, which has resulted in the creation or retention of 5,000 jobs in those communities.

The Food Trust, The Reinvestment Fund (a community development bank), and the Greater Philadelphia Urban Affairs Coalition (a community-based organization) are responsible for operating the FFFI loan/grant program. FFFI staff provide technical assistance to supermarket operators and work with the business community, which provides workforce development assistance.

Applicants to the FFFI program must have a strong business model (as determined by The Food Trust and The Reinvestment Fund staff) and an experienced supermarket operator. The most successful operators are those who work closely with community groups, which help the operator understand residents' needs and overcome obstacles to building new supermarkets.

Sources:

Kettel Khan L, Dawkins N, Leviton LC. The systematic screening and assessment method: finding innovations worth evaluating. *New Directions for Evaluation*. 2010(125).

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Shaw's Supermarket

Shaw's Supermarket is a full-service supermarket located in a retail plaza (Dwight Place) in a low- and moderate-income neighborhood in New Haven, Connecticut. The supermarket was built because of community efforts to revitalize the neighborhood's economic base, create jobs and tax revenue, and increase residents' access to quality, healthy food.

These efforts grew out of a grassroots movement started in 1994 by six local residents. Planning for the supermarket began in 1996, and the store was built in 1998. In the first phase of development, the Greater Dwight Development Corporation (GDDC) partnered with a for-profit developer. The GDDC is a hands-on, grassroots organization that includes a 13-member board. It is active on the local food policy council and in local committees to ensure that Shaw's Supermarket meets the surrounding community's needs.

After completion and initial operation of the supermarket, the GDDC bought out the for-profit developer. Shaw's Supermarket has about 150 employees, 80% of whom are neighborhood residents. Initial funding for this project came from a \$1.3 million grant secured by Yale University and the GDDC in the early 1990s.

Project funding for Dwight Place included \$2.35 million in equity investments from the Local Initiatives Support Corporation/The Retail Initiative, along with a recoverable grant of \$325,000. This leveraged a \$1 million grant from the State of Connecticut and bank financing of \$12.5 million.

This large-scale, comprehensive strategy to improve access to healthful foods depended on sustainable community partnerships. The role

of a nonprofit organization with community roots was a key factor in connecting the retail development of Shaw's Supermarket to public health goals related to access to healthful foods in underserved communities.

Source: Kettel Khan L, Dawkins N, Leviton LC. The systematic screening and assessment method: finding innovations worth evaluating. *New Directions for Evaluation*. 2010(125).

Resources

Pennsylvania Fresh Food Financing Initiative

The Food Trust

Learn more about this program to improve food access in underserved areas.

<http://www.thefoodtrust.org/php/programs/fffi.php>

Stimulating Supermarket Development: A New Day for Philadelphia

The Food Trust

Recommendations for how cities can encourage supermarket development in neighborhoods to ensure access to affordable, nutritious food.

http://www.thefoodtrust.org/pdf/Supermkt_Report_F.pdf

Neighborhood Groceries: New Access to Healthy Food in Low-income Communities

California Food Policy Advocates

Discusses key variables to use when evaluating potential food-delivery models in low-income areas and defining the market segment.

<http://www.cfpa.net/Grocery.PDF>



Grocery Store Attraction Strategies: A Resource for Community Activists and Local Governments

PolicyLink and the Bay Area Local Initiatives Support Corporation
Resources to help underserved neighborhoods organize a coordinated strategy to attract or develop grocery stores, including description of previous efforts.
<http://www.policylink.org/site/apps/nlnet/content2.aspx?c=lkIXLbMNJrE&b=5136581&ct=6994695>

Community Food Assessment Toolkit

U.S. Department of Agriculture
A tool kit of standardized measurement tools for assessing various aspects of community food security.
<http://www.ers.usda.gov/publications/efan02013/>

Nutrition Environment Assessment Tool (NEAT)

Michigan Department of Community Health
Use this community food assessment instrument to determine adequacy of healthy food accessibility, availability, and affordability.
<http://mihealthtools.org/neat/>

Nutrition Environments Measures Survey (NEMS)

Emory University
Use this community food assessment instrument to determine adequacy of healthy food accessibility, availability, and affordability.
<http://www.sph.emory.edu/NEMS>

Equitable Development Toolkit: Healthy Food Retailing

PolicyLink
An online tool that focuses on increasing access to retail outlets that sell nutritious, affordable food in underserved communities.
http://www.policylink.org/site/c.lkIXLbMNJrE/b.5137405/k.6042/Healthy_Food_Retailing.htm



Healthy Food, Healthy Communities: Improving Access and Opportunities Through Food Retailing

PolicyLink
Describes the 10 steps of a successful and coordinated effort to attract new stores in underserved areas.
<http://www.policylink.org/site/c.lkIXLbMNJrE/b.5137443/apps/s/content.asp?ct=6999329>

Strategic Alliance ENACT: Community Food Environment

An online tool that focuses on attracting grocery stores to underserved areas through financial and regulatory incentives.
http://www.preventioninstitute.org/sa/enact/neighborhood/supermarkets_underserved.php

Pennsylvania Fresh Food Financing Initiative

University of North Carolina Center of Excellence for Training and Research Translation Resources that support the planning, implementation, and evaluation of evidence-supported nutrition, physical activity, and obesity prevention interventions, including the Pennsylvania Fresh Food Financing Initiative.
http://www.center-trt.org/index.cfm?fa=op_interventions.intervention&intervention=fffi&p_age=intent

Strategy 4. Improve existing small stores in underserved areas

Definition

Most low-income communities without supermarkets have a base of smaller grocery stores, specialty stores, ethnic markets, corner stores, and convenience stores. Most interventions designed to improve access to healthier foods in underserved areas have been conducted at corner stores. These stores are often small (400 to 4,000 square feet) and are frequently the only available food resource for residents with limited or no access to cars. Corner stores that historically have provided meat, produce, and dairy products have increasingly become liquor, cigarette, and snack food outlets.⁶⁷

Corner stores generally charge higher prices than supermarkets because their smaller volume of goods does not allow them to get bulk rates. Store owners also may charge higher prices because they have a captive market of customers unable to shop elsewhere.⁶⁷ Merchandise is more likely to become dated because of slower stock turnover, and store owners often stock only the items they know will sell instead of a mix of products.⁶⁷

One way to improve access to healthier foods in underserved areas is to upgrade existing small stores so they have adequate space and storage equipment to provide healthier foods. Other options include encouraging stores to stock healthier foods, use in-store communication materials that direct people to healthier foods, and offer cooking demonstrations and taste tests.

Rationale

Studies involving adolescents and adults have found that supermarket access is associated with a lower prevalence of overweight and obesity, whereas access to convenience stores is associated with a higher prevalence.^{52,54,56} Factors related to dietary intake of healthier foods include geographic accessibility of food stores (e.g., the distance to stores or store density) and in-store availability of healthier foods such as fruits and vegetables.

One study found a positive association with vegetable intake when geographic access to small stores was within 100 meters of a residence, as well as a 0.35 serving increase of vegetable intake with each additional meter of in-store shelf space.⁵⁸


Interventions designed to increase the availability and affordability of healthier foods in low-income communities by improving the food supply and upgrading the facilities in small stores are feasible to implement^{68,69} and have been

shown to increase the sale of healthier foods.⁷⁰ Multicomponent strategies such as increasing shelf space, prominently displaying healthier products, and promoting healthier foods were used in these intervention in small stores.⁶⁸⁻⁷⁰

Evidence of Effectiveness

A review article of the epidemiologic evidence of the implications of neighborhood differences in access to food found that healthier diets and lower levels of obesity were associated with better neighborhood access to supermarkets and limited access to convenience stores.⁵³ Although interventions designed to improve food options at corner stores have emerged as a potential strategy to increase healthier food availability in low-income communities, few evaluation studies exist.

The Baltimore Healthy Stores trial (which used in-store promotion and on-site education to encourage selection of healthier foods) resulted in an increase in the availability and sale of



healthier food items. An evaluation conducted 6 months after the intervention showed that the increase was sustained.^{69,70}

Unpublished evaluations of interventions intended to improve food retail also have shown promising results. For example, an evaluation of an intervention designed to improve fruit and vegetable offerings and promote healthier foods at small ethnic stores (*tiendas* and *bodegas*) found that customers shopping at the intervention stores increased their consumption of fruits and vegetables compared with those shopping at the nonintervention stores.⁷¹ A New York City initiative designed to address issues of quantity, quality, display, and distribution of fruits and vegetables at *bodegas* showed improvements in the sale of fruits and vegetables and increases in the quantity and variety of fresh produce offered.⁷²

Key Considerations

- Improving existing small stores takes far less time and money and requires fewer steps than building a new store in the community.
- Improving existing small stores is an economic development strategy that supports small businesses. It also can help build relationships between local merchants and residents and contribute to community revitalization efforts.
- Vendors who work with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) are required by new federal rules to stock their shelves with an array of products, including fruits and vegetables, low-fat dairy products, whole-grain products, and soy foods. Thus, anyone shopping at a WIC-authorized store will

have access to healthier foods. WIC food vouchers that list these foods create a strong incentive for stores in low-income areas to carry these healthier food items.

- Conducting formative research to assess community food sources, resident demographics, types of foods stocked at stores, sales data, and information about what foods people eat and where these foods are purchased will help you to understand the food consumption patterns of residents as well as store owners' perception of the demand for healthier foods.⁶⁹
- Because store owners have small profit margins, incentives are essential to get them to stock healthier food items initially and to reduce their concerns that the products will not sell.
- Although finding the time and space to conduct taste tests can be challenging, these activities gives customers the opportunity to sample healthier food options.⁶⁹
- Support from store managers and employees, as well as training related to marketing, customer service, and storage of perishable food items, is key to the success of these types of interventions.





Action Steps

1. Urge store owners to foster a healthier food environment by
 - Stocking healthier foods such as low-fat milk and dairy products, fresh fruits and vegetables, and whole-grain foods.
 - Promoting healthier foods in storefront ads, at the cash register, on shelves, and on cooler doors instead of promoting less-healthy products such as sodas and other sugar-sweetened beverages, alcoholic beverages, and cigarettes.
 - Encouraging customers to try healthier food by offering lower prices taste tests.
 - Collaborating with other neighborhood stores to leverage their collective buying power or linking with local farmers' markets to purchase produce directly.
2. Provide training to owners of small stores on how to select, store, and maintain fruits and vegetables. This training can include information on
 - what equipment is needed to stock perishable items.
3. Subsidize the initial purchase of new equipment and healthier foods while store owners test local demand.
4. Provide training and technical assistance to small stores in underserved areas to become WIC-authorized stores that provide foods included in the new WIC food package, such as fruits and vegetables, low-fat dairy products, whole-grain products, and soy foods. WIC food vouchers that list these foods create a strong incentive for stores in low-income areas to carry these healthier food items.
5. Identify program champions to help promote policies and legislation at all levels that offer retailers incentives such as grants, low-interest loans, tax exemptions, and tax credits to enhance existing stores to improve the availability and affordability of healthier foods in underserved communities.

Program Example

Baltimore Healthy Stores

The Baltimore Healthy Stores program promotes healthier food choices through store promotions and on-site education at the point of purchase. The program was implemented in seven corner stores and two supermarkets, which represent the main types of food establishments in East Baltimore.

East Baltimore is a low-income community with a large minority population. Community members helped select the foods that would be

promoted by filling out questionnaires about their diets and participating in community workshops to identify healthy foods to replace high-energy-dense foods.

The intervention was divided into five 2-month phases that focused on specific foods and food behaviors. During selected phases, limited numbers of incentive cards and coupons were given to customers to increase initial demand. Point-of-purchase promotional materials were used in stores, and store owners received nutrition education and incentives to stock



healthier foods. Results indicate that an intervention that helps small food stores promote healthier food choices through store promotions and on-site education at point of purchase can increase availability of healthier foods in underserved areas.

The Baltimore Healthy Stores program was led by the Johns Hopkins Bloomberg School of Public Health working in partnership with the Baltimore City Health Department and community organizations. The project was funded by the U.S. Department of Agriculture's (USDA) Food Assistance and Nutrition Research Program.



Sources:

Gittelsohn J, Suratkar S, Song HJ, et al. Process evaluation of Baltimore Healthy Stores: a pilot health intervention program with supermarkets and corner stores in Baltimore City. *Health Promotion Practice* 2009. doi:10.1177/1524839908329118.

University of North Carolina Center of Excellence for Training and Research Translation.

Resources

Healthy Stores

Case studies for the Apache Healthy Stores, Baltimore Healthy Stores, and Marshall Islands Healthy Stores.
<http://www.healthystores.org/>

Healthy Bodegas Initiative

New York City Department of Health and Mental Hygiene

A public-private partnership to expand the availability of healthier food choices in Harlem, South Bronx, and Central Brooklyn.

http://www.nyc.gov/html/doh/html/cdp/cdp_pan_hbi.shtml

Neighborhood Groceries: New Access to Healthy Food in Low-income Communities

Hartford Food System

California Food Policy Advocates

Discusses key variables to use when evaluating potential food delivery models in low-income areas and defining the market segment.

<http://www.cfpa.net/Grocery.PDF>



Baltimore Healthy Stores

University of North Carolina Center of Excellence for Training and Research Translation Resources that support the planning, implementation, and evaluation of evidence-supported nutrition, physical activity, and obesity prevention interventions, including the Baltimore Healthy Stores program.

http://www.center-trt.org/index.cfm?fa=op_interventions.intervention&intervention=bhs&page=intent

The Healthy Food Retailer Initiative

Forty corner markets and *bodegas* have agreed to replace 5% of their junk food inventory with healthier groceries.

<http://www.hartfordfood.org/n/programs/stores-n.html>

Equitable Development Toolkit: Healthy Food Retailing

PolicyLink

An online tool that focuses on increasing access to retail outlets that sell nutritious, affordable food in underserved communities.

http://www.policylink.org/site/c.lkIXLbMNJrE/b.5137405/k.6042/Healthy_Food_Retailing.htm

Literacy for Environmental Justice's Food Justice Program

Youth interns recruited merchants to become Good Neighbors by increasing their stock of fresh produce following a community-based assessment of corner stores.

<http://www.lejyouth.org/programs/food.html>

Healthy Corner Stores Network

Resources for improving access to healthier foods through work with small stores and corner stores.

<http://www.healthycornerstores.org>

Healthy Corner Store Initiative

The Food Trust

Describes steps taken to improve the food environment in low-income communities in Philadelphia.

<http://www.thefoodtrust.org/php/programs/corner.store.campaign.php>

Strategic Alliance ENACT: Community Food Environment

An online tool that focuses on attracting grocery stores to underserved areas through financial and regulatory incentives.

http://www.preventioninstitute.org/sa/enact/neighborhood/supermarkets_underserved.php

Healthy Corner Stores

Describes successes and challenges of early corner store interventions and identifies steps for developing sustainable models.

http://healthyplanning.org/HealthyCornerStores_StrategicPlan.pdf

Changes in the WIC Food Packages: A Toolkit for Partnering with Neighborhood Stores

Provides a range of tools and strategies that advocates can use to identify and work with prospective WIC vendors and to help retailers upgrade their stock in accordance with the new, healthier WIC food packages.

<http://www.phlpnet.org/healthy-planning/products/changes-wic-food-packages-toolkit-partnering-neighborhood-stores>



Strategy 5. Ensure that students have only appealing, healthy choices in foods and beverages offered outside of the school meals program

Definition

Foods and beverages available to students that are not part of the National School Lunch Program (NSLP) or the School Breakfast Program (SBP) are referred to as competitive foods. Competitive foods are offered at schools through vending machines, à la carte lines, school stores, concession stands, after-school programs, fundraising campaigns, and class parties. Thus, these channels substantially increase student access to high-energy-dense foods.

Policies that limit high-energy-dense foods and increase the access and availability of low-energy-dense foods (e.g., fruits and vegetables) are being implemented at state, district, and school levels as a way to prevent and reduce obesity among school-aged children.⁷³

Rationale

Studies evaluating the effect of competitive foods on the nutritional intake of students have generally found that competitive foods are associated with less favorable eating practices.^{74–76} For example, in one study, the number of à la carte foods available was negatively correlated with the amount of fruits and vegetables that students consumed.⁷⁴ In another study, middle school students who bought competitive foods consumed more sugar-sweetened beverages and high-fat vegetables (e.g., french fries, tater tots) than they had when they were in elementary school and only had access to school lunches.⁷⁵

During the 2004–2005 school year, 40% of children ate at least one food item per day sold outside the NSLP or SBP, and the food consumed was most commonly a high-energy-dense food.⁷⁷ Forty-eight percent of all high schools, 25.4% of all middle schools, and 11.9% of elementary schools allowed students to buy high-energy-dense foods during the school lunch period.⁷⁸ Making fruits or vegetables available to students whenever food was offered or sold was only required by 4% of states and 7% of school districts.⁷⁸

School nutrition policies provide a framework for creating a school environment in which healthier eating choices are easier for students to make.^{79,80} Federal legislation now requires that

Schools

About 55 million school-aged children are enrolled in schools across the United States.⁸¹ Schools have a unique opportunity to help students adopt healthier lifestyles by providing information, tools, and strategies or by restructuring social and physical environments to make healthier lifestyle choices easier for students to adopt. CDC's Division of Adolescent and School Health (DASH) has reviewed school-based policies and practices to determine which are most likely to improve health behaviors among students.

DASH identified 10 strategies that can be used to prevent obesity in the school setting, including offering only appealing and healthy choices of foods and beverages outside of school meals programs.⁷³ This strategy can include a variety of policies or program approaches designed to reduce the availability or consumption of high-energy-dense foods and beverages in schools.

local educational agencies that receive funds through USDA Child Nutrition Programs establish local school wellness policies.⁸² Minimum requirements for these policies include goals for nutrition education, nutrition guidelines for all foods available, guidelines



for reimbursable school meals, evaluation of school policies, and community involvement by parents, students, and school administrators.⁸²

Evidence of Effectiveness

In a recent review of 18 studies examining school food and nutrition policies, implementation of nutrition guidelines and price modifications affected intake and availability of foods.⁸³ Specifically, nutrition guidelines resulted in decreases in the amount of fat in school menu items and increases in the availability of fruits and vegetables. Price incentives that lowered the cost of low-fat foods showed increased sales of low-fat snacks, fruits, and vegetables.⁸³

A review of policies that restricted access to and availability of high-energy-dense snacks was inconclusive.⁸³ More recent studies have confirmed the positive effect of nutrition policies on the food behaviors of students.^{84,85}

Few studies have evaluated the effect of improving the school food environment on students' weight or weight status. One study has shown that a multicomponent, school-based intervention was effective in preventing overweight among children in grades 4–6.⁸⁶ However, the incidence and prevalence of obesity was not different between the intervention and control schools.

Key Considerations

The manual *Making it Happen! School Nutrition Success Stories*⁸⁷ identifies several factors that should be considered when creating and implementing school nutrition policies.

Examples of these factors include

- Tailoring policies to specific schools, districts, or states is the most effective approach.
- School nutrition policies work best when they are aligned with physical activity policies as a part of a coordinated school health policy.
- Competitive foods affect revenue. Schools that limit competitive foods get more money from federal reimbursement programs for school meals.
- Groups interested in nutrition policy can support efforts in this area through their political influence and should be consulted when policies are being created and implemented.
- Look for multiple ways to offer appealing fruits and vegetables, which can serve as replacements for high-energy-dense foods, to students. For example, create a farm-to-school program that connects schools to local farms to get fresh produce.





Action Steps

The approaches defined by *Making It Happen! School Nutrition Success Stories*⁸⁷ provide steps to ensure that students have appealing, healthy choices in foods and beverages offered outside of the school meals program. These steps can be adapted for interventions designed to help students eat lower-energy-dense foods. These steps are as follows:

1. Establish strong nutrition standards for competitive foods, such as those recommended by the Institute of Medicine (IOM).³⁰
2. Revise existing food and beverage contracts so that only healthier food options are available to students.
3. Make more healthful foods and beverages available.
4. Adopt marketing techniques to promote healthful choices.
5. Limit student access to competitive foods.
6. Use fundraising activities and rewards that support student health.

Program Examples

Aptos Middle School

This program removed foods with minimal nutritional value and high fat from cafeteria meals at Aptos Middle School in San Francisco. High-fat and high-sugar foods also were removed from the à la carte line and substituted with fresh, healthier foods of appropriate portion sizes.

The cafeteria supervisor and staff, teachers, and parents collaborated to determine what food changes were appropriate for the school, and they opted to provide healthier versions of the foods that students wanted in the à la carte lines. Since these changes were made, à la carte sales are similar, but net revenues have increased.

The dedication of volunteer parents and teachers and the support of the school superintendent were critical to the success of this program. The program has now been implemented at the district level, and a district-wide student nutrition and physical activity committee was formed to develop a plan to improve school foods.

Sources:


Wojcicki JM, Heyman MB. Healthier choices and increased participation in a middle school lunch program: effects of nutrition policy changes in San Francisco. *American Journal of Public Health*. 2006;96:1542-1547.

U.S. Department of Agriculture, Centers for Disease Control and Prevention, U.S. Department of Education. *Making It Happen! School Nutrition Success Stories*. Alexandria (VA): U.S. Department of Agriculture; 2005.

Texas Public School Nutrition Policy

Mandated in 2004, this statewide policy promotes a healthful school environment for Texas students by setting calorie limits for high-fat and high-sugar snacks (200 kcals per package), guidelines for the fat content of foods served at schools (including limiting the fat content of milk to 1%), and limits on how often high-fat vegetables (e.g., french fries) can be served at school.

Nutrition standards were established for competitive food, and periodic food service reviews are



conducted to monitor implementation. After the policy was implemented, fewer high-fat vegetables were served by school cafeterias, more baked chips were sold, and fewer large bags of chips were sold. Clear communication to and support from key stakeholders is important. Smaller school districts may have more barriers associated with the bidding and food contract process and the availability of alternative products that meet policy standards.

Source: Cullen KW, Watson KB. The impact of the Texas public school nutrition policy on student food selection and sales in Texas. *American Journal of Public Health*. 2009;99:706-712.

Resources

Making it Happen! School Nutrition Success Stories

A collection of success stories describing approaches that schools, school districts, and states have used to improve the nutritional quality of foods offered at school.
<http://www.cdc.gov/HealthyYouth/MIH>

Fresh Fruit and Vegetable Program

U.S. Department of Agriculture
Funding for free fruits and vegetables to low-income schools in all 50 states and some U.S. territories.
<http://www.fns.usda.gov/cnd/FFVP/FFVPdefault.htm>

Nutrition Standards for Food in Schools: Leading the Way Toward Healthier Youth

Institute of Medicine
Recommends nutritional standards for the availability, sale, and consumption of foods at school.
<http://www.iom.edu/Reports/2007/Nutrition-Standards-for-Foods-in-Schools-Leading-the-Way-toward-Healthier-Youth.aspx>

Nutrition Standards for Foods in Schools: Fact Sheets

Use to support strong nutrition standards consistent with the Institute of Medicine's recommendations.
<http://www.cdc.gov/Healthyyouth/nutrition/standards.htm>

Fit, Healthy, and Ready to Learn: A School Health Policy Guide

National Association of State Boards of Education
Helps schools and districts develop and implement policies on nutrition, physical activity, and health.
<http://nasbe.org/index.php/shs/53-shs-resources/396-fit-healthy-and-ready-to-learn-a-school-health-policy-guide>

School Health Index

Centers for Disease Control and Prevention
A self-assessment and planning tool for schools to determine strengths and weaknesses of school health policies, curricula, and services.
<http://www.cdc.gov/HealthyYouth/SHI>

Changing the Scene: Improving the School Nutrition Environment

A tool kit that focuses on multiple facets of the nutrition environment of schools, such as school meals, competitive foods, nutritional education, and nutrition marketing.
<http://www.fns.usda.gov/TN/resources/changing.html>

Dietary Guidelines for Americans 2005

Dietary advice for health promotion and reduction of chronic disease risk.
<http://www.health.gov/dietaryguidelines/dga2005/document/pdf/DGA2005.pdf>

Strategy 6. Expand curriculum-based strategies that support nutrition standards in child care settings

Definition

Curriculum-based interventions can be used to support the implementation of policies and regulations to improve nutrition standards in child care facilities. Curriculum-based interventions that help increase children's recognition of fruits and vegetables and increase their willingness to try healthier foods such as fruits and vegetables are most effective when policies and regulations are implemented to increase the availability of these foods in the child care facility.

Curriculum-based interventions in child care facilities that improve knowledge and a child's willingness to try healthier foods may include the following:

- Activities that provide children with hands-on learning opportunities, such as preparing and sampling healthy foods.
- A component for parents that includes newsletters and homework assignments for parents.
- Parent education with a focus on interactive cooking lessons and recipes that fit the topic of a particular lesson, such as fruits and vegetables, low-fat foods, calorie intake, and portion size.
- Staff training on the importance of healthier eating for young children and for themselves.

Rationale

Eating experiences early in life shape dietary preferences and may affect the nutritional quality of a child's diet throughout childhood.⁸⁸ Because children develop food and nutrition-related attitudes during the preschool years, the child care setting is an important setting in which to teach nutrition, offer nutritious foods, and provide opportunities to try new foods.

Curriculum-based interventions can be used to support the implementation of policies and regulations to improve nutrition standards in child care facilities. Examples of curricula that support a larger policy or environmental change effort include Color Me Healthy (part of North Carolina's Eat Smart, Move More program), Eat Well Play Hard (part of a New York City program), and Healthy Habits for Life (part of the Nemours Health & Prevention Services' 5-2-1-Almost None program in Newark, Delaware).

Evidence of Effectiveness

A review of interventions for heart disease prevention found that multicomponent preschool interventions that combine curriculum and environmental changes were effective in promoting heart-healthy behaviors and improving nutrition and health knowledge.⁸⁹ In addition, one study showed that children's knowledge about healthier eating was improved with the use of the Color Me Healthy curriculum by child care providers in North Carolina. Seventy-nine percent of participating child care providers reported an increased willingness by children to taste new foods, and 82.0% reported that fruit and vegetable recognition had improved.⁹⁰

Key Considerations

- Nutrition education experiences provided to young children should be fun and should provide multiple and varied attempts to present children with new food items.

- Staff in child care centers may need training before implementation of a healthy food curriculum.
- Involving parents in decisions about the nutrition curriculum are important.
- Parents can strengthen the messages being conveyed and influence the foods being served at home.



Program Example

Eat Well Play Hard

This multicomponent intervention was conducted in low-income child care settings throughout the state of New York that participate in the USDA's Child and Adult Care Food Program (CACFP). This intervention focuses on improving the nutrition and physical activity behaviors of children aged 3–4 years and teaches positive role modeling to parents and caregivers.

The Eat Well Play Hard curriculum contains 10 modules that include activities that provide children with hands-on learning opportunities (e.g., preparing and sampling healthy foods) and age-appropriate physical activities. A newsletter sent home with children introduces families to the lesson of the day and includes a recipe, activities, and suggestions for extending the lesson to the home.

Action Steps

1. Identify and modify (as needed) a curriculum that is integrated with nutrition standards used in schools.
2. Provide training for child care providers on a curriculum that supports nutrition standards.
3. Provide support and tools for the assessment of nutrition education and the availability of healthier foods in child care centers.
4. Engage parents in the nutrition curriculum taught at child care facilities so they can reinforce healthy eating practices when children are not in child care. For example, provide information about what children are learning and offer recipe ideas.
5. Incorporate curriculum and environmental change concepts that promote healthier foods into existing child care conferences and meetings at the state level.
6. Partner with business, government, and community organizations to finance activities. For example, partner with local food distributors to provide healthier foods, such as fresh fruits and vegetables, to child care centers.



Registered dietitians teach classes for parents and primary caregivers that correspond with the children's lessons on nutrition and physical activity.

Partnerships and collaborations between child care facilities, as well as a commitment to this intervention at federal, state, and community levels, are key to its success. The program is supported through partnerships between the Child Care Resource and Referral Agencies, the New York City Department of Health and Mental Hygiene, the USDA Supplemental Nutrition Assistance Program Education (SNAP-Ed), the New York Child Care Licensing Agency, the New York State Child Care Coordinating Council, and academic institutions.

Primary funding is provided by SNAP-Ed, and the New York State Department of Health provides some matching funds.

Sources:

Kettel Khan L, Dawkins N, Leviton LC. The systematic screening and assessment method: finding innovations worth evaluating. *New Directions for Evaluation*. 2010(125).

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Resources

Eat Well Play Hard in Child Care Settings Curriculum

Learn more about this multicomponent intervention in child care settings that serves low-income families throughout New York. http://www.health.state.ny.us/prevention/nutrition/cacfp/ewphccs_curriculum/index.htm

Child Care Settings

About one in four children (26.2%) aged 2–5 years in the United States is overweight or obese.⁹¹ About 33% of preschool-aged children younger than age 6 are enrolled in child care centers for at least 1 day and an average of 25 hours per week.⁹²

A recent study that examined diet quality trends among preschool-aged children aged 2–5 years found that, although diet quality improved slightly from 1977 through 1998, total energy intake increased, as did consumption of added sugars and excess juice. Consumption of grains, fruits, and vegetables improved but was still well below recommended levels.⁹³

Child care centers are ideally positioned to improve young children's nutrition by providing healthier foods and by educating children, parents, and teachers about the importance of healthier eating habits. Child care centers can introduce children to a variety of healthier foods, including fruits and vegetables. These eating experiences early in life shape dietary preferences and may affect the nutritional quality of a child's diet throughout childhood.⁸⁸

Interventions used in child care centers include curriculum-based strategies to improve knowledge and skills, strategies to implement policies and enhance state regulations that support child care environments to foster healthier eating, and strategies that combine both curriculum and environmental changes.



***Eat Well Play Hard in Child Care Settings
Intervention Package***

Activities and other information about this intervention disseminated by the University of North Carolina Center of Excellence for Training and Research Translation.

<http://www.center-trt.org/index.cfm?fa=opinterventions.intervention&intervention=eatwell&page=overview>

Color Me Healthy

Training and technical assistance materials for this curriculum to improve physical activity and fruit and vegetable intake among preschoolers.

<http://www.colormehealthy.com/professional/index.html>

Color Me Healthy Intervention Package

Activities and other information about this intervention disseminated by the University of North Carolina Center of Excellence for Training and Research Translation.

<http://www.center-trt.org/index.cfm?fa=opinterventions.intervention&intervention=cmh&page=intent>

Healthy Habits for Life

A resource kit for prekindergarten teachers that promotes healthier eating and guidance for nutrition and physical education practices.

<http://www.nemours.org/content/dam/nemours/www/filebox/service/preventive/nhps/sesamestreet.pdf>

Fruits & Vegetables Galore: Helping Kids Eat More

Tips on planning, purchasing, protecting, preparing, presenting, and promoting fruits and vegetables.

http://www.fns.usda.gov/tn/Resources/fv_galore.html

Food and Nutrition Service Resources for Child Care Providers

U.S. Department of Agriculture

Tips, activities, and materials to increase children's fruit and vegetable consumption.

<http://www.fns.usda.gov/tn/childcare.html>

Strategy 7. Ensure that regulations, policies, and legislation at all levels promote healthier foods in child care settings

Definition

Each state develops and enforces its own child care licensing requirements. Most states license two types of child care facilities: child care centers and family child care homes. Child care centers serve more children and typically have more employees than family child care homes. Family child care homes are located in the residence of the owner and operator of the child care facility, who is often the provider of care.

Many states further divide family child care homes into small family child care homes, which typically serve 6 or fewer children, and large family or group child care homes, which typically serve 7–12 children and have two providers. States usually have separate regulations for each type of child care setting.

Some local jurisdictions have the power to regulate child care facilities, and they may establish policies and practices that go beyond state minimum requirements. Head Start programs that provide child care are not covered by state licensing because they are subject to the federal Head Start Program performance standards.⁹⁴

Rationale

Eating experiences early in life shape dietary preferences and may affect the nutritional quality of a child's diet throughout childhood.⁸⁸ Child care centers are well-positioned to provide the opportunity for children to develop healthier eating behaviors.⁹⁴ A comprehensive review of state licensing regulations in all 50 states and the District of Columbia conducted in 2006 found that nutrition regulations varied from state to state, within each state, and by the type of child care setting.⁹⁴

Overall, child care centers were the most heavily regulated and had the most specific regulations, followed by large family child care homes and then by small family child care homes. The most common nutrition regulation (occurring in 29 states) was for child care providers to follow the requirements established in the USDA's Child and Adult Care Food Program (CACFP) or similar meal programs.⁹⁴ In addition, foods of low nutritional value are prohibited or limited in 12 states, but only Michigan and West Virginia require child care center menus to be consistent with the *Dietary Guidelines for Americans 2005*.⁹⁴

Many child care facilities depend on CACFP to defray their food expenses, and many parents, especially low-income working families, depend on these settings for a substantial portion of their children's nutritional intake.⁹⁵

CACFP has meal pattern requirements that are modeled on those established for the NSLP and the SBP.⁹⁶ The types of foods that can be offered at meals and snack periods, as well as the appropriate portion sizes for various age groups, are specified. The CACFP meal patterns do not include specific nutrient standards.

The USDA's Food and Nutrition Service (FNS) has asked the IOM to review the CACFP meal patterns and make recommendations based on current science and the *Dietary Guidelines for Americans 2005*. The FNS is expected to make its recommendations by the end of 2010, and the agency will then use these recommendations to update federal meal pattern regulations to improve nutrition standards and ensure that all U.S. children are eating healthy foods while they are in child care.



Some states and local jurisdictions are actively working to improve the nutrition standards specified in their child care licensing requirements. Some actions can be done easily without raising costs, while others will require additional funding and effort. Reviews of current regulations can be used to determine where cost-effective and feasible improvements can be made.

An example of state efforts is a collaboration between the Delaware CACFP and the Nemours Health & Prevention Services to adopt new best practice standards and policies to improve food and beverage offerings by all licensed child care providers in Delaware.⁹⁷ New York City also has used its regulatory power to regulate child care facilities under its jurisdiction to improve nutrition standards.

Evidence of Effectiveness

Research to assess the nutrition quality of foods in child care settings is limited, and most studies have examined providers that use CACFP.⁹⁶ A nationally representative study of child care facilities found that meals and snacks offered by CACFP potentially provided children with more than one-half of the recommended dietary allowance (RDA) for energy and more than two-thirds of the RDA for key nutrients.⁹⁸ In a review that also examined smaller studies, menus in child care settings often listed foods with a high-fat content, and the recommended vegetable servings were rarely provided.⁹⁶

The only published study that has evaluated the effect of a nutrition policy and environmental change intervention in child care centers examined the NAP SACC intervention.⁹⁹ NAP SACC is an environment and policy intervention that uses self-assessment by child care centers and technical support provided by local health consultants to change the policies, practices, and environment for healthier eating and regular

physical activity for children in child care settings. Child care centers that received the NAP SACC intervention improved their nutrition and physical activity environment more than comparison facilities. For the nutrition section of the self-assessment, improvements from the baseline score were statistically significant.⁹⁹ An evaluation study of the Nemours Health & Prevention Services' multicomponent intervention, which coupled improved nutrition and physical activity standards with provider education, resulted in improvement in the nutrition and physical activity environment in 81% of the child care centers in the study.¹⁰⁰

Key Considerations

- Except for the federal Head Start program, child care program policies differ considerably from state to state. More uniform and stronger performance standards would help to ensure that all children are eating healthy foods during the time they are in care.
- Improvements in child care nutrition and physical activity standards can occur through legislative or regulatory action at the appropriate state or local level. Some local jurisdictions, including New York City and Pinellas County, Florida, have used their regulatory power to regulate child care facilities under their jurisdiction.
- Providing training to child care providers on best practices for nutrition standards, such as the *Delaware Best Practices for Healthy Eating: A Guide to Help Children Grow Up Healthy*, may provide the staff buy in that is needed to successfully implement policy changes.
- Providing information and training to parents on nutrition policy may prove useful and necessary to obtain parental buy in. Activities can include classes for parents or distribution of informational flyers.



- Using tools such as the NAP SACC to conduct a self-assessment of the child care center or home can guide changes in policies, practices, and the environment.

Program Examples

Child Care Nutrition Policy in Delaware

The Nemours Health & Prevention Services, the Delaware CACFP, and the Office of Child Care Licensing (OCCL) collaborated to implement this multilevel project to implement policy and practice changes that help young children in licensed child care settings eat healthier meals and participate in moderate to vigorous physical activity. Best practice standards and policies from *Best Practices for Healthy Eating: A Guide to Help Children Grow Up Healthy* were adopted statewide.

Delaware child care facilities must abide by the nutrition standards, which include

- Only one serving daily of 100% fruit juice.
- No juice for infants younger than age 1 year.

- Only low-fat (1% or nonfat) milk for children younger than age 2 years.
- No more than 35% of total calories from fat.
- No more than 35% of total calories from sugar.

The project also provided tools for teachers to promote healthy eating habits, reduced screen time, and physical activity in the child care setting.


Source: Nemours Health & Prevention Services.

Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC)

The NAP SACC program addresses child care policy, practice, and environmental influences on nutrition and physical activity behaviors in young children.⁹⁹ The program was developed through extensive formative work with stakeholder groups, including child care providers, parents, and experts in the field. Child care centers can use the NAP SACC self-assessment instrument to assess their current practices related to healthy eating

Action Steps

1. States should review and revise child care regulations on a regular basis to ensure that regulations reflect healthier food and beverage standards that are consistent with the *Dietary Guidelines for Americans 2005*.
2. Encourage child care providers to conduct self-assessments of their centers or homes to identify improvements that they can make in their policies, practices, and environment.
3. Include nutrition and feeding policies and practices in orientation sessions for new employees in child care settings and in the education requirements for certifications for child care providers.
4. Partner with business, government, and other community organizations to support child care policy changes that may require additional funds or more cost-effective strategies (e.g., partner with a local food distributor to obtain fresh fruits and vegetables).
5. Encourage child care providers to determine if they are eligible for CACFP to get help with food costs and menu planning.
6. Encourage child care providers to provide information about their nutrition policies and practices to parents and include a policy about foods brought from home.



and physical activity, set goals for organizational change, and develop a plan to improve areas in greatest need or areas in which staff members are most ready and willing to make changes.

Continuing education is provided to child care staff to increase their knowledge of strategies for managing organizational change and the relationship between nutrition, physical activity, and the development of healthy weight in children. Skill-building activities support staff as they increase their confidence (self-efficacy) to make both personal lifestyle changes and organizational changes. NAP SACC training, which is available on the Internet, is recommended as a way to promote implementation of the core elements of this intervention.

Source: University of North Carolina Center of Excellence for Training and Research Translation.

Resources

Improving Children's Health through Delaware Child Care Policy

Learn more about this program.

<http://www.nemours.org/content/dam/nemours/www/filebox/service/preventive/nhps/policybrief/cldcarepol08.pdf>

New York City: Amendments to Health Code

Updated to address the current environment of obesity and the need for guidance on appropriate kinds of foods and portion sizes for children.

http://www.frac.org/pdf/nyc_cacfp_childcare_nutrphysact_law.pdf

Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC)

Assessment tool, implementation plan, and policy information to change the nutrition and physical activity environment of child care facilities.

<http://www.napsacc.org/>

NAP SACC Intervention Package

Activities and other information about this intervention disseminated by the University of North Carolina Center of Excellence for Training and Research Translation.

http://www.center-trt.org/index.cfm?fa=op_interventions.intervention&intervention=napsacc&page=intent

NAP SACC Online Training Module

Step-by-step instructions for implementation.

http://www.center-trt.org/index.cfm?fa=web_training.napsacc

National Network for Child Care

Nutrition and diet resources, including best practices and information about meals, snacks, and mealtime behavior.

<http://cyfernet.ces.ncsu.edu/nncc/index.php?mode=b&c=115>

Child Care and Obesity Prevention Issue Briefs

Practical strategies and policy recommendations developed with input from child care professionals, child care health consultants, national experts, and others published by the University of Washington Center for Public Health Nutrition.

<http://depts.washington.edu/uwcpnhn/work/child/childcare.html>

Creating a Comprehensive State Early Childhood Advisory Council

How to develop these councils to improve the coordination of programs and services for young children and their families.

<http://www.nga.org/Files/pdf/0905ECACFAQ.pdf>

Childcare Settings and Childhood Obesity Prevention Toolkit

Robert Wood Johnson Foundation

List of resources related to policy and environmental changes in child care settings.

<http://www.reversechildhoodobesity.org/content/technical-assistance-toolkits>

Strategy 8. Promote healthier foods at workplace cafeterias, in workplace vending machines, and at meetings and conferences

Definition

Employees can typically buy or consume food at various places in the workplace, including workplace cafeterias, vending machines, and break rooms, as well as at meetings and conferences. Many opportunities exist in the workplace to implement policy and environmental strategies that promote healthier eating among employees. In addition to being a convenient place to buy food, the workplace cafeteria offers a place where employees can take short breaks away from the office to rest and relieve stress.¹⁰¹

Although foods can also be conveniently purchased from workplace vending machines, these machines are usually stocked with high-calorie, high-fat snacks, and their convenience can undermine employees' efforts to maintain healthy eating habits. Nutrition should also be considered when meals or snacks are chosen for meetings and other workplace events. The Working Well Trial showed that only 14% of workplaces have catering policies that consider healthier foods when planning for meetings and other company events.¹⁰²

Consumption of healthier foods in the workplace can be encouraged by

- Establishing procurement policies that increase the availability of healthier foods.
- Providing nutritional information or product labeling for healthier foods.
- Reducing the price of healthier foods.
- Establishing policies that guide what foods are served at meetings and conferences.

Rationale

The Working Well Trial showed that about 32% of U.S. workplaces have cafeterias within the premises and that more than one-third of workers feel that workplace cafeterias are conducive to healthier eating habits.¹⁰² A lack of access to healthier foods was cited as the most common barrier to healthy eating at work.¹⁰³ In a survey among nurses, 53% of respondents thought that healthier eating was not supported at their workplace.¹⁰⁴

About half of the U.S. workforce purchases lunch at least twice a week, and one-quarter of employees usually visit workplace cafeterias and sandwich shops.¹⁰⁵ Thus, workplace eating establishments offer significant opportunities to promote healthier eating. Workers in many industries spend as much as 60% of their waking hours at work, and the food options available to

them in the workplace have a great influence on their health.¹⁰⁶ Healthier food options are limited at many work sites, especially for employees who work night shifts because most cafeterias are closed at night.^{104,107,108} Thus, vending machines are often the only source of readily available food for these workers.

When surveyed, workers often cite convenience as the most important factor in determining lunchtime food purchases, followed by taste, cost, and health concerns.¹⁰⁵ Nearly 50% of workers always or often choose low-fat and healthier foods when options are available, and women and college graduates are more likely to make healthier food choices.¹⁰⁵

About three-quarters of all U.S. workplaces have vending machines within the premises,¹⁰² and about 85% of the items in vending machines are



less healthy, with high levels of fat and calories.¹⁰⁹ A survey of nurses indicated that 74% of respondents regularly bought foods from vending machines in their workplace,¹⁰⁴ and researchers estimated that nearly 5% of workers regularly bought lunch from vending machines.¹⁰⁵ Only 13% of vending representatives reported that they post nutritional labels on their machines.¹⁰² Increasing the number of healthier food choices in vending machines and labeling the healthier food items has been shown to promote the sales of these items.^{102,110,111}

Because convenience is often the determining factor in food purchases, refrigerated vending machines with a variety of high-quality, nutritional foods such as fruits, vegetables, and yogurt could have a great influence on people's eating habits in the workplace. Refrigerated vending machines can be especially beneficial in work settings where no other options exist, such as during the night shift and at workplaces where cafeterias and other food outlets are not close by.

Evidence of Effectiveness

Studies have shown that strategies that combine environmental interventions with individual and family work-site interventions can influence people to adopt healthier eating behaviors.^{112,113} Additionally, the availability and promotion of healthier foods often improves customers' perceptions of the quality of a food establishment.¹¹⁴

Researchers have not determined whether selective labeling (e.g., of only low-calorie or healthier items) of specific foods or meals in cafeterias results in increased selection of healthier foods. About 35% of cafeterias label healthier food choices,¹⁰² and food labeling has been shown to influence choice of low-calorie salads and vegetables, but not of entrées.^{102,115}

Workplaces

Sixty-five percent of adults and teenagers (aged 16 years or older) are employed in the United States.¹¹⁶ The workplace provides an opportunity for implementing healthier behaviors and preventing chronic diseases in this large segment of the population. Obesity is a significant problem in the workplace, with 39 million lost workdays and 239 million restricted-activity workdays caused by obesity.¹¹⁷

Recognizing the economic and human toll of obesity and other health problems, many employers encourage physical activity, healthier eating, and improved health management through various programs designed to promote health and prevent disease. In addition, changes designed to create a more healthy workplace environment can result in positive changes in social norms surrounding dietary choice.^{118,119}

These strategies create opportunities for action and remove barriers to following a healthier diet, thereby encouraging positive nutritional behaviors. Such strategies include increasing the availability and promotion of healthier foods in on-site cafeterias and vending machines, as well as lowering the prices of these items. Input from people at all levels of an organization's hierarchy, including senior management and employees, and from people involved in food service is essential to the success of these environmental interventions.¹⁰²

A study conducted at the employee cafeteria of the Kansas Farm Bureau and Affiliated Services showed that customers were more accepting of entrees with modified amounts of sodium



and fat when these entrées were labeled and accompanied by a marketing campaign that explained the health benefits of these changes.¹²⁰ However, sales data did not change over a 7-month period. Other studies have shown that even when a majority of cafeteria customers report that they notice nutritional labels, the labels do not affect their food selection, even when combined with increased availability of healthier foods and nutrition education.^{121,122}

In the FoodSteps intervention, information sheets that listed the number of minutes that a task had to be performed to burn the calories from various foods were placed near foods in a workplace cafeteria. Although social support for eating less fat increased, self-reported consumption of fruits, vegetables, and fat did not change.¹¹⁹

Price reductions of 20%–50% for healthier foods in workplace cafeterias has been shown to positively influence the selection of these food items, especially when combined with nutrition education and increased availability of healthier food options.^{123,124} Price reductions of healthier foods are often accompanied by a reduction in the consumption of less healthy foods.

Increasing the number of healthier food choices in vending machines and labeling the healthier food items has been shown to promote the sale of these items.¹¹⁰ This strategy often includes the placement of posters and signs on the vending machines to encourage the selection of the labeled items. When less healthy foods are replaced with low-fat foods but prices are not modified, total revenues from sales do not change.¹¹¹ However, reducing the price of healthier food items by 25%–50% is an effective way to promote low-fat foods in vending machines and will increase the sale of these items by at least 93%.^{125,126}

Key Considerations

- Cafeteria programs can encourage healthier eating by making it cheaper and more convenient and by maintaining or improving the taste and appearance of healthier foods.
- Product placement should be considered in cafeteria programs. Healthier items should be placed in high-traffic areas and should replace the unhealthy items typically placed at cafeteria checkout lanes to entice impulse buying.
- The effect of price-reduction programs on the revenues and profits generated by the cafeteria should be considered. To sustain these programs, employers can look for other revenue sources, such as external funding or higher prices for less healthy foods.
- The cost of buying, maintaining, and frequently stocking refrigerated vending machines must be considered.
- Healthier foods should be strategically placed at eye level within vending machines. In refrigerated machines, placement can be a challenge. Healthier items that need refrigeration, such as yogurt and fresh fruits, are often placed on the lower shelves of vending machines because they are usually cooler than the higher shelves.
- If promoted well, vending machines that carry healthier snacks can attract health-conscious customers who normally do not consider buying food from vending machines.
- Lowering the prices of healthier items in vending machines can result in increased sales, and any loss of revenue caused by the price reduction can be offset by increased prices for less healthy food items (as long as a minimal volume of less healthy foods is still sold).



Program Examples

Healthy Food in Hospitals Program of the NC Prevention Partners

The purpose of this program was to increase the availability, visibility, and affordability of healthy foods in a hospital cafeteria for employees and visitors. After getting input from employees at North Carolina's FirstHealth Moore Regional Hospital about the lack of healthy options in the cafeteria, the FirstFit committee worked with the food service management team and NC Prevention Partners (NCPP) to develop criteria for healthy foods and increase healthier choices in the cafeteria.

Hospital officials used internal communication channels (related to benefits and employee education) to prepare staff members for the changes and encourage healthy lifestyle change. Changes included lowering the prices of healthier foods and raising the prices of less healthy foods.

The intervention increased sales of healthier food items and decreased sales of less healthy items. NCPP's Healthy Food Environments Team developed this program in collaboration with FirstHealth of the Carolinas, with support from The Duke Endowment and the North Carolina Hospital Association. The project will be rolled out to more than 130 acute care hospitals in North Carolina by 2011.

Source: University of North Carolina Center of Excellence for Training and Research Translation.

Vending Intervention for the University of Virginia Health System

This program designated calorie and saturated fat standards for vending machine products offered throughout the University of Virginia Health System. Officials used nutrition standards developed by dietitians to label snacks and

Action Steps

1. Develop sample nutritional guidelines that employers can readily adopt for use in workplace cafeterias or vending machines. Guideline policies can include nutrition criteria, pricing strategies, percentages of healthy foods required in vending machines, and promotion strategies.
2. Train food service personnel on how to buy healthier foods (such as fruits and vegetables as part of a farm-to-work program).
3. Train food service personnel to adapt recipes to lower the energy content of recipes and to increase the nutritional content of the meals they serve by adding fruits and vegetables (which also will lower the energy density of foods).
4. Develop and disseminate a list of locally available vending suppliers who carry healthier food items. The list can indicate which items meet the criteria for a healthy vending program and which vendors are willing to replace traditional vending machines with refrigerated machines that can hold yogurt, fresh fruits, and healthier sandwiches (e.g., turkey on whole-wheat bread).
5. Create point-of-sale icons, including nutrition labels, to identify healthier options in workplace cafeterias and vending machines.



beverages in 120 vending machines with red, yellow, and green stickers. The labels indicated the calorie and saturated fat content of the food items, and point-of-purchase materials explained the labeling system.

In addition, the prices of snacks and beverages with the highest levels of calories and saturated fat (labeled with red stickers) were raised by 5 cents (about 8%), and the extra revenue was donated to the University of Virginia Children's Fitness Program. Researchers monitored sales during the intervention and found that total vending sales increased 8.3%. Sales decreased 5.3% for red items, increased 30.7% for yellow items, and increased 16.5% for green items. The increased prices on red items raised \$6,700.

Source: Garson A Jr, Engelhard CL. Attacking obesity: lessons from smoking. *Journal of the American College of Cardiology*. 2007;49:1673-1675.

Resources

CDC's LEAN Works!

Tools and resources to design effective work site programs to prevent and control obesity.
<http://www.cdc.gov/leanworks/index.html>

California 5 a Day—Be Active! Worksite Program

Learn more about this program that uses a check mark system to identify healthier food choices.
<http://www.cdph.ca.gov/programs/cpns/Documents/CPNS-HealthyDiningMenuGuidelines.pdf>



CDC's Healthier Worksite Initiative

Tool kits for workplace health promotion programs for federal and state government offices.
<http://www.cdc.gov/hwi>

NC Prevention Partners

Programs and other information to make healthy choices easier.
<http://www.ncpreventionpartners.org/dnn/>

Healthy Food Environments Pricing Incentives Intervention Package

Activities and other information about this intervention disseminated by the University of North Carolina Center of Excellence for Training and Research Translation.
http://www.center-trt.org/index.cfm?fa=op_interventions.intervention&intervention=hfe&page=overview



Cafeteria and Vending Machine Guidelines

New Hampshire Department of Health and Human Services

Guidelines to implement healthier options in workplace cafeterias and vending machines.

http://www.dhhs.state.nh.us/NR/rdonlyresrxyt3cyh7kh5eq2wj36wnzh7cgpn2zutkadladizzc2hahdr7mrjdtwfdunjkqojzupuioiz5lwhrxka7fus2gwtmh/nhp_cafvending.pdf

Vending Machine Food and Beverage Standards

Network for a Healthy California

Tools for workplaces to implement standards for foods and beverages sold in vending machines.

http://www.takeactionca.com/docs/fit-business-kit-tools/BRO-155_FEB_2008FINAL.pdf

Healthy Vending Machines (Fit Pick)

Washington State Health Care Authority

Tools for workplaces that are based on a successful and profitable vending machine program.

http://www.washingtonwellness.gov/resource/initiatives/nutrition_vending.shtml

Healthy Vending Guidelines: A Fit City Initiative, San Antonio, Texas

Healthy vending machine choices and the rationale behind these choices.

http://www.stepstohealthiermn.com/dynamic_documents/0278.pdf

Choosing Foods and Beverages for Healthy Meetings, Conferences and Events

Centers for Disease Control and Prevention

Guidelines for selecting foods and beverages for breaks or meals at meetings, conferences, and other work-related events.

http://www.cdc.gov/nccdphp/dnpao/hwi/downloads/healthy_worksite_food.pdf

Guidelines for Offering Healthy Foods at Meetings, Seminars and Catered Events

University of Minnesota School of Public Health

Lower-fat and lower-calorie food and beverage options for workplace meetings and seminars.

http://www.ahc.umn.edu/ahc_content/colleges/sph/sph_news/Nutrition.pdf

Meeting Well: A Tool for Planning Healthy Meetings and Events

American Cancer Society

A tool to help companies organize meetings and events with good health in mind.

<http://www.acsworkplacesolutions.com/meetingwell.asp>

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