

Food-and-beverage environment and procurement policies for healthier work environments

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The importance of creating healthier work environments by providing healthy foods and beverages in worksite cafeterias, in on-site vending machines, and at meetings and conferences is drawing increasing attention. Large employers, federal and state governments, and hospital systems are significant purchasers and providers of food and beverages. The American Heart Association, federal government, and other organizations have created procurement standards to guide healthy purchasing by these entities. There is a need to review how procurement standards are currently implemented, to identify important minimum criteria for evaluating health and purchasing outcomes, and to recognize significant barriers and challenges to implementation, along with success stories. The purpose of this policy paper is to describe the role of food-and-beverage environment and procurement policy standards in creating healthier worksite environments; to review recently created national model standards; to identify elements across the standards that are important to consider for incorporation into policies; and to delineate issues to address as standards are implemented across the country.

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INTRODUCTION

With more than 130 million Americans employed across the United States each year, the workplace is a key environment for maintaining the health of the U.S. population through comprehensive worksite wellness programming and the promotion of a culture of health.¹ An important strategy in creating a healthier worksite environment is the development of policy standards for the procurement of food and beverages in the workplace (hereafter referred to as food procurement policies) that can successfully promote a healthier nutrition environment (Table 1). These policies can be implemented within a broad range of worksites and public/private environ-

ments, including government buildings, hospital systems, college/university campuses, schools, child care centers, assisted living facilities, church/faith-based organizations, private corporations, theme parks, resorts, prisons, libraries, and nonprofit organizations. The targets of these policies include food and beverages sold through workplace cafeterias, vending machines, concession stands, or other locations or provided at meetings, retreats, conferences, or other organizational events.

It is widely recognized that targeting individuals through health education is important but is not sufficient on its own to bring about improvements in dietary behaviors at the population level.^{2,3} The American Heart Association and other organizations have long histories

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Table 1 Glossary of terms.

Term	Definition
Standards	A set of nutrition criteria that often include nutrients to avoid as well as foods and beverages to encourage; the standards establish the foods and beverages eligible to be served or purchased within work environments.
Procurement	The acquisition of goods or services; includes the purchase or acquisition of foods and beverages for consumption within the workplace or at conferences, meetings, or other events.
Food environment	Food and beverages included in the surroundings in the work environment (e.g., in vending machines, cafeterias, offered at meetings/special occasions, kitchens) that impact an employee's ability to choose healthy options.
Vending	Machines that dispense items such as snacks and beverages for a cost.
Sustainability	The purchase of foods and beverages that contribute to the capacity of the food system to endure and remain viable over time.
Policy	A course of action or rule with the intent to establish a procedure or protocol; policy can be established and adopted by governments (through regulation or legislation) or by decision makers to facilitate change within environments such as agencies, organizations, corporations, schools, or communities.

of providing regularly updated evidence-based national nutrition recommendations and standards for promoting health and preventing disease.⁴⁻⁶ The Association also has set a goal to improve the cardiovascular health of the nation by 20% by the year 2020 and has defined cardiovascular health with seven metrics: diet, physical activity, tobacco use, body mass index, glucose, cholesterol, and blood pressure.⁷ Efforts to improve the U.S. diet are central to meeting these ambitious goals. While the strength of the evidence for the links between diet and health continues to grow, adherence to national dietary guidelines and achievement of a healthy diet remains poor in the general population.⁸

Targeting the food environment is a strategy that has gained considerable traction in the public health and health professional communities. Of the many components of the food environment, large employers such as hospitals and federal, state, and local government agencies are among the most important and viable targets, because they employ a significant portion of the American workforce; moreover, health promotion is already central to the mission of many of these organizations.

A healthy workplace food environment may be an obvious and important goal for any organization, but this must fit into a complex set of overall factors that includes employee satisfaction and participation as well as practical and financial feasibility. State and local governments, hospitals, and large employers, among other employers, have a strong interest in improving the health and wellness of their employees. Improved employee health can benefit the employer through, for example, decreased absenteeism, increased productivity, and lower healthcare costs.⁹ Thus, promoting a healthy workplace food environment is not only appropriate and important but also has the potential to be a sound business practice.

A number of potential challenges can hinder the promotion of a healthy workplace food environment (Box 1).

These challenges may arise when a transition to a healthier workplace environment is attempted through food procurement policies. Assuming the factors described in Box 1 can be adequately addressed, the potential beneficial impact of successful healthier food procurement policies could extend beyond the employees to their families and their communities. Furthermore, if the purchasing volume of hospitals, state and local governments, and large employers is substantial, these employers may also be able to influence the types of foods available to the general community by creating greater demand for and, subsequently, greater supply of healthier products.

Currently, there are several national models for procurement policy and hundreds of iterations at the local, state, and organizational level that have been proposed or are being implemented across the country. Several of these food procurement standards are presented in Table 2. There are at least two toolkits, one from the Centers for Disease Control and Prevention (CDC)¹⁰ and another from ChangeLab Solutions,¹¹ to assist in the development and implementation of these policies. The purpose of this policy paper is to describe the role that food-and-beverage environment and procurement policy standards can play in creating healthier worksite environments; to review some of the national model standards that have recently been created; to identify elements across the standards that are important to consider for incorporation into policies; and to delineate issues to address as standards are implemented across the country.

PUBLICATIONS AND RESOURCES REVIEWED

The publications and resources reviewed for this article were identified by a variety of strategies. The initial strategy was to identify relevant materials that were familiar to the authors. One helpful resource was a website created in

Box 1 Questions to help address potential challenges in promoting a healthy workplace food environment.

Are the procurement and purchasing policies written with sufficient clarity to allow for proper implementation?
Are the types and product lines of the specified food and beverage items readily and consistently accessible year round from reliable suppliers?

Are staff members in charge of procurement adequately trained to incorporate nutrition standards into purchasing?
Is the food service staff adequately trained, and are the food service facilities adequately designed to prepare and serve the items?

Will the items being offered successfully meet employee/patron demands, including taste, appearance, cost, and convenience?

Will the volume of sales be sufficient to sustain the workplace food service?

How should product placement, marketing, promotion, and portion size goals be incorporated?

2012 by the Center for Science in the Public Interest, called *Healthier Food Choices for Public Places*.¹² The site provides links to four categories: Fact Sheets/Background; Model Policies; National, State, and Local Policy; and Toolkits. Another helpful document, *Examples of National, State and Local Food Procurement Policies*, provided a list of almost 50 examples from across 18 different states and included a set of policies addressing hospital food.¹³ Another strategy was to review the state legislation/regulation landscape. In addition, developers and implementers of numerous procurement policies were consulted. These various approaches provided a broad sense of the current landscape for procurement policy across the United States, including regulation and legislation being proposed as well as standards that had already been developed and implemented.

LEGAL AND POLICIES ISSUES AFFECTING THE IMPLEMENTATION OF FOOD PROCUREMENT POLICIES

When developing and implementing food-and-beverage procurement policies, understanding and navigating legal and policy issues is important to ensure the successful implementation and enforcement of these policies. There are two fundamental issues to consider: first, whether the policy is mandatory or voluntary, and second, whether the policy is being implemented in a public or private setting. Both of these issues are described briefly below, followed by five legal and policy considerations that could affect the development, implementation, and enforcement of policies. Appendix A, available in the Supporting Information online.

Mandatory versus voluntary policies

For the purposes of this discussion, a policy is mandatory if it is adopted and enforced as an official policy of the organization or workplace, and compliance with the policy becomes a standard and required part of organi-

zational or workplace operations. In contrast, a policy is considered voluntary if it is not implemented as part of the standard organizational or workplace policies but is provided only as a recommendation. In general, well-written mandatory policies are preferable because they are enforceable.

Public versus private organizations

Implementing a food procurement policy in a government setting, such as a local public health department or other government agency, raises different legal and policy issues than implementing the same policy in a private organizational setting, such as a business or a privately owned hospital. At the same time, private organizations are often faced with the same legal and policy concerns as public organizations. Private organizations, including hospitals and educational institutions, typically provide services to a broad public base that may hold these organizations accountable to certain standards of behavior in their operations. The law informs the public's understanding of what is fair and appropriate. Thus, even private organizations that are not technically subject to legal requirements such as equal protection or due process may still follow these principles for equity reasons.¹⁴

Key legal and policy issues

Broadly speaking, legal and policy considerations affecting food procurement policies can be grouped into two phases: policy development and policy implementation. The development of food procurement policies can raise questions of legal authority and constitutional issues. The implementation of food procurement policies typically raises issues involving the availability of vendors willing to provide the desired foods and beverages and contract law.

Developing food procurement policies. A workplace or organization developing a food procurement policy must make sure that it has the authority to implement and

enforce the policy to avoid challenges to the policy. This concern can be an issue for mandatory policies adopted by public agencies and organizations.¹⁵

Preemption is a legal doctrine whereby one level of government can restrict or eliminate the authority of a lower level of government to regulate an issue. Preemption can arise in two key ways. First, a state and local government cannot enact laws that conflict with federal law. Likewise, a local government cannot enact laws that conflict with state law. Second, federal law can restrict – or preempt – the regulatory authority of state or local governments over a given area. Likewise, state law also can preempt local governments of the power to regulate in a given area, including in ways that could affect the authority of the local government to establish food procurement policies.¹⁶ The extent to which state government has the power to preempt local government authority is state specific.^{17,18} Preemption is also an important factor to consider relative to state and local government efforts to implement menu labeling laws.¹⁹

When a public agency or local government seeks to develop and implement a mandatory food procurement policy, the agency or governmental unit not only must have the authority to create the policy, but it also may be required to follow a specific process in doing so. If an agency does not have the authority or fails to follow the proper procedure, this policy could be vulnerable to legal challenge.¹⁵

There are constitutional limits on a government's authority to regulate speech (First Amendment to the US Constitution), as well as principles of fairness to which governments are required to adhere (Equal Protection and Due Process Clauses of the 14th Amendment to the US Constitution). While these legal issues are primarily a concern for mandatory policies adopted by public agencies, other organizations may wish to consider these principles.

If a food procurement policy restricts speech, it is important to consider whether the speech being restricted is on public or private property. First Amendment protection of commercial speech in government settings may be implicated by food procurement policies that seek to limit advertisement of unhealthy food items in public spaces.²⁰ Private organizations have more room to regulate advertising because the First Amendment does not protect commercial speech in private settings. While private organizations can restrict advertising of specific products, it is good practice for private organizations to clearly define what advertising is to be restricted, and to incorporate clearly written limitations into the food procurement policy.

Equal protection is a legal concept that requires that similarly situated people or things be treated similarly (14th Amendment). Equal protection issues are primarily

a concern with mandatory food procurement policies in governmental agencies. Healthy food-and-beverage procurement policies may trigger equal protection issues if the policy treats similarly situated individuals or products differently, without sufficient justification.²¹ Due process concerns are discussed further below.

Implementation of food procurement policy. The Randolph Sheppard Act and similar state laws may provide legally blind vendors with contractual advantages over other vendors who operate vending facilities on government property.²² State blind-vendor laws give eligible legally blind vendors priority over nonblind vendors to operate vending facilities on specified public property in the state. This law is important to consider for both governmental and nongovernmental policies because blind vendors may be the primary vendor in a community and so could be influential in determining the product offerings in a particular geographic area.

The implementation of a food procurement policy could be frustrated if the requirements of the policy are not included in both the requests for bids and the contracts with vendors. Ensuring that the policies, bids, and contracts are clear and consistent is critical to support the enforcement of the policy; moreover, it can help partners, contractors, and customers feel they are being treated fairly and appropriately and can minimize possible equal protection or due process concerns.²³ Due process is a constitutional principle that essentially requires that no person be deprived of life, liberty, or property without due process of law (Fifth and 14th Amendments). In general, due process issues relating to the implementation and enforcement of a food procurement policy can be avoided if the policy is clearly written, if those impacted are given adequate notice of when the policy will be implemented and who it impacts, and if the policy provides for those affected by the policy to appeal any actions taken against them for failing to follow the policy. Contract law can also affect the enforceability of food procurement policies. For example, if a policy includes specifications regarding advertisement and placement of food and beverages that do not meet specific nutritional standards but these specifications are not included in the vendor's contract, these terms will be difficult to enforce.

Summary

Successfully navigating the legal and policy issues discussed above is critical to ensure that food procurement policies achieve the desired goal of creating healthier workplace environments. Incorporating these considerations into the development of food procurement policies can help to avoid problems once the policy is implemented.

CURRENT EXAMPLES OF FOOD PROCUREMENT STANDARDS AND POLICIES

Over the last decade, several examples of procurement standards or policies have emerged on the national landscape, including the American Heart Association procurement standards,²⁴ the federal *Health and Sustainability Guidelines for Federal Concessions and Vending Operations*,²⁵ the *National Alliance for Nutrition and Activity (NANA) Model Beverage and Food Vending Machine Standards*,²⁶ the Alliance for a Healthier Generation beverage and snack standards,²⁷ industry standards, called “Fit Pick,” developed by the National Automatic Merchandising Association,²⁸ and *Recommendations for Healthier Beverages* developed by Healthy Eating Research, a program of the Robert Wood Johnson Foundation²⁹ (Table 2). Organizations, local and state governments, and hospital systems are using these standards as well as others to tailor their own policies to their specific needs. Consequently, there is an amalgam of standards across the country as business and government leaders experiment with a wide range of approaches that include not only nutrition standards but also product placement, pricing, nutrition education, and other strategies. There is an urgent need to evaluate these different approaches and determine if there are key areas within the nutrition standards themselves and within broader implementation that have the greatest impact on food choice behaviors and population health. The following examples highlight some of the standards and approaches that have been developed and have served as a model for others.

American Heart Association

In 2009, the American Heart Association identified nutrition standards for foods purchased by governments and employers as an emerging issue with important implications for state and federal advocacy efforts. The Association used its policy development process with expert peer review from the relevant scientific councils to develop model procurement standards.²⁴ In addition to developing nutrient standards for sodium, *trans* fat, saturated fat, and calories, the Association also developed food-based recommendations for vegetables and fruits, whole grains, lean meat and protein, nuts/seeds/nut butters, dairy, and seafood, and, in accordance with the *Dietary Guidelines for Americans* and the Association’s *Diet and Lifestyle Recommendations*, established guidance for beverages.^{5,6} Other areas addressed in the nutrition standards included calorie labeling, promotions of healthier and lower-calorie options, pricing strategies to make healthier items more favorable, and integration of nutrition education and promotion within worksite wellness programming.

Plans are in place to continue to evaluate and update procurement policies to incorporate emerging science, lessons learned in implementation, and congruence with other Association programs.

Department of Health and Human Services and the General Services Administration Health and Sustainability Guidelines

Shortly after the American Heart Association released its procurement standards, the federal government, in an initiative led by the Department of Health and Human Services (HHS) and the General Services Administration (GSA), established its own food, nutrition, and sustainability guidelines²⁵ to improve dietary intake and increase the healthfulness and sustainability of food purchased in federal facilities. The goals of the guidelines were to 1) assist contractors in working with vendors to offer healthy, sustainable food-and-beverage choices; 2) help populations served by concessions and vending machines make informed decisions; 3) eliminate industrially produced *trans* fats; and 4) decrease the sodium content in foods. The guidelines apply to all food service concession operations and vending machines managed by HHS and GSA and may be applied to sponsored/cosponsored conferences and events on site and off site. Although not enforceable or required, these guidelines are currently integrated into standard language within GSA/HHS contracts and are also a recommended strategy for federal agencies under the National Prevention Strategy. There will be varying degrees of implementation across federal agencies in the years to come. The guidelines are dynamic and will be updated as relevant science and consumer demand evolves.

National Alliance for Nutrition and Activity

NANA is a national coalition of leading public health organizations advocating federal policies and programs to promote healthy eating and physical activity to reduce morbidity and mortality and to improve the overall health of the nation. NANA promotes, within the legislative and executive branches of government, a better understanding of the importance of healthy eating, physical activity, and obesity control to the nation’s health and healthcare costs. Recently, NANA developed recommended procurement standards³⁰ that were built on its earlier work and feedback on the HHS guidelines released in 2010. A NANA group is developing nutrition and food standards (including vending machine standards) as part of the Healthy Public Places movement to increase the availability and accessibility of healthy food-and-beverage options in public venues.

Table 2 Comparison of procurement standards.

AHA procurement standards ²⁴ (Cafeterias, vending machines, meetings, special events, other venues)	Health and Sustainability Guidelines for Federal Concessions and Vending Operations ²⁵ (Cafeterias, vending machines, conferences, and on- and off-site events)	National Alliance for Nutrition and Activity (MANA) model vending guidelines ²⁶ (Vending machines)	Fit Pick (standard criteria for vending machines) ²⁸ (Vending machines)	Alliance for a Healthier Generation (high school) ²⁷ (Cafeterias and vending machines)	Robert Wood Johnson Foundation, Healthy Eating Research: Recommendations for Healthier Beverages ²⁹ (Beverages only)
Nutrients or food components to limit or avoid					
Sugar					
Limit foods with added sugars	In vending machines, limit calories from sugars to ≤35% of total weight (excluding fruits or vegetables without added caloric sweeteners)	No more than 35% of calories from total sugars and a maximum of no more than 10 g of total sugars in the product, with the exceptions of 1) fruits and vegetables that do not contain added sweeteners or fats; and 2) yogurt that contains no more than 30 g of total sugars per 8-oz container (adjust proportionally for smaller containers)	<35% of total product weight from sugar	≤35% sugar by weight, except dried fruits with no added sugar	NA
Sodium					
Foods, side dishes, single-item foods: <150 mg/serving Entrees: <600 mg/serving Meals: <600 mg	All individual food items must contain ≤480 mg of sodium as served, unless otherwise designated in the specific categories. For example, vending snack items must contain ≤230 mg of sodium per serving, and all meals must contain ≤900 mg of sodium as served	No more than 200 mg of sodium per snack item as offered (per package/container). No more than 480 mg of sodium per entrée item as offered		≤230 mg sodium for all products, except 1) low-fat and fat-free dairy products can have ≤480 mg of sodium; and 2) vegetables with sauce and soups can have ≤480 mg of sodium if they contain one or more of the following: ≥2 g of fiber, ≥5 g of protein, ≥10% of the Daily Value of vitamins A, C, E, folate, calcium, magnesium, potassium, or iron; or at least ¼ cup of fruit or vegetables	NA
Trans fats					
Zero grams of trans fats as labeled and no products containing partially hydrogenated oils	Eliminate use of partially hydrogenated vegetable oils, shortenings, or margarines. Eliminate food containing partially hydrogenated vegetable oils, shortenings, or margarines, unless the label or other documentation for the food indicates that the food contains 0 grams of trans fat per serving. Offer both foods that have “0 grams of trans fat” and foods low in saturated fats	Zero grams of trans fats		Zero grams of trans fats	NA
Saturated fats					
<10% of calories from saturated fat	In vending machines, limit total calories from saturated fat to ≤10% (excluding nuts and seeds without added fats or oils)	No more than 10% of calories from saturated fat, with the exception of packages that contain 100% nuts or seeds; snack mixes that contain components other than nuts and seeds must have no more than 10% of calories from saturated fat	<10% saturated fat per serving	<1 g saturated fat	NA
Total fat					
		No more than 35% of calories from fat, with the exception of packages that contain 100% nuts or seeds; snack mixes that contain components other than nuts and seeds must have no more than 35% of calories from fat	≤35% of total calories from fat	≤35% of total calories from fat	NA
Food groups to make available or promote					
Vegetables					
Prioritize vegetables: fresh, frozen, canned	Offer daily at least one raw, salad-type vegetable and at least one steamed, baked, or grilled vegetable, seasoned, without fat or oil. All vegetable offerings must contain ≤230 mg of sodium as served. Mixed dishes containing vegetables must contain ≤480 mg of sodium as served. Offer a variety of seasonally available vegetables	At least ¼ cup of a nonfried vegetable			NA
Fruits					
Prioritize fruit: fresh, frozen (100% fruit – no added sugar), or canned (in water, its own juice, or light syrup; no heavy syrup)	All canned or frozen fruit must be packaged in 100% water or unsweetened juice, with no added sweeteners. Offer a variety of at least 3 whole or sliced fruits daily. Offer a variety of seasonally available fruits	Each snack food item must contain at least one of the following and each entrée item at least two of the following: ¼ cup of fruit; at least 10% of the Daily Value of at least one of the following naturally occurring nutrients of public health concern: calcium, potassium, vitamin D, or fiber			NA
Whole grains					
Offer whole grains that are a good source of dietary fiber without excess calories from added sugars	When cereal grains are offered (e.g., rice, bread, pasta), then a whole grain option must be offered for that item as the standard choice. 1) All cereal, bread, and pasta offerings must contain ≥230 mg of sodium per serving. 2) At least 50% of breakfast cereals must contain at least 3 g of fiber and <10 g of total sugars per serving	At least 50% of the grain ingredients are whole grain (determined by the product having whole grain as the first ingredient, listed by the manufacturer, or by the product having a whole-grain claim)			NA

Table 2 Continued

AHA procurement standards ²⁴ (Caterias, vending machines, meetings, special events, other venues)	Health and Sustainability Guidelines for Federal Concessions and Vending Operations ²⁵ (Caterias, vending machines, conferences, and on-off-site events)	National Alliance for Nutrition and Activity (NANA) model vending guidelines ²⁶ (Vending machines)	Fit Pick (standard criteria for vending machines) ²⁸ (Vending machines)	Alliance for a Healthier Generation (high school) ²⁷ (Caterias and vending machines)	Robert Wood Johnson Foundation, Healthy Eating Research: Recommendations for Healthier Beverages ²⁹ (Beverages only)
Lean meats/protein Use only lean meats (no more than 10% fat by weight). Limit processed/deli meats; if offered, use products with no more than 480 mg of sodium per 2 oz. Serve poultry without skin	When protein entrees are offered, offer lean meat, poultry, fish, or low-fat vegetarian entrée choices. Canned or frozen tuna, seafood, and salmon must contain <290 mg of sodium per serving, and canned meat <480 mg of sodium per serving			NA	NA
Nuts/nut butters/seeds Offer nuts and seeds with ≤140 mg of sodium per labeled serving and the butters and pastes derived from these, like peanut butter or almond butter	1 oz of nuts or seeds or 1 Tbsp of nut butter			Nuts, nut butters, seeds, and fruit with nuts (with no added sweeteners) are exempt from the fat limitations and are permitted if they adhere to the remaining set of criteria. Fruit with nuts (trail mix) must contain only fruit, nuts, and/or seeds and must have no added sweeteners, with a calorie limit of 200 kcal	NA
Dairy Use only fat-free or low-fat dairy products (1% or less), which, if flavored, contain no more than 130 kcal per 8 fl oz	1) If milk is offered as a beverage, only offer 2%, 1%, and fat-free fluid milk. 2) If cottage cheese items are offered, only offer low-fat (2% or less) or fat-free items. 3) If yogurt is offered, only offer 2%, 1%, or fat-free yogurt, with no added caloric sweeteners (or yogurts labeled as having reduced or less sugar according to FDA labeling standards). 4) Processed cheeses must contain ≤230 mg sodium per serving	¼ cup of fat-free/low-fat dairy		Up to 12-oz servings of low-fat and nonfat regular and flavored milk with up to 150 calories per 8 oz	See below, under <i>Beverages</i>
Beverages					
Water Water (including sparkling, seltzer, or flavored water), preferably with zero calories; not to exceed 10 kcal per 8 fl oz	Drinking water, preferably chilled tap, must be offered at no charge at all meal service events	Water, including carbonated water (no added caloric sweeteners)		Water without flavoring, additives, or carbonation	Water including carbonated water, with no added caloric sweeteners. Require access to free, safe, drinking water wherever beverages are served and/or sold
Fruit and vegetable juice 100% fruit juice (≤120 kcal per 8-oz serving), with no added caloric sweeteners and >10% Daily Value for 3 beneficial nutrients	If juice is offered, only offer 100% juice with no added caloric sweeteners. Vegetable juices must contain ≤230 mg of sodium per serving	100% fruit juice or fruit juice combined with water or carbonated water (limited to a maximum of 12-oz container; no added caloric sweeteners). 100% vegetable juice (limited to a maximum of 12-oz container; no added caloric sweeteners; and ≤200 mg of sodium per container)		0- to 8-oz portion of 100% fruit or vegetable juice or fruit juice combined with water, with no added caloric sweeteners, and no more than 140 mg of sodium per portion	
Reduced calorie ≤10 kcal per 8 fl oz Fat-free or low-fat (≤1%) milk; if flavored, no more than 130 calories per 8 oz. Regular and herbal unsweetened teas (hot or cold). Coffee (with ≤1% fat milk or creamers as well as soy alternatives). In vending machines, at least 50% of beverages offered should be water and beverages with <10 kcal per 8 fl oz	At least 50% of available beverage choices (other than 100% juice and unsweetened milk) must contain ≤40 kcal per serving	Low-calorie beverages that are ≤40 calories per container. 100% of beverages in vending machines must meet the above guidelines		No- or low-calorie beverages with up to 10 calories per 8 oz (any size). Up to 12-oz servings of low-fat and nonfat regular and flavored milk with up to 150 calories per 8 oz Up to 12-oz servings of 100% juice with no added sweeteners, and up to 120 calories per 8 oz; must contain at least 10% of the recommended Daily Value for 3 or more vitamins and minerals. Up to 12-oz servings of light juices, sports drinks, and other drinks with no more than 66 calories per 8 oz	Low- to mid-calorie beverages with no more than 40 calories per container. Prepackaged coffee or tea beverages with no more than 40 calories per container. If coffee or tea beverages prepared on site contain milk (e.g., cappuccino, latte, chai), the milk must be low-fat or nonfat, with no added caloric sweeteners in no more than 12-oz portions. Low-fat and nonfat milk and soy beverages (calcium and vitamin D fortified) with no more than 130 calories per 8 oz in no more than 12-oz portions; flavored milk is not recommended; if flavored milk is offered, it should be nonfat or low-fat, with no more than 130 calories per 8 oz

Table 2 Continued

AHA procurement standards ²⁴ (<i>Cafeterias, vending machines, meetings, special events, other venues</i>)	Health and Sustainability Guidelines for Federal Concessions and Vending Operations ²⁵ (<i>Cafeterias, vending machines, conferences, and on-site events</i>)	National Alliance for Nutrition and Activity (NANA) model vending guidelines ²⁶ (<i>Vending machines</i>)	Fit Pick (standard criteria for vending machines) ²⁸ (<i>Vending machines</i>)	Alliance for a Healthier Generation (high school) ²⁷ (<i>Cafeterias and vending machines</i>)	Robert Wood Johnson Foundation, Healthy Eating Research: Recommendations for Healthier Beverages ²⁹ (<i>Beverages only</i>)
Calories and portion sizes: limit or reduce					
Calories Snack foods, side dishes, desserts, single-item foods: <200 kcal/serving. Entrees ³⁰ : <500 kcal/serving Meals ³¹ : <700 kcal (*An entree is considered the main part of a meal, such as a sandwich, pizza, or burger, whereas a meal is a more complete offering intended for breakfast, lunch, or dinner that includes two or more items from recommended food groups served in combination (e.g., lean meat + vegetable + fruit + whole-grain bread)	In vending machines, limit all snack (not refrigerated meals) items to <200 calories per item (excluding nuts and seeds without added fats, oils, or caloric sweeteners)	No more than 200 calories per snack item as offered (per package). No more than 400 calories per entree item as offered (per package). Sugarless chewing gum can be sold without having to meet the nutrition standards		Fruit packaged in its own juice and dried fruit are limited to 200 kcal; other foods must meet all criteria previously listed (fats, sugar, and sodium) and be one of the following: 1) Vegetables with sauce or soups with ≤150 calories if they contain 2 or more of the nutrients* listed below; 2) ≥¼ cup of fruit or vegetables; 3) Other foods with calorie limits of 200 kcal that contain 1 or more of the nutrients listed below. *Additional nutrients: ≥2 g fiber, or ≥5 g protein, or ≥10% Daily Value of vitamins A, C, E, folate, calcium, magnesium, potassium, or iron	NA
Portion sizes Reduce portion sizes as a way to reduce calorie intake. Offer the smallest serving size, when possible, or offer half-serving sizes	When feasible, offer half- or reduced-size choices for some meals and concessions items				NA
Other foods to include, increase, or avoid/limit					
Vegetarian dishes: include Incorporate beans, peas, and legumes (e.g., hummus made from garbanzos/chick peas, edamame, or snow peas)	At least twice per week, offer an entree with a vegetarian protein source				NA
Fried foods: limit Limit fried foods. Prioritize roasted, baked, microwaved, steamed, poached, or grilled preparation	Deep-fried options must not be marketed or promoted as the special or feature of the day. Limit deep-fried entree options to no more than one choice per day.				NA
Other recommendations					
Pricing Provide calorie labeling on all food and beverage items on menus and menu boards in cafeterias, vending machines, and other venues. Highlight and promote healthier and lower-calorie options	Make healthier options more appealing to the consumer by offering them at a reduced price as compared with less healthy alternatives (see above standard)	Ideally, beverages and foods that meet nutrition standards should be priced competitively (e.g., at or below) compared with similar items that do not meet nutrition standards			NA
Labeling Provide calorie labeling on all food and beverage items on menus and menu boards in cafeterias, vending machines, and other venues. Highlight and promote healthier and lower-calorie options	All items available in cafeterias must be labeled with calories per serving as sold (or calories per measure provided for salad-bar-type service)	Each vending machine must display, clearly and conspicuously, the total calorie content for each item as sold and place calorie content adjacent to or in close proximity to the item or its selection button, where it can be seen before the consumer selects items (labeling should be consistent with federal law for calorie labeling of vending machines once in effect). A font and format at least as prominent in size, appearance, and contrast as that used to post either the name or the price of the item must be used.			NA

Abbreviations: AHA, American Heart Association; FDA, Food and Drug Administration; kcal, kilocalories; NA, not applicable; oz, ounce; Tbsp, tablespoon.

Alliance for a Healthier Generation (high schools)

Working with the William J. Clinton Foundation, the American Heart Association established the Alliance for a Healthier Generation, an initiative to address childhood obesity and reverse the nation's obesity epidemic. In May 2006, the Alliance announced a landmark agreement with the beverage industry to eliminate full-calorie beverages from schools across the nation and promote lower-calorie, smaller-portion beverages to reduce the calories consumed by children in the school environment. In 2007, the Association and the Alliance established science-based snack-food standards for competitive foods in schools to promote consumption of a healthy, balanced diet that is rich in vegetables, fruits, and high-fiber whole grains, with limited intake of fats, salt, and calories to help students make healthier food choices in the school environment.²⁷ The standards cover foods offered outside of the reimbursable meal program such as products sold in school vending machines, a la carte lines, snack bars, fundraisers, and school stores. For this review, the Alliance standards are included because they are frequently referenced by organizations or local or state government agencies wanting to develop their own standards. The standards for high schools (instead of those for elementary or middle schools) are summarized in Table 2 because they are most applicable to adults.

Recent surveillance has shown the impact of the Alliance beverage agreement. In 2009, the American Beverage Association reported that 88% fewer beverage calories had been shipped to schools across the United States.³¹ Additionally, the CDC's 2012 School Health Policies and Practices Study showed that 86.3% of states are now providing technical assistance and strategies to improve the nutritional quality of foods and beverages available in schools, which is likely some reflection of both the voluntary and legislative efforts carried out over the last decade to address the school nutrition environment.³²

Fit Pick (industry, vending)

Fit Pick is a system developed by NAMA, the national trade association of the food and refreshment vending, coffee service, and food service management industries.²⁸ NAMA developed two sets of standards for Fit Pick, one based on the Alliance for a Healthier Generation criteria, and a separate category with a less stringent set of three basic criteria on which Fit Pick bases its supporting materials: 1) no more than 35% of total calories from fat; 2) no more than 10% of calories from saturated fat; and 3) no more than 35% of total product weight from sugars. The simple, ready-to use system developed by NAMA offers vendors lists of foods and beverages that fit the criteria

and stickers that identify the approved products on the machines. The less stringent set of standard criteria that are adopted by most implementers using this system allow a broad range of foods and beverages into vending machines and do not significantly limit offerings of unhealthier items.

Robert Wood Johnson Foundation's Healthy Eating Research program: recommendations for healthier beverages

Since beverage choices contribute significantly to dietary and caloric intake, Healthy Eating Research, a national program of the Robert Wood Johnson Foundation, convened an expert advisory panel to develop a comprehensive set of age-based recommendations to define healthier beverages.²⁹ This consensus process was helpful in developing consistent beverage guidance, incorporating expert consensus and existing recommendations from many organizations across various age groups. Many organizations that want to address healthy choices start with beverages because they are less complicated than the food environment.

Overview of model recommendations by category

For the approximately 30 topics of recommendations presented in Table 2, there is strong consistency and little disagreement between the different standards when a specific recommendation is made. For example, five of the standards have a recommendation for limiting the total, added, and/or types of sugar content of foods offered. There are, however, very few topics for which all six sets of standards offer a specific recommendation. For example, only the American Heart Association has a specific recommendation for seafood intake, and only the federal guidelines promote local/organic/sustainable foods. Below is an overview that summarizes some of the detailed information in Table 2.

Nutrients and food components to limit or avoid. For this category of standards, most of the policies have similar recommendations. This can be explained by the availability of an extensive evidence base for the health impacts of added sugars, sodium, *trans* fat, saturated fat, and total fat. The Association has published scientific statements on each of these topics,^{5,33-37} as have many other scientific groups.^{6,38} There is general scientific agreement that all of these nutrients, with the exception of total fat, can have adverse health effects among some people under certain conditions, and dietary deficiencies of these nutrients or food components are unlikely. Therefore, they may be harmful in excess, so the general recommendation is to either limit or avoid them. Another characteristic that

distinguishes this set of nutrients and food components is the availability of specific numeric targets that are used fairly consistently, e.g., percent of energy, grams, or milligrams; such targets are not available for most of the items and categories discussed below. Of the several categories of recommendations, this one is the most well established and the least controversial.

Food groups to promote and make available. This category of items is distinct from the first in several ways. First, these are items to include, rather than to limit or avoid. Second, these are all foods and food groups, rather than individual nutrients. Third, these recommendations tend not to involve specific units or amounts (e.g., grams, cups, servings) that should be included; rather, the suggestion is primarily to make them available, which may set a low bar of expectation to be fulfilled. The recommendations get most specific, numerically, in terms of the *preparation* of vegetables, fruits, whole grains, lean meat and protein, nuts/nut butters and seeds, and dairy products, with specific standards set forth to avoid high levels of added sugars, sodium, and fat in these foods and food categories. As with the first category, the organizations offering recommendations for this second category are generally consistent with one another, but fewer of the organizations make recommendations for the items in this category, and the recommendations are more general, which may make them more challenging to implement in an impactful way. There is an extensive scientific literature that addresses the potential health benefits of including the foods in this category in the diet.⁶

Beverages. The various standards have criteria for packaged beverages that appear to be specific enough to allow them to be followed clearly, feasibly, and effectively. Recommendations for water, 100% fruit juice, milk, and other beverages are made in terms of specific volumes and specific calorie cutpoints. The recommendation for tap water may be more challenging to implement in some facilities and geographic areas than in others (i.e., locations where the purity and/or safety of the local tap water may be compromised).

Limiting or reducing calories and portion sizes. Four of the standards have guidelines for calorie limits for snacks and side dishes, and all of them suggest <200 kcal, with the exception of the Alliance for a Healthier Generation guidelines for high schools, which have a separate recommendation of <150 kcal when the snack or side dish is either a soup or a vegetable with a sauce. For entrees, the Association recommendation is <500 kcal, while the NANA recommendation is <400 kcal; this difference may be explained by the NANA standards being intended for

vending machines only, while the Association standards are for a broader set of food environments. Only the Association offers standards for meals, and suggests <750 kcal. Three of the standards specifically mention portion size and suggest that reduced portion sizes be offered and made available. In sum, these calorie and portion size recommendations are straightforward – they offer specific calorie limits for side dishes and snacks, entrees, and meals, and recommend reduced-size portions (i.e., smaller than what would be considered a typical portion).

Additional items to include or limit. Both the Association and federal standards include recommendations to include vegetarian options and limit fried foods. For the federal guidelines, “limit” means that deep-fried options cannot be marketed or promoted as the special or feature of the day, and there cannot be more than one choice per day. The Association defines “limit” to prioritize roasted, baked, microwaved, steamed, poached, or grilled preparation. These recommendations are fairly general and could be met easily through modest efforts to make items available or, in the case of fried foods, to eliminate them. This has already been done extensively in the school environment. Simply “limiting” fried foods in procurement policy could be such a low bar to achieve that it may have a minimal or negligible impact.

Other recommendations that go beyond items to include or limit. Three of the standards – American Heart Association, federal, and NANA – address pricing and calorie labeling. The recommendation for pricing is that strategies be employed to offer healthier items at lower prices than available items that are less healthy. While the intent of this recommendation is clear, implementation is likely to be challenging until successful models are developed and disseminated. These three sets of guidelines also recommend that calorie levels be labeled clearly. This is currently done in many institutional settings on menus or at the point of purchase and seems feasible in most cases.³ The federal standards go the farthest in this regard and recommend that the full list of information found on the standard Nutrition Facts Panel be made available in written form, upon request, as made clear by a statement prominently placed on a menu or menu board (Table 2). The federal standards in this area were developed to be consistent with the forthcoming implementation of the federal menu label law, which requires that calorie content be disclosed on menus and that other nutrient information – total calories, fat, saturated fat, cholesterol, sodium, total carbohydrates, sugars, fiber and total protein – be made available in writing upon request.

Although the federal menu label law has not yet been fully implemented, several studies have investigated the

impact of menu labeling, especially on purchasing behavior in areas of the country where menu labeling has been put into practice through state law or local ordinances. In some studies, customers who reported seeing and using the posted calorie information purchased fewer calories, especially women and parents choosing for their children.^{39–43} Other research has not shown a significant decrease in purchasing or consumption as a result of calorie labeling^{44–48} or an impact of the calorie statement on facilitating understanding of the overall energy intake.⁴⁹ The format in which the calorie information is presented may contribute to its efficacy.^{50,51} Continued research as the federal law is implemented will be necessary to gauge the effectiveness and the effect of the law on health status, industry innovation, consumption behavior, and purchasing decisions.⁵²

In general, research on the effects of food labels has shown relatively limited impact on dietary preferences and food consumption.³ Some studies have shown that front-of-package (FOP) labeling featuring elaborate symbols, rather than raw quantitative data, is more effective.^{53–55} Further, the use of familiar symbols and color-coded lighting schemes (i.e., the United Kingdom’s “Traffic Light” system) has been shown to be particularly effective at increasing consumers’ ability to ascertain healthier food choices,^{56–60} and there is some evidence that these strategies increase healthy purchase patterns.⁶¹ However, the influence of traffic light labeling on overall dietary intake has not yet been established.

Color codes and graphic symbols have been used on FOP labels, which have shown to be more effective than traditional labels.^{62,63} However, the influence of such labels in and of themselves is inconclusive. For example, some studies have shown that FOP labels may increase the knowledge base of consumers with low-nutrition education,⁶² yet others have indicated they disproportionately benefit those with a high-nutrition education.⁶⁴ In general, further research is needed on the impact of food-and-beverage labeling within procurement standards.

Recommendations made by only one of the six organizations. In addition to the recommendations listed in Table 2, an additional set of recommendations was made by only one of the six organizations. While some of these are variations on some of the common and standard themes above, others are more novel and perhaps groundbreaking. For example, the federal standards recommend promoting local, organic, sustainable, and seasonal items. All of those terms are known to be accompanied by a degree of variability in interpretation as well as a limited evidence-base of support. It will be important for institutions that commit to implementing such standards to include an evaluation component. Other federal recommendations suggest that the side

dishes offered with value meals be fruit and nonfried vegetable options, rather than cookies or chips, and that desserts be offered that contain no, or low levels of, added sugars. A similar general standard from the Association is for condiments that are low in fat, sodium, and calories to be available. However, the Association standards, like the federal standards, have several suggestions for going beyond these recommendations. The Association recommends integrating nutrition education and promotion within worksite wellness programs as well as offering prizes or rewards (e.g., coupons, gift cards, wellness points) to incentivize employees to make healthier choices. Evidence shows that financial incentives are effective primarily in achieving short-term, distinct, well-defined behavioral goals⁶⁵ but are less effective in achieving sustained health improvements, particularly weight loss.^{44,66–68} Often, early gains are reversed when rewards are no longer offered,⁶⁹ so future research needs to evaluate the short- and long-term impact of financial incentives on behavior change, whether positive or negative incentives have the greatest impact, whether there are unintended consequences of financial incentives, and the impact of extrinsic motivation like incentives compared with intrinsic motivation and a person’s readiness to change on long-term efficacy.

Again, it will be important for such standards to include an evaluation component. Two NANA standards do not appear in the table. First, the positioning and promotion of healthier items should match or exceed that of less healthy items, and second, the general implementation of all standards put forth should be allowed to be phased in over a 3-year period.

FOOD PROCUREMENT POLICY IMPLEMENTATION AND EVALUATION IN DIFFERENT ENVIRONMENTS

The next step beyond the development of food policy standards is the adoption, implementation, and evaluation of those policies.

Examples of state and local policies

In 2012, the Center for Science in the Public Interest created the website *Healthier Food Choices For Public Places: Food and Nutrition Guidelines for Government, Worksites, Hospitals & Organizations*, which provides resources for food policy standards.¹² One of the documents, *Examples of National, State, and Local Food Procurement Policies*, provides electronic links to, and brief descriptions of, 49 policies (5 from hospitals) that have been adopted across 18 states.¹³ The 44 policies that were not from hospital organizations (hereafter referred to as general policies) break down as follows: approximately 50% are for cities; approximately 33% are for counties; and

approximately 15% are statewide policies. Approximately 75% include vending machines, and of those, approximately 66% address vending machines exclusively.

The policy examples that address more than vending machines (e.g., cafeterias) come from nine different states, including California, Delaware, Kentucky, Maryland, Massachusetts, New York, Tennessee, Virginia, and Washington. The most common standards cited in this set were Fit Pick, *Dietary Guidelines for Americans*, and the American Heart Association.

These policies were reviewed to determine the extent to which they included items and categories from Table 2. Almost all of the policies, 41 of the general policies, and all 5 of the hospital policies specified one or more “Nutrients or food components to limit or avoid,” the most common being sodium and added sugars. Under the category of “Food groups to make available and promote,” 19 general policies and 1 hospital policy prioritized vegetables, fruits, and/or whole grains (fiber-containing foods), and 34 general policies prioritized reduced-fat, low-fat, or nonfat dairy items. As many as 29 policies made mention of dairy substitution items as being acceptable options. Thirty-seven general policies and 4 hospital policies specified at least one beverage requirement; limiting the availability of soda and sugary beverages was the most common policy target, with 15 general policies and 4 hospital policies recommending the complete elimination of regular and diet soda. Thirty-four general policies and 1 hospital policy specified restrictions on calories and/or portion sizes. Nine general policies addressed pricing adjustment to favor purchase of healthier items, and 13 general policies supported the use of a labeling system either to display nutrition facts on items or to help customers identify and differentiate healthier from less healthy items. Some of the topics less prevalent but still relevant to this review included 8 general policies and 1 hospital policy that endorsed buying locally, 6 general policies for utilizing strategic product placement to increase visibility and encourage purchase of healthier items, and 4 general policies and 2 hospital policies that included an educational component for staff and/or patrons. Finally, the review of this set of policies led to the identification of 17 general policies and 1 hospital policy that included plans for either a formal or informal review or evaluation following policy implementation.

Hospital food-and-beverage environments and procurement policies

Healthcare institutions are uniquely poised to provide healthy food-and-beverage environments for large populations, including their employees, patients, and local communities. Over 5 million people are employed by

more than 5,700 hospitals in the United States, and annually, there are approximately 36 million inpatient admissions, 118 million emergency department visits, and 481 million outpatient visits.⁷⁰⁻⁷² A healthy food policy not only contributes to the organizational mission and institutional culture of hospitals but also serves as a health promotion model for the surrounding worksites and communities.

Existing initiatives. As part of the Healthier Worksite Initiative, in 2010 the CDC convened an expert panel that generated a *Healthy Hospital Choices* report.⁷³ The report emphasized collaboration between hospitals and health practitioners to establish healthy food standards and measures of food-and-beverage policies and environments. The panel recommended using environmental change strategies such as access, pricing, and menu labeling, and developing publicly available, healthy food-and-beverage scan toolkits. The report also underscored the need for a “clear business case,” such as improved patient satisfaction or reduced employee healthcare costs, to persuade hospital administrators to make a healthy food environment a priority. As an additional resource for this healthy hospital initiative, the CDC developed the Healthy Hospital Practice to Practice Series (P2P), which features examples of hospital systems across the United States that have made significant changes in their food environments.⁷⁴

The North Carolina Prevention Partners is a statewide nonprofit organization funded by the Duke Endowment and the North Carolina Hospital Association to assist hospitals in North Carolina in promoting healthy environments through healthy food environment policies as well as tobacco-free campuses.^{75,76} Despite several noted barriers encountered during implementation – lack of strong leadership for the initiatives, lack of a prevention focus in the hospital’s strategic plan, and insufficient budgeting for wellness – by 2011, 95 hospitals in North Carolina had implemented all of the principles, and an estimated 200,000 hospital employees and millions of visitors were exposed to a healthier food environment.

Another example includes Kaiser Permanente, one of the largest nonprofit health plans in the United States, which has been promoting healthy food choices in some of its hospital systems since 2006 with a healthy food options marketing-and-labeling program called “Healthy Picks.”⁷⁷ In 2008, Kaiser tested a cafeteria intervention in a pilot study of six California hospitals that provided detailed calorie and nutrient content information at the point of purchase.⁷⁸ The program was subsequently rolled out to additional hospitals in California, Oregon, and Hawaii, and by 2012, the intervention has been adopted by 35 Kaiser hospitals.⁷⁷

Healthcare Without Harm, an international coalition that promotes ecologically sound practices in healthcare, is a sponsor of the Healthy Food in Health Care Initiative.⁷⁹ One of its core missions is to encourage food-purchasing systems that support sustainable food production and distribution and provide healthy food at healthcare facilities. Since 2006, 408 hospitals and seven food service contractors throughout the United States have signed the “Healthy Food in Health Care Pledge” in which the organization commits to increasing the availability of vegetables and fruits, reducing unhealthy fats and sweetened foods, and implementing a program of sustainable food procurement. The Partnership for a Healthier America has a similar “Healthy Hospital Food Commitment” in which hospitals commit to changes in the food environment and procurement, including nutrition labeling, product placement, pricing, and children’s wellness meals. The Partnership asks hospitals to eliminate all deep fryers and fat-fried products, to increase the percentage of vegetable-and-fruit dollar purchases by 20% annually, with 2012 as the baseline, or to achieve vegetable-and-fruit dollar purchases of 10% of total dollar purchases by July 2015, to increase the percentage of healthy beverages purchased by the hospital to 80% of all beverages, and to assure that at least 60% of a la carte entrees and side dishes meet healthy nutrition standards. At the local level, several city-wide hospital initiatives were launched in the past 2 years, including the Healthy Beverages in Hospitals Campaign in Boston, Massachusetts (10 participating hospitals), and the New York City Healthy Hospital Food Initiative (30 participating hospitals).

Evaluation of healthy food initiatives. At this time, few healthy food initiatives have been formally evaluated to determine the effectiveness of the programs. One study conducted at Brigham and Women’s Hospital in Boston evaluated an intervention that increased the price of sugar-sweetened beverages and found that the sales of these beverages declined.⁸⁰ Kaiser evaluated a menu-labeling pilot study over 12 weeks at 6 hospital cafeterias in California.⁷⁸ All cafeterias participated in the “Healthy Picks” program that identified the healthiest choices in the cafeterias, but for the pilot study, two different menu-labeling interventions were tested: 1) calorie information posted on countertop menu boards at the point of purchase and detailed nutrition information listed on a poster in the cafeteria, and 2) calorie and nutrition information listed on a poster only. A survey of 554 hospital cafeteria customers from intervention hospitals found that respondents from the sites with menu-board labeling were more likely to notice calorie labeling than sites with the poster alone. An evaluation of lower-calorie purchases conducted at two sites with electronic cash regis-

ters found that purchases of lower-calorie side dishes and snacks significantly increased with the menu-board intervention, although purchases of lower-calorie entrees did not change.

Researchers at Massachusetts General Hospital in Boston tested the effectiveness of a 6-month 2-phase intervention in a large hospital cafeteria using traffic-light labeling and product placement (“choice architecture”).⁶¹ This study demonstrated that sales of unhealthy foods and beverages declined and sales of healthy items increased with both the labeling and the product placement interventions. In an analysis of hospital employees who used the cafeteria regularly, employees from all racial and socioeconomic backgrounds increased their purchases of healthy foods and beverages during the intervention.⁸¹ A survey of cafeteria patrons suggested that the traffic-light labels prompted cafeteria patrons to consider their health and nutrition at the point of purchase.⁶⁰ An evaluation of the long-term follow-up of this program demonstrated that the cafeteria customers continued to make healthier purchases over the following 18 months, including a cohort of 2,285 employees followed longitudinally.⁸²

Next steps for healthy food in hospitals. In the future, hospitals have the potential to play a stronger leadership role in providing a healthy food environment. Healthy food procurement policies would impact food served in cafeterias, patient meals, and vending machines and by on-site vendors and would reach millions of employees, patients, and community members. Although many hospital systems are voluntarily creating healthy food environments, ultimately the most effective way to implement a universal policy would be to make a healthy food environment one of the criteria on which hospitals are judged by accrediting agencies, such as the Joint Commission.

Case studies and other examples

In the two case studies described below, the organizations have either completed a formal evaluation of their food procurement policy implementation (Hubert H. Humphrey Building cafeteria) or have initiated implementation and have a formal plan for evaluation (Santa Clara County, California). Two other examples of food procurement policies are briefly described to demonstrate the diversity of environments in which these policies are being implemented: the 2020 Real Food Challenge at colleges and universities, and the recent efforts under way at the Walt Disney Company.

Hubert H. Humphrey Building cafeteria. Recognizing the need for formal evaluation of the new federal standards, the HHS and the GSA contracted with the Nutrition

Obesity Research Center at the University of Chicago to do an independent assessment and a process evaluation of the experience of the HHS Hubert H. Humphrey Building cafeteria in developing and implementing the *Health and Sustainability Guidelines for Federal Concessions and Vending Operations*.^{25,83} Although the Humphrey Building was the first federal facility to implement the standards, as of March 2012, all 32 of the GSA's federal facilities in the Capital Region were incorporating at least some of the standards. The Humphrey Building experience provides valuable feedback about the challenges and successes that were achieved in the course of implementing the new federal standards.⁸³ The evaluation took the form of a case study that addressed the following: 1) how the standards were translated into a Request for Proposal (RFP) to issue a new vendor contract, 2) implementation challenges for vendors, and 3) the impact of adherence to federal standards on cafeteria sales, menu offerings, and food delivery.

The RFP for a new vendor contract at the Humphrey Building cafeteria was developed by staff from the GSA in collaboration with HHS operations and management staff. The HHS staff was enthusiastic about bringing healthier and greener food options to their cafeteria, and this was an important aspect of developing a new food contract. The multidisciplinary partnership was essential to the success of the overall program. The GSA solicited feedback from potential vendors to determine the feasibility of implementing the standards, and the main challenge identified was finding a reasonable balance between health/sustainability standards and what the industry could realistically support. Meeting sodium standards was difficult due to lack of availability of low-sodium products and to customer tastes being acclimated to high levels of sodium. Other challenges included problems with sourcing specialty products, accessing local and organic produce, cost of fresh foods, and customer acceptance.

Based on this feedback, the GSA built in flexibility to the RFP, requiring that only 25% of products be organic or locally grown and that only 40% of menu offerings meet all the standards. Recommendations for implementing standards in future settings included increased industry education about the standards and built-in flexibility. In addition, other stated goals were to raise awareness, education, and commitment of the consumers with marketing campaigns and to designate someone as responsible for overseeing implementation. Most importantly, the report noted the agency and vendor must create a process that works within the constraints of the supply chain in order to maximize implementation of the standards.

Preliminary sales and menu-offering outcomes were evaluated after implementing standards in the Humphrey

Building cafeteria. During the first 6 months of implementation, 67% of menu items met the standards, surpassing the GSA's target of 40%. Comparing sales from the first 6 months of the policy implementation to the previous 6 months, monthly sales increased by 34% and monthly check average increased by 17%. However, these findings should be interpreted with caution because these changes may also have been affected by price increases in the cafeteria. Future research will be needed to evaluate the long-term impact of policy implementation on consumer food choices, the food supply chain, and food service business models.

Santa Clara County. In February 2012, the Santa Clara County (California) Board of Supervisors unanimously adopted comprehensive nutrition standards for local-government-funded facilities. The nutrition standards, developed by Santa Clara County's Public Health Department (SCCPHD), were created to ensure that food and beverages offered, purchased, or served at County facilities and provided by County departments are of maximum nutritional value.

At passage, the County estimated that the new standards would affect more than 6 million meals served to seniors in their senior nutrition program, to patients and customers at their medical center, and to incarcerated custodial populations. Additionally, the standards influence employee meals and snacks served across 12 cafeterias and cafés, 8 leased properties, 200 vending machines, and numerous meetings and events.

To achieve these impacts, the county designed two types of standards: general food-and-beverage standards that apply to all populations and locations, and population- and location-specific standards. The general beverage standards recommended that water be readily accessible, that no sugar-sweetened beverages be served, and that tap water, seltzer water, coffee, and/or unsweetened tea be served. The general food standards recommended that healthier food options incorporating more vegetables, fruits, whole grains, low-fat and low-calorie foods be offered, that processed foods be used minimally, that foods be prepared using healthy cooking techniques, that foods containing less than 0.5 grams of *trans* fat per serving be provided, that smaller portion sizes be offered, that vegetarian options be made available, and that seasonal produce be obtained when available. The population- and location-specific standards identified additional guidance for meetings and events, vending machines, cafés and cafeterias, leased properties, and custodial populations. For example, 100% of vending-machine items were required to meet minimal nutrition criteria, and, in cafés and cafeterias, at least 50% of the healthier items were to be placed prominently. The *Santa Clara County Nutrition Standards* can be found online.⁸⁴

With the exception of the implementation of the guidelines specific to meetings and events, all Standards went into effect on July 1, 2012.

To implement the standards, the SCCPHD partnered internally with numerous agencies to help support transitions in procurement, disseminate internal notifications and education, and conduct trainings. SCCPHD made plans for a summer 2013 evaluation of the implementation process to assess changes in the various locations affected by the new standards and to identify areas for improvement or revision, including vending machine items, menu items in the cafés and cafeterias, and menu items in County-leased properties.

Real Food Challenge. The Real Food Challenge (RFC) is sponsored by The Food Project and the California Student Sustainability Coalition. The RFC's target is to redirect 20% of all food purchased by colleges and universities (currently almost \$5 billion) towards "real food" by 2020.⁸⁵ "Real food" is defined by the RFC as food that "truly nourishes" and is divided into four categories: local/community-based, fair, ecologically sound, and humane. By signing the RFC's Real Food Campus Commitment, colleges and universities pledge to buy 20% real food by 2020. The RFC grassroots campaign has taken off around the country, with 363 participating colleges and universities to date⁸⁶ (see reference for a list of participating schools). The RFC developed a Real Food Calculator that provides in-depth definitions of "real food" and a tracking system for institutional purchasing.⁸⁷ Many students are more willing to advocate for changes in the food to which they have access if the changes support local, sustainable, and fair food systems rather than emphasize solely the nutrient content of foods.

Walt Disney Company. In June 2012, the Walt Disney Company announced new nutritional standards that limit total calories, saturated fat, sodium, and sugars per serving. The standards apply to all foods and beverage products that are advertised, promoted, or sponsored on Disney media properties and must be adhered to by 2015. Disney is the first major media company to set standards for food advertising on child-focused television programming. The standards also include nutritional changes at Disney theme parks and resorts. The nutrition standard criteria align with the *2010 Dietary Guidelines for Americans* and assess foods and meals based on the following: 1) Do they contribute to a nutritious diet? (e.g., vegetables, fruits, whole grains, lean protein, low-fat dairy); 2) Do they encourage kid-appropriate portions? (i.e., calorie criteria); and 3) Do they limit "nutrients to avoid"? (e.g., sugars, sodium, trans fat, saturated fat). The Disney Nutrition Guideline Criteria can be found online.⁸⁸

EVALUATION APPROACHES AND ISSUES

As procurement policies are implemented in various settings, it is critical to evaluate the extent to which a policy change occurred and the effects of that change on food-and-beverage choices. Under ideal circumstances, this evaluation would also include health indicators, such as body mass index, blood pressure, lipid profiles, and other risk factors for cardiovascular disease. Therefore, whenever an organization adopts food procurement standards, it is incumbent upon the organization to include a plan for evaluation. Depending upon resources available and the size of the organization, the evaluation may be as simple as gathering basic data or as complex as a well-controlled research study. Results from an evaluation are important for justification of the resources to make and sustain the change, as well as for making informed decisions in future planning. Moreover, an evaluation provides an empirical assessment of whether the change in procurement policies has intended or unintended effects. Evaluation typically includes assessment of both process (i.e., how and to what degree the planned changes in procurement occurred) and outcomes (i.e., effects of the changes). Table 3 summarizes potential components of an evaluation plan of food procurement standards.

Process evaluation

Key aspects of process evaluation focus on the extent to which the policies were implemented and the factors that facilitated or hindered their adoption. The questions mentioned earlier in this report under potential barriers (Box 1) can stimulate plans for process evaluation. Focus groups can be effective in garnering qualitative data from those who implemented the procurement requirements as well as from consumers. Such data can provide helpful insights into benefits, barriers, and areas for further improvements. Asking those charged with the implementation of new procurement requirements for written reflections on the implementation process can capture other useful qualitative data. If penalties or rewards are established for implementation, objective data describing the degree to which the milestones were met and how incentives or penalties were received are useful. Quantitative assessments of the degree to which the intended changes occurred are critical for a valid evaluation. Having a procurement policy is one thing, but determining the degree to which it was actually implemented (as documented by invoices, product inventory, types of foods available for purchase) is helpful for knowing exactly what is being evaluated. The more frequent and unannounced these assessments are, the better they are for an unbiased assessment. An extensive example of process evaluation was described earlier for the Hubert H.

Table 3 Strategies for evaluating food and beverage procurement policies.

Consideration	What to do	Questions to answer	Instruments or methods to use	Links to specific tools
Process evaluation Implementation of the guidelines	<p>Consider whether the intended improvements in foods offered are actually being provided.</p> <p>Document issues related to availability, palatability, and cost of foods</p> <p>Document concurrent nutrition education or marketing efforts employed to foster consumer use of newer food-and-beverage options</p> <p>Document efforts to train employees in correct food preparation, handling, and display</p> <p>Consider the extent to which implementation occurred relative to the intended timeline</p> <p>Consider the financial cost of the initial implementation expense and the ongoing cost of offering foods and beverages that meet the guidelines</p>	<p>Do the foods served/offered meet the established guidelines?</p> <p>Are the healthy options available and competitive with other options, with consideration of positioning, marketing, and pricing?</p> <p>Were there foods/food categories that were not available from vendors to meet the established guidelines?</p> <p>Did efforts change consumer and provider attributes?</p>	<p>Review of records of foods ordered and received.</p> <p>Nutrient analyses of published menus.</p> <p>Structured surveys or use of a mystery shopper to survey the foods available at unannounced times.</p> <p>Award applications that require evidence of improvements in menu/food offerings.</p> <p>Qualitative process data from focus groups of food service employees and consumers</p> <p>Use of pre-/postscales to measure awareness, knowledge, attitudes, self-efficacy</p>	<p>Programs for computerized nutrient analysis are available for purchase and use online.</p> <p>Award applications used by Alliance for a Healthier Generation²⁷ (https://schools.healthiergeneration.org/_asset/1062/k/07-278_HSPFramework.pdf#%29.Link)</p>
Timing of implementation Economic impact	<p>Document concurrent nutrition education or marketing efforts employed to foster consumer use of newer food-and-beverage options</p> <p>Document efforts to train employees in correct food preparation, handling, and display</p> <p>Consider the extent to which implementation occurred relative to the intended timeline</p> <p>Consider the financial cost of the initial implementation expense and the ongoing cost of offering foods and beverages that meet the guidelines</p>	<p>When were specific changes implemented within each site?</p> <p>Did implementation of the guideline affect the cost or profit margin of the entity providing the foods and beverages?</p> <p>Did implementation increase or decrease cost to the consumer?</p>	<p>Timeline reports from responsible party</p> <p>Review of accounting ledgers pre- and postimplementation</p>	
Outcome evaluation Dietary behaviors		<p>Did healthy eating behaviors improve among the target audience? (i.e., Do they report drinking lower-fat milk, eating more whole grains, eating more fruits and vegetables, drinking fewer sugar-sweetened beverages?)</p> <p>Did the constituents/employees consume healthier foods?</p> <p>For instance, did lunches purchased in the hospital cafeteria contain less saturated fat and sodium? (Assess sales date if/when possible)</p>	<p>Dietary screeners</p> <p>Meal recalls as employees exit a cafeteria; could include asking the employee why he/she selected specific "healthy or nonhealthy" items.</p> <p>Use of cafeteria sales data (i.e., sales of whole vs. 2% vs. nonfat milk)</p> <p>24-h dietary recalls or food records (can be offered as part of a wellness competition)</p>	<p>See National Cancer Institute tools³¹ at http://appliedresearch.cancer.gov/diet/screeners</p>
On-site food intake		<p>Did participant's daily nutritional intake improve?</p> <p>Did participant's mean body mass index or blood pressure decrease?</p>		
Daily nutritional intake Health parameters				

Humphrey Building cafeteria (see “Case studies and other examples” section) and serves as a model worth replicating.

Outcome evaluation

Evaluation of outcomes can represent a wide spectrum of time and impact. Assessment of short-term change, such as selection of healthier food on a specific day in a cafeteria or from a vending machine, can be conducted using observers, short interviews, or even brief electronic surveys. The collection of individual level data, ultimately compromised by its self-reported nature, can be augmented by overall sales data (i.e., Were overall sales affected?) and by the sales of certain products (i.e., Did the sales of targeted products increase/decrease?). It is important to collect such data for at least a year to see trends, seasonal and otherwise, and to avoid making overly positive or negative assessments based on short-term data. The long-term desired outcome is that consumers would not only select a healthier food but would also have an overall healthier dietary pattern for the day, which would become a habitual pattern, and that the improved dietary pattern would result in improved health, such as less weight gain, lower blood pressure, and/or delayed development of diabetes. Although these are worthy goals, investment of significant resources in measurement of these long-term health outcomes is best reserved for significant interventions that incorporate a well-designed research component. In general, evaluations that are focused on things most proximal to the procurement policy (e.g., sales, availability) will be easier to implement and interpret than those focused on more distal outcomes (e.g., individual health indices), which are affected by numerous factors that can be difficult to assess. Observational, uncontrolled, pre/post evaluations can be useful, especially when the predata include previous month/year data before any policy change occurred. In addition, randomized controlled trials are better vehicles for making inferences about cause and effect. Such designs usually randomize at the site level, such that certain locations have a new policy and others remain unchanged. These designs can provide useful data as new policies are being piloted in select locations.

Range of evaluation efforts and resources

It is important to note that effective evaluation does not necessarily require large budgets and specialized expertise. If personnel with evaluation experience are involved, employers and government agencies can conduct process evaluation (as described above) and assess the quantitative effects of a policy on data they already collect (sales, inventory, waste, profit). More complicated designs that

involve the assessment of individual data (intake, health indicators) will likely require seeking partnerships with academic researchers. Optimally, large-scale research evaluations will require financial investment from federal or state governments, foundations, or other funders. Although published studies on changes in the food available at worksites are limited,⁸⁹ evaluation of attempts to improve the availability of healthy foods in schools provides examples of both process and outcome evaluation.⁹⁰ These studies provide evidence that substantial efforts to improve the availability of healthy foods can result in the intended change in food service and vending and can, to some extent, affect the nutritional intake of students.

Development and execution of an evaluation plan require at least some resources. It is not unusual for a community nutrition program to allocate 10% of the budget to evaluation of the program. However, limited financial resources should serve as a spur to increase resourcefulness rather than as a rationale for no evaluation. Various tools and survey instruments are available for use. Several are listed in the last column of Table 3.^{27,91} For data collection and analysis, an organization may find employees willing to invest some of their time. Graduate students in local universities are another potential resource. For more extensive evaluation, use of an evaluation consultant can be valuable.

Potential requirement for institutional review board approval

Another item to consider when planning evaluation is whether the evaluation plans constitute research that would require review by an institutional review board (IRB). In general, collection of data by individuals involved in implementation of a program for the purpose of evaluating and improving the program does not require approval by an IRB. On the other hand, a research study conducted by others to conclude the effects of a program that results in a published study requires approval by an IRB and informed consent of individuals being assessed.

CONCLUSION

As part of its goal to improve the cardiovascular health of all Americans by 20% by 2020, the American Heart Association defined seven important metrics for cardiovascular health, including diet, physical activity, smoking, body mass index, total cholesterol, fasting plasma glucose, and blood pressure.⁷ The Association Strategic Planning Task Force and Statistics Committee used an evidence-based process to develop several principles to guide the approach to identifying the dietary metric, including the following: dietary habits that have the strongest evidence

base for likely causal effects on cardiovascular events, diabetes, and/or obesity; an overall recommended dietary pattern based on foods rather than nutrients; and elements consistent with existing national^{6,25} and American Heart Association⁵ dietary standards. Each of these principles can be considered within the development of food procurement policies in order to maximize the impact on cardiovascular health in the employed population.

Implementation and evaluation of food procurement policies should be conducted in a broad spectrum of worksite environments, and workplace standards should encompass all food-and-beverage offerings as well as physical activity opportunities and smoke-free policies. As a first step, this paper reviews a set of national model standards for foods and beverages. Most of the current food procurement policy standards are built on an evidence-based foundation of nutrients to avoid in excess due to potential harm, and foods and food groups to include and increase for health promotion. Many standards specifically target excessive energy intake, with recommendations for zero-, low-, or reduced-calorie beverages and reduced portion sizes of foods. The types of foods offered in worksites are also addressed by some standards, such as promoting vegetarian options or limiting deep-fried foods. Some standards recommend going even further to take health and environmental sustainability into account by increasing organic, local, seasonal, sustainable, grass-fed, and pasture-raised options. While all of these recommendations are made with the intention of promoting healthier dietary intake, some have a more established history and are more evidence-based than others. When formulating initial recommendations, it is suggested that the most evidence-based findings be used as a starting point, keeping in mind that future evidence may support broader recommendations; in fact, some facilities and organizations will need to test the impact of adopting broader recommendations in order to generate those needed data. In support of implementing these recommendations, this policy paper summarizes some of the major legal issues to be considered in the process in order to avoid potential legal

barriers to implementation, presents case studies and examples, and provides an overview of evaluation issues and approaches.

Worksite-based procurement policies provide the opportunity to promote healthier diets among large populations of employees by making stronger connections between national dietary standards and food-and-beverage environment and procurement policies. In order to beneficially impact cardiovascular health and obesity, employers developing and implementing food procurement policies should make it easier for their employees to access a healthy diet. Generally, the more comprehensive a set of standards, the greater potential they have to promote health; however, there are some key focus areas that could particularly affect population dietary intake, including reducing the intake of sugar-sweetened beverages and sodium and increasing fruit and vegetable intake. This paper identifies elements across the standards that, as a minimum, should be included in food procurement policies in worksite settings and recommends steps for employers to take (Box 2).

The workplace food environment of federal, state, and local government agencies and hospitals is likely among the most viable targets for population-based change in food consumption patterns. These organizations employ a significant portion of the American workforce, often serve foods to a broader public, and promote health as one of their central missions. Targeting worksites is a population approach that parallels and complements the current changes being developed, implemented, and evaluated in other population-based arenas, such as the school environment. The key to this approach is to focus on improving the overall quality and healthfulness of food and beverages made available in specific settings (e.g., worksites, hospitals, schools). At this time, the area of worksite food procurement and food service policy is dynamic. This paper is intended to provide a current snapshot and overview of the field and to encourage development, implementation, and evaluation of standards for foods and beverages offered or served in worksites. This overview can serve as a basis to

Box 2 Recommendations for optimizing food procurement policies.

Develop policies that incorporate established dietary guidance, including elimination of sugar-sweetened beverages and *trans* fats; limits on sodium and saturated fat; availability and promotion of consumption of vegetables, fruits, and fiber-rich whole grains; and availability and promotion of reduced-portion options.

Evaluate the implementation and outcomes of these policies. Ideally, assessment tools will be developed from examples such as WellSAT, used to help employers and government agencies assess the strength and impact of their policies.

Identify implementation barriers and revise strategies accordingly.

Allow for regular review and update of standards to accommodate emerging science.

create opportunities for evidence-based assessments and identification of the most effective strategies to be replicated, scaled, and disseminated. It is important to note that current implementation and evaluation of these policies is typically voluntary. In the future, implementing mandatory food procurement policies and offering tax credits or other incentives for implementing standards may be needed for a population-level effect that would best be achieved through universal adoption of food policies by government, institutional, and private employers.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher’s web-site:

Appendix A. The original author-created table in a non-Journal format that has line-boxed cells and more for greater ease of interpretation.