



# Under Pressure

Strategies for Sodium Reduction in the Hospital Environment

National Center for Chronic Disease Prevention and Health Promotion  
Division for Heart Disease and Stroke Prevention



## Acknowledgments

CDC would like to thank all those who provided input during the development of *Under Pressure: Sodium Reduction in the Hospital Environment*.

CDC would also like to share a special thank you to participants in CDC's 2010 Public Health Law Summit on Sodium Reduction for their additional support and valuable input.

# Under Pressure: Strategies for Sodium Reduction in the Hospital Environment

## Why Hospitals?

Exposure in the hospital setting to foods full of sodium can lead to increased salt consumption in already sick and immune-compromised populations as well as their families, hospital staff, and the public. Currently, the percentage of healthful foods and beverages offered as well as what defines “healthy” is determined by individual hospitals or hospital systems. A 2005 survey of 17 hospital entrees reported as “healthiest” found the sodium content per serving varied greatly from 61 milligrams (mg) to 1,450 mg. According to the survey, many of the recipes submitted as the “healthiest” meals also were exceedingly high in fat, saturated fat, and cholesterol and low in fiber.<sup>1</sup> Recommendations from an expert panel convened by CDC’s Division of Nutrition, Physical Activity, and Obesity reported significant variance in today’s hospital food environment, supporting the need for comprehensive, population-based environmental change strategies that may be adopted by independent hospitals and hospital systems across the country.<sup>2</sup>

**“...Poor nutrition is a risk factor for four of the seven leading causes of death in the United States—heart disease, cancer, stroke, and diabetes.”**

According to the American Hospital Association, there were 5,795 registered hospitals in the United States in 2009. Behind only restaurants, hospitals are the second largest employer in the private sector, supplying jobs for more than 5 million people.<sup>3</sup> Hospitals across the country are large purchasers and providers of food. In FoodService Director’s 2011 hospital census, 69 hospitals nationwide reported average food purchases exceeding



\$1.5 million per hospital in 2010. The data also showed that more than 50 percent of food service revenue, just more than \$1 million, comes from retail and catering.<sup>4</sup> By making healthful changes to the food environment, hospitals can use their influential purchasing power responsibly and sustainably while positively affecting the myriad populations they serve.

In many ways, the hospital environment represents foodservice for a captured population, considering that outside food and beverage choices for patients and visitors within the hospital are likely limited or unavailable. Further, third-shift employees working in rural or community settings may lack access to healthful choices. Because hospitals are venues in which snacks and meals are served to patients, visitors, and employees as well as settings in which nutrition education is offered, hospitals are ideal settings to offer access to and knowledge about healthful foods and to practice healthful eating habits.

## Hospital Food Environment

Poor nutrition is a risk factor for four of the seven leading causes of death in the United States—heart disease, cancer, stroke, and diabetes.<sup>5</sup> With this and other non-nutrition-related considerations in mind, more than 350



hospitals signed the Healthy Food in Health Care Pledge, promising to implement policies and programs that treat food, and food production and distribution, as preventive medicine protecting the health of patients, staff, and communities.<sup>6</sup> On a related note, of the hospitals that responded to the 2011 hospital census:

- 64 percent procured locally sourced dairy.
- 56 percent procured locally sourced produce.
- 28 percent procured locally sourced meat and seafood.
- 22 percent procured locally sourced baked goods.<sup>4</sup>

Although these and other hospitals across the country are working to improve their food environments, food system changes still must be broadly addressed, leaving great potential for work in this area.

### Heart Health: What's Sodium Got to Do with It?

Sodium is needed in small amounts to maintain fluid balance, blood volume, and plasma osmolality.<sup>7</sup> Sodium is found naturally in certain foods, such as vegetables and dairy products, but the majority of sodium consumed is from packaged and restaurant food (including food intended for food service venues, such as hospitals) as a direct result of food processing. High sodium intake increases blood pressure.<sup>7</sup> High blood pressure is a major risk factor for cardiovascular disease (CVD), the leading

cause of death in the United States.<sup>5</sup> CVD includes heart disease, stroke, and other vascular diseases. Treatment for these conditions accounts for 1 of every 6 U.S. health dollars spent, about \$444 billion in 2010.<sup>8</sup>

Average sodium consumption in the United States is more than 3,400 mg per day, nearly twice what is recommended for the majority of adults.\* Reducing average population sodium intake to 1,500 mg/day may save \$26 billion health care dollars annually. Even reducing sodium intake to 2,300 mg/day could save \$18 billion health care dollars annually.<sup>9</sup>

Recommendations from the expert panel convened by CDC's Division of Nutrition, Physical Activity, and Obesity called for establishing healthful food and beverage standards in hospital venues as well as food and beverage environmental change strategies.<sup>2</sup> Efforts to improve the hospital food environment through strategies such as sodium reduction must consider the hospital environment as a whole. A range of strategies to improve the hospital food environment, with a special emphasis on sodium reduction, follows.

---

\* The 2010 *Dietary Guidelines for Americans* recommend that Americans aged 2 and up reduce sodium intake to less than 2,300 mg per day. People 51 and older and those of any age who are African American or who have high blood pressure, diabetes, or chronic kidney disease—about half the U.S. population and the majority of adults—should reduce sodium intake to 1,500 mg per day.



## Strategies to Improve the Hospital Food Environment

### ► **Start a Conversation**

Begin a multidisciplinary dialogue among medical staff, food service staff, administrators, patrons, and community members related to the importance of providing access to and promoting consumption of healthful and lower sodium foods. To successfully modify a hospital food environment to be more healthful, a variety of stakeholders must be involved, and support must build from the ground up. When starting out, consider:

- Assembling a core food team to assess the current hospital food environment, including what is currently available and attitudes and beliefs relating to food served in the hospital setting.
- Initiating a dialogue about the current food environment in your hospital and desire for improvements with representatives from:
  - Food and nutrition services staff, including chefs, the clinical nutrition manager, food service director, diet technicians, registered dietitians, and food service workers.
  - Purchasing officers.
  - Human resources representatives.
  - Employee wellness representatives.
  - Hospital administration and the hospital board of directors.
  - Clinicians, including doctors and nurses.
  - Public affairs.
  - Ethics and quality improvement.
  - Community members, including students in related fields of study.
- Hospital residents.
- Communicating the business case for environmental change to hospital administrators and hospital boards of directors. Placing emphasis on employee absenteeism and on health care and clinical costs as well as framing employee health as a primary business strategy will be beneficial in ensuring the hospital administrator is on board. Other indicators could include market differentiation, branding, and the value of a positive reputation.

### ► **Establish a Comprehensive Food Policy**

Large medical centers typically buy food in bulk from large distributors, and much of this food is packaged and precooked, meaning it can be a substantial source of sodium. Through responsible food purchasing decisions, hospitals and hospital systems can promote better nutrition by providing healthful and appealing food choices for patients, staff, and the community that are lower in sodium. A comprehensive food policy should have clearly defined goals and establish purchasing requirements, including nutrient standards for food served in the hospital setting. This policy could include patient meal services and food sold to visitors, employees, and community members through the hospital cafeteria, vending machines, café carts, gift shops, and franchises. When drafting a comprehensive food policy, consider:

- Conducting an environmental scan of foods and beverages currently served and all settings in which foods and beverages are served.
- Including language supporting locally grown agriculture, such as allowing local farmers markets to operate at the hospital.

**“...By accepting WIC and SNAP vouchers, farmers’ markets increase access to healthful food for low-income populations.”**

- Eliminating or modifying therapeutic meals to ensure that all patients are placed on a “heart healthy” or “low sodium” diet.
- Including purchasing requirements (via nutrition standards) as a component to accept or reject a bid for food service.
- Adopting language supporting the availability of healthful, lower sodium food at meetings and workshops hosted by or at your hospital.
- Establishing a hospital garden to grow and sell food to visitors. Doing so may foster pride among staff, serve as a demonstration to educate the community, and produce healthful food for patient and cafeteria menus.
- Partnering with a community supported agriculture (CSA) group through subsidizing CSA purchases by hospital employees. CSA gives small-scale commercial farmers access to a closed market by selling directly to members through frequent local delivery or pick-up, typically of fruits and vegetables.
- Working with local food policy councils to show hospital support for positively changing the local food system, not only within the walls of the hospital but within the community as well.

### Case Example:

Dominican Hospital, in Santa Cruz, California, purchases produce from a nonprofit, community-based organic farm as part of its commitment to investing in the local community and healing the sick. Introducing locally grown agriculture to hospital food service can provide affordable, fresh, and inherently low-sodium produce and vegetables to patients, staff, and visitors. Further, it can generate goodwill in the community, provide support for local agriculture, and foster community partnerships.

### ***Food Procurement Requirements—Outlining Nutrient Standards***

Defining nutrient standards for foods and beverages served in the hospital environment increases access to healthful food by only allowing foods and beverages that meet a minimum nutritional quality to be sold. Limits for certain nutrients, such as sodium, may be required for meals and snacks served. Nutrition standards may include:

- Limiting certain nutrients, including sodium, for all foods and beverages served in hospital cafeterias, café carts, vending machines, gift shops, and franchises.
- Establishing a fast-food-free zone by disallowing outside fast food chains to operate in your facility.
- Increasing the availability of locally sourced or organic foods.





### Case Example:

Kaiser Permanente, the largest nonprofit health system in the United States, hosts weekly farmers' markets at 29 of its hospitals and has switched to milk from cows raised without synthetic hormones at all its medical centers. Organic fruits and vegetables are now being served at St. Luke's Hospital in Duluth, Minnesota, and the Children's Hospital of Philadelphia. Good Shepherd Health Care System in Hermiston, Oregon, banned potato chips in favor of carrots and replaced beef with antibiotic- and hormone-free bison.

### **Food Procurement—Utilizing Group Purchasing Organizations (GPOs)**

Negotiated prices for food and ingredients are made through GPOs, which significantly affect hospital food. By joining a GPO, lower sodium and more nutritious foods may be obtained at a lower cost if the member organizations request these items. For example, in response to increased demand from its member hospitals, MedAssets, a leading GPO, recently contracted with United Natural Food Inc., a distributor of natural and organic foods. In 2004, the top health care GPOs purchased approximately \$2.75 billion worth of food, with cafeteria and catered food accounting for about 55 to 70 percent of hospital food volume.<sup>11</sup> In 2010, 82 percent of hospitals reported using a GPO for at least some foodservice purchases.<sup>4</sup>

Hospital GPO members may utilize GPOs to:

- Develop a uniform definition of "healthy" to communicate to the food industry when asking for healthy foods.

- Require distributors to meet defined nutrient standards, including low sodium.
- Require distributors to use electronic distributor catalogues tailored to screen out products that exceed a certain level of sodium.
- Use electronic distributor catalogues to search desired criteria, such as locally sourced or trans fat free.

### Case Example:

The Healthy Hospital Food Initiative is a new effort by the New York City Department of Health and Mental Hygiene to promote a healthy hospital food environment. Hospitals throughout the city are adopting the New York City Food Standards, thereby increasing access to healthy food choices for patients, visitors, and employees.

### ► **Use Marketing Techniques to Promote Healthful Foods**

Lower sodium and more nutritious foods may be promoted with savory descriptors on menu boards, serving lines, and other areas around the hospital where food is sold. Advertising unhealthful foods may be restricted as well. Numerous media markets have reported on Kaiser Permanente's farmers markets, creating positive, free marketing for the hospital. Facilities that sign on to Health Care Without Harm's Healthy Food Pledge have received national media attention. Successful marketing also creates opportunities for vendors to be highlighted in media coverage, which can resonate with the local community. Strategies may include:

**"...A recent study of 15 health care settings participating in the Healthy Eating, Active Communities program found a predominantly high availability of energy-dense foods and sugar-sweetened beverages in vending machines and few policies to limit unhealthful food options."<sup>10</sup>**



- Labeling foods to identify those considered healthy.
- Applying a warning symbol to meals and snacks with high amounts of sodium.
- Using creative signage and descriptors to highlight nutrient-rich, lower sodium food choices available in hospital food settings.
- Subsidizing CSAs for hospital employees through employee benefit programs and marketing this incentive through employee wellness programs.
- Designing stickers highlighting the amount of calories in each serving size offered for all beverages and placing them under the name of the beverage on the soda machines in the cafeteria.
- Highlighting locally sourced cafeteria food by providing information about the farmer.
- Distributing information regarding farmers at the point of purchase along with additional nutritional information.

- Disallowing unhealthful advertising on vending machines and hospital materials and instead consenting only to advertising healthful food and beverage items, such as 100% fruit juices.
- Displaying thought-provoking ads on vending machines and around food service settings, such as comparing a piece of fruit or 100% fruit juice with a traditional packaged snack and a message to “choose wisely, your heart will thank you.”
- Advertising your hospital garden on vending machines.
- Developing and marketing a data source through which consumers can be informed about hospital food offerings.
- Developing recognition programs for staff adopting healthful eating habits.
- Soliciting involvement of staff and patients by asking for volunteers to help design artwork for hospital walls.
- Asking staff to provide input about new menu options by conducting taste tests.
- Implementing and promoting pricing strategies as incentives for purchasing healthful foods.

### Case Example:

Research has found substantial price sensitivity for organic, local, and healthier food items served in hospitals.<sup>12</sup> In 2004, Stillwater Medical Center in Oklahoma changed its cafeteria pricing structure so that prices for “healthy” foods were 20 percent lower and prices for “unhealthy” foods were 20 percent higher. Sales data from the cash register found that employees chose more healthful foods.<sup>13</sup> Item pricing could impact purchases, especially if lower sodium items are cheaper than items with greater amounts of sodium.



## ► **Modify the Built Environment to Promote Healthful Foods**

The built environment may have a substantial impact on food choice and preference. Hospital food environments can be modified to display healthful, lower sodium options more prominently, which may increase the likelihood they will be chosen. Strategies may include:

- Placing lower sodium, more healthful options such as fruit at and around the point of purchase.
- Procuring and distributing reusable plates that emulate the MyPlate design.
- Placing vending machines with traditional, unhealthful items in inconspicuous places around the hospital.
- Placing healthful café carts front and center in lobbies and other prominent locations, including mobile carts on patient floors.

## ► **Educate Patients, Staff and the Community**

Educating patients and staff about the importance of healthful eating and reducing sodium can be a complementary strategy carried out with changes to the hospital food environment. Education may be incorporated into myriad aspects of the hospital setting, including:

- Providing nutrition and sodium education during new employee orientations.
- Including sodium information, especially major sources of sodium, as part of cardiac diet education to heart patients.
- Encouraging nurses to distribute sodium information when dispensing a patients' blood pressure medication.
- Providing nutrition information in and around food service settings in the hospital (e.g., table tents, signage, menu labeling, murals, brochures).

- Preparing educational materials for patients' families regarding the impact of sodium on blood pressure and hidden sources of sodium.
- Incorporating nutrition information, including the importance of sodium reduction, into the hospital newsletter and other publications.
- Implementing an educational campaign to promote the healthful food environment to staff and visitors.
- Offering professional development training for food service staff on lower sodium and from-scratch cooking techniques.
- Incorporating provider education related to the impact of high sodium intake on health and sources of sodium as a standard component of health care provider training programs focused on primary prevention and wellness.
- Requiring nutrition and sodium information with in-patient education as a part of discharge planning.
- Working with the local dietetic association to identify registered dietitians to whom you can refer patients for nutritional counseling after discharge.
- Modifying internal referral criteria so that all patients with a hospital stay of more than two to three days see a registered dietitian.
- Using electronic medical record prompts to increase referral numbers to a registered dietitian during discharge planning and after discharge.

## ► **Utilize Community Partners**

Hospital patients and staffs are *not* the only people who care about what goes on in the hospital. Working with members of the community to increase support for sodium reduction and other strategies increasing the availability of more healthful foods can position the hospital as a leader in improving the healthfulness of the community. This approach could include working

with city leaders on improved zoning to ban unhealthy vendors from operating within a certain vicinity of hospitals or reaching out to local faith-based groups for fundraising support. Assessing and networking with outside stakeholders who would benefit from or have an interest in improving the hospital food environment will build support for the strategies outlined in the food policy. Stakeholders may include:

- Local health care associations, such as nutrition or nurses associations.
- Media.
- Local YMCAs and other community organizations.
- Local leaders.
- Farmers and CSAs.
- Charities and philanthropic organizations.

## Conclusion

Hospitals are uniquely poised to positively impact our food supply by modeling healthful nutrition and responsible purchasing practices. Tactics that have worked for some hospitals may not work for all hospitals. When working to reduce sodium and offer more healthful choices, consider what will work for your specific hospital. The

examples listed in this guide are just some of the many things that can be done to improve the hospital food environment and the health of populations served in these settings. Please see the following page for more hospital-related resources.

## Resources

American Dietetic Association  
[www.eatright.org](http://www.eatright.org)

American Hospital Association  
[www.aha.org](http://www.aha.org)

Association for Healthcare FoodService  
[www.healthcarefoodservice.org](http://www.healthcarefoodservice.org)

CDC Division of Nutrition, Physical Activity, and  
Obesity Hospital Environmental Scan  
*In Press*

Health Care Without Harm  
[http://noharm.org/us\\_canada/issues/food/pledge.php](http://noharm.org/us_canada/issues/food/pledge.php)

Kaiser Permanente Healthy Picks  
[www.kaisersantarosa.org/health/healthypicks](http://www.kaisersantarosa.org/health/healthypicks)

New York City Food Standards  
[www.nyc.gov/html/doh/downloads/pdf/cardio/cardio-vending-machines-standards.pdf](http://www.nyc.gov/html/doh/downloads/pdf/cardio/cardio-vending-machines-standards.pdf)

North Carolina Prevention Partners  
[www.ncpreventionpartners.org/dnn](http://www.ncpreventionpartners.org/dnn)

U.S. Department of Agriculture MyPlate  
[www.choosemyplate.gov](http://www.choosemyplate.gov)



## References

1. Physicians Committee for Responsible Medicine. *Healthy hospital food initiative: a survey and analysis of food served at hospitals*. Washington, DC: Physicians Committee for Responsible Medicine and ADInfinitem, Inc.; 2005. Available at [www.pcrm.org/search/?cid=618](http://www.pcrm.org/search/?cid=618).
2. Wiseman A, Boothe A, Reynolds M, Belay B. *Designing healthy hospital food, physical activity, breastfeeding and lactation support and tobacco-free environments: recommendations on policy and environmental approaches from an expert panel*. Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; forthcoming 2012.
3. American Hospital Association. *Hospital facts to know*. 2008. Available at [www.aha.org/aha/content/2008/pdf/08-issue-facts-to-know-.pdf](http://www.aha.org/aha/content/2008/pdf/08-issue-facts-to-know-.pdf).
4. FoodService Director. *Census: non-patient service drives hospitals*. 2011. Available at [www.foodservicedirector.com/images/pdf/fsd\\_hospital\\_census\\_2011.pdf](http://www.foodservicedirector.com/images/pdf/fsd_hospital_census_2011.pdf).
5. Xu J, Kochanek K, Murphy S, Tejada-Vera B. Deaths: final data for 2007. *Natl Vital Stat Rep*. 2010;58(19). Available at [www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58\\_19.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_19.pdf).
6. Health Care Without Harm. *Healthy food pledge*. 2011. Available at [www.noharm.org/us\\_canada/issues/food/pledge.php](http://www.noharm.org/us_canada/issues/food/pledge.php).
7. Institute of Medicine. *Dietary reference intakes for water, potassium, sodium, chloride, and sulfate*. Washington, DC: National Academies Press; 2005.
8. Heidenreich PA, Trogon JG, Khavjou OA, Butler J, Dracup K, Ezekowitz MD, et al. Forecasting the future of cardiovascular disease in the United States: a policy statement from the American Heart Association. *Circulation*. 2011; 123:933-44. Available at <http://circ.ahajournals.org/content/123/8/933.full>.
9. Palar K, Sturm R. Potential societal savings from reduced sodium consumption in the U.S. adult population. *Am J Health Promot*. 2009;24:49–57.
10. Lawrence S, Boyle M, Craypo L, Samuels S. The food and beverage vending environment in health care facilities participating in the healthy eating, active communities program. *Pediatrics*. 2009;123 Suppl 5:S287–92.
11. FoodService Director. *Industry census: modest sales gains for GPO's in FY '04*. 2005. Available at [www.fsdmag.com/pdfs/Census-GPO-12.pdf](http://www.fsdmag.com/pdfs/Census-GPO-12.pdf).
12. Schultz J, Nichols Dauner K, LaCaille L, Klingner J, LaCaille R, Branovan M, et al. Institutional and consumer decision-making in the hospital setting: an evaluation of a healthy food practices model. Poster presented at the Healthy Foods, Healthy Lives Second Annual Symposium; 2010 Sept 30–Oct 1; Minneapolis, MN. Available at [www.hfhl.umn.edu/prod/groups/cfans/@pub/@cfans/@hfhl/documents/asset/cfans\\_asset\\_336241.pdf](http://www.hfhl.umn.edu/prod/groups/cfans/@pub/@cfans/@hfhl/documents/asset/cfans_asset_336241.pdf).
13. Kulick M. *Healthy food, healthy hospitals, healthy communities: stories of health care leaders bringing fresher, healthier food choices to their patients, staff and communities*. Minneapolis, MN: Food and Health Program, Institute for Agriculture and Trade Policy; 2005. Available at [www.noharm.org/lib/downloads/food/Healthy\\_Food\\_Hosp\\_Comm.pdf](http://www.noharm.org/lib/downloads/food/Healthy_Food_Hosp_Comm.pdf).





For more information please contact Centers for Disease Control and Prevention  
1600 Clifton Road NE, Atlanta, GA 30333  
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348  
E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov) Web: [www.cdc.gov](http://www.cdc.gov)  
Publication date: 10/11/2011