JOHNS HOPKINS
CENTER *for* A LIVABLE FUTURE

ACHIEVING THE TRIPLE AIM IN HEALTH CARE REFORM: THE IMPORTANCE OF THE FOOD SYSTEM

TYLER SMITH, ANNE PALMER, ROBERT MARTIN & CLAIRE FITCH

The health care system of the United States is a case study in paradox: despite spending more per capita on health care than any other country in the world,[1] our system ranks last among the top 11 industrialized countries, according to one widely cited report.[2]

By passing the Patient Protection and Affordable Care Act (ACA), Congress sought to transform how U.S. health care is financed and delivered. A guiding philosophy for the ACA has been the "Triple Aim" developed by Donald S. Berwick, founder and former director of the Institute for Healthcare Improvement. The Triple Aim is to improve population health, reduce per-capita costs, and improve patient experiences.[3]

Any serious attempt to improve population health and reduce per-capita costs must address the epidemics of diet-related conditions, such as cardiovascular diseases and diabetes mellitus, that rank among the most important causes of preventable morbidity, premature mortality, and health care spending in this country. The U.S. leads the world in the percentage of a national population that is overweight or obese, with more than 69 percent of the US population[4] in these two categories. Incidence rates of coronary heart disease and stroke, diabetes, and certain cancers are projected to increase by millions of cases per year in the coming decades.[5] While the causes of diet-related diseases extend beyond excess bodyweight[6] and include factors such as low micronutrient intake, obesity alone accounts for tens of billions of dollars in U.S. health care spending each year.[7]

Many have referred to a poor diet as a "behavioral" risk factor, but evidence suggests that *food environments*, which encompass the availability and affordability of healthy food where people live, work, and attend school, are also important determinants of diet, nutrition, and ultimately health.[8] Given the physical and social barriers to healthy food choices and the preponderance of unhealthy food options, scientists have referred to the predominant American food environment as toxic and obesogenic.[29] Food environments, in turn, reflect and are interdependent with

food systems, or the processes by which food is produced and distributed.[8] Unfortunately, the U.S. food system has failed to provide healthy food at affordable prices to large percentages of the U.S. population. This ongoing failure greatly undermines efforts to achieve the Triple Aim, and warrants urgent and powerful attention to improving our food system.

While our current food system creates many barriers to achieving the Triple Aim, it remains unclear in some circles whether or not the health care system can or should help improve population health and reduce per-capita costs by supporting food system change. And even if it can and should, it remains unclear exactly how best it could. This report describes how a subset of the health care system—tax-exempt hospitals—may utilize existing community benefits resources to support community-based disease prevention via food system change.

What is population health?

The term "population health" is now ensconced in the health care lexicon, but many in the health care industry have interpreted "population" narrowly to mean just the group of patients under the care of a particular hospital, practice, or provider.[9] A number of researchers have encouraged the industry to think broadly, however, and to consider how clinical care may be linked to prevention strategies in communities where patients live and work.[9-11] These recommendations coincide with health care reforms that create incentives for preventive services that may help break down the historic separation between health care and public health.

Historically, this separation has been reinforced by fee-for-service payment models: improvements in population health that decrease health care utilization could harm hospitals and other health care organizations that are reimbursed based on the volume of services they provide, discouraging them from doing more to prevent disease in the community. As Berwick and colleagues wrote, "Under current market dynamics and payment incentives, it is entirely rational for hospitals to try to fill beds and to expand services… [T]he great task in policy is…to change what is rational for them to do."[3]

The ACA represents major strides in this direction by incorporating accountable care organizations (ACOs) into Medicare. An ACO is a group of health care organizations that assumes responsibility for the care of a defined population of patients. In an intermediate model, organizations that reduce per-capita spending on Medicare populations share these savings with the government. In advanced models, payments may be capitated: an ACO receives fixed amounts per patient per month to cover all costs. The logic of the current system is then reversed: improvements in population health that reduce health care utilization are advantageous, as expenses decline relative to revenue and profits increase. The purpose of the payments shifts as well: organizations are funded to promote health, not just to treat sickness.

The ACO model continues to grow. In April 2014, an estimated 520 ACOs served 17% of the U.S. population.[12] As health care reform continues, incentives to prevent disease will strengthen and expand beyond the boundaries of traditional clinical preventive services, and ACOs and other organizations that develop the capacity to implement cost-effective prevention strategies in the community will hold an important advantage. Nevertheless, because most payers

currently do not reimburse for prevention activities, it is unclear how organizations should fund such work. Fortunately, new requirements for community benefits programs have provided a path forward.

A path forward: community benefits

For decades, the Internal Revenue Service has required that nonprofit hospitals demonstrate a "community benefit" in exchange for their exemption from federal, and often state, taxes. In 2009, the average nonprofit hospital reported community benefits equivalent to 7.5 percent of operating expenses.[13] While community benefit requirements have been met primarily through the provision of free or discount care, the expansion of health insurance coverage under the ACA is expected to reduce demand for such services.

In anticipation of the ACA, the Internal Revenue Service now requires all nonprofit hospitals to conduct "community health needs assessments" (CHNAs) every three years in the communities they serve and to adopt "implementation strategies" to address unmet needs.[14] Most hospitals will complete these requirements in the 2016 tax year, providing an important opportunity to reallocate resources previously needed for free or discount care to activities that improve population health and reduce per-capita costs. This could include activities that involve and/or address aspects of the food system, with the aims of improving the food environment and fostering food choices that support overall health.

Community Health Needs Assessments

Internal Revenue Service regulations require hospitals to conduct a CHNA that defines the community served by the hospital, identifies and prioritizes significant health needs of the community, and identifies resources available to address those needs.[14] The hospitals are required to take into account input from "persons representing the broad interests of the community," including at least one health department and "medically underserved, low-income, and minority populations" or organizations that represent them.

A CHNA should assess the food environment, or more specifically, the availability and cost of food in the community served by the hospital. Simple metrics at the neighborhood level include the presence and number of *supermarkets*, which typically carry healthier foods at lower prices than smaller grocery stores, where options are relatively limited and/or expensive.[15] The presence of supermarkets also is associated with healthier diets[16,17] and lower prevalence of overweight and obesity.[18] A study that directly measured healthy food availability confirmed that low availability was associated with poorer-quality diets.[19]

Similar metrics, likewise based on food-store categories and derived from public or commercially available data, have been incorporated into previous assessments conducted by hospitals, as well as "community health assessments" by state and local health departments. For example, the Johns Hopkins Hospital used Baltimore City Health Department data to compare the number of fast-food, carryout, and corner-store businesses per 10,000 residents in each ZIP code within the community it serves.[20] The Philadelphia Department of Public Health assessed healthy food access based on food-store type: supermarkets received healthy food scores of 100 while stores in other categories scored proportionally lower.[21]

More intensive approaches that yield richer data require visiting each food store in an area and determining the presence of healthy food items on a pre-defined checklist or even measuring the proportion of shelf-space devoted to healthy items. The Johns Hopkins Center for a Livable Future (CLF) has conducted such inventories in Baltimore and has used results to produce detailed maps of food deserts in the city.[22] The U.S. Department of Agriculture's Food Environment Atlas also contains useful data.[23]

Additionally, a CHNA should incorporate elements of a community food assessment, which may use data on federal food and nutrition programs (including the Supplemental Nutrition Assistance Program (SNAP), the Women Infants and Children (WIC) program, the National School Lunch Program, and the School Breakfast Program) to assess community food security. The appropriate metrics will depend on the hospital and the community it serves, but incorporating food environments into assessments using currently available data should be feasible in most contexts.

Implementation strategies

The IRS also requires each hospital to adopt an implementation strategy that addresses each significant health need or explain why the hospital does not intend to address a particular need.[14] The strategies will depend on the hospital, its community, and the results of the assessment, but hospitals are well positioned to implement and support interventions that have improved food environments around the country.

These interventions should aim to assure the availability of healthy and affordable food throughout the community served by the hospital. While supermarkets obviously are not practical interventions for hospitals to implement, less capital-intensive options might include supporting a registered dietitian to advise supermarket customers about food choices, funding double incentive dollars for SNAP recipients to purchase produce at farmers markets, and hosting community-supported agriculture programs that link local farmers with urban consumers.[24] For example, Denver Health Medical Center has contributed personnel time to the Denver Sustainable Food Policy Council and the development of Denver's Healthy Food Access Plan. It has also partnered with the city of Denver to evaluate food policy through a CDC Community Transformation Grant, which hospitals may help jurisdictions obtain.

Additionally, hospitals are well positioned to educate patients and other individuals in the community about the importance of choosing healthy food options, when they are available and affordable. UMass Memorial Medical Center partnered with the Worcester Food & Active Living Policy Council and used community benefit funding to operate a mobile farmers market for low-income areas, an urban farming summer program for low-income youth, and Share Our Strength's Cooking Matters classes. It has also trained its financial counselors to enroll people for food assistance benefits. Another leader in the field, Kaiser Permanente, has supported several projects in Maryland. These include a nutrition incentive program for SNAP and WIC benefits at the Crossroads Farmers Market in Takoma Park, which was one of the first farmers market nutrition incentive programs. Kaiser Permanente also funded the United Fresh Produce Association to install salad bars in neighboring Washington, D.C. elementary schools.

The rapid expansion of electronic health records (EHRs) provides several unique opportunities to monitor diet and other health promoting behaviors. The Health Information Technology for Economic and Clinical Health (HITECH) Act authorized $27 billion over 10 years for health care organizations that demonstrate "meaningful use" of EHR technology.[25] While hospitals can demonstrate meaningful use in several ways, options include using EHRs to "identify patient-specific education resources and provide those to [each patient] as appropriate.'[25] This objective might be accomplished by coordinating patient-specific messages on healthy eating with similar messages promoted by health departments in areas where those patients reside.

Finally, the IRS requires hospitals to evaluate implementation strategies during subsequent community health needs assessments. EHRs provide a unique type of data by which to assess food environments, their effects on population health, and potentially the impact of interventions. In Pennsylvania, Schwartz and colleagues have pioneered the use of "big data" collected by the Geisinger Health System's comprehensive EHR system to study relationships among food environments and childhood obesity.[26]

Food policy advocacy

While many interventions to increase availability and awareness of healthy food have been effective, sustained success will require public policy that promotes changes in the production, distribution and consumption of food—that is, changes in the food system itself. In recent years, interest in food policy has increased dramatically at the federal and especially the state and local levels, but most hospitals and hospital associations generally have not engaged these efforts, despite their relevance to population health.

While caution is understandable, providers enjoy enormous credibility with policymakers, and even small steps by hospitals and their clinicians in support of food system advocacy could prove influential. These steps might include signing letters of support for proposed legislation or rules, or providing expert testimony to legislative committees and executive agencies with jurisdiction over food policy.

An important resource for hospitals is the state or local "food policy council" in their area, which typically comprises diverse organizations and individuals – including policymakers – dedicated to improving the regional and local food system and increasing access to healthy and affordable foods. The councils can connect hospitals with ongoing work related to the food system, including policy initiatives. In some cities, hospitals associations have joined food policy councils as members.

Recommendations and resources

The ACA provides a framework for providers to improve population health and reduce per-capita costs by engaging and improving the food system, but getting started can be difficult. The Johns Hopkins Center for a Livable Future (CLF), based at the Bloomberg School of Public Health, has deep experience and expertise in assessing food systems, implementing and evaluating interventions, and advancing public policy in this domain. Several organizations are uniquely positioned to support innovative health care systems in their efforts, as follows:

1. ***Community Health Needs Assessments***. These assessments can incorporate public data and mapping resources increasingly utilized by health departments and other decision-makers at the state and local levels. The CLF's Food System Mapping project has pioneered the use of GIS in the Maryland food system,[27] and the CLF can advise hospitals on where they can acquire data that will contribute to a community health needs assessment.

2. ***Implementation Strategies***. The CLF and collaborators at Johns Hopkins have implemented and evaluated research and program interventions in Baltimore city, where many neighborhoods have limited access to healthy food. The CLF's literature review, "Community Food Security in the United States," evaluates the evidence for investing in community food activities.[30]

Wholesome Wave has developed a Fruit and Vegetable Prescription Program whereby health care providers can give patients prescriptions for fruits and vegetables that may be redeemed at grocery stores, farmers" markets, and other food retailers.[31]

The Healthier Hospitals Initiative—a Practice Greenhealth Program—offers resources for health care systems through their Healthier Foods Challenge. This challenge focuses on hospital procurement of locally grown and environmentally sustainable foods, a reduction in meat purchasing, and an increase in the purchasing of meat that is raised without the routine use of antibiotics.[32]

Building upon the success of the Los Angeles Food Policy Council's Good Food Pledge, the recently created Center for Good Food Purchasing offers purchasing guidelines for food service institutions that may be applied to health care systems. The purchasing guidelines are focused on five fundamental values, aiming to support "sustainably produced food, healthy eating, respect for workers" rights, humane treatment of animals and support for the local small business economy."[33]

3. ***Food Policy Advocacy***. While community-based interventions are essential, lasting change will come through policy. The CLF's Food System Policy program has played an active role in advancing food policy that promotes population health. The program can advise hospitals on current and proposed policy and connect them with leading advocates in their area.

4. ***Food Policy Councils***. Food policy councils will prove invaluable to hospitals looking to incorporate food systems and community food security into assessments and implementation strategies. Many food policy councils conduct community food assessments to survey community food security. The CLF's Food Policy Network project maintains an active listserv with 1,000 subscribers, a resource database with over 800 items, and an online directory of food policy councils.[28] The project also provides technical expertise and training to food policy councils across the U.S.

For more information, please contact the Center for a Livable Future.

clf@jhu.edu

References

1. Organisation for Economic Co-operation and Development. Total expenditure on health per capita at current prices and PPPs. 2014; http://www.oecd-ilibrary.org/social-issues-migration-health/total-expenditure-on-health-per-capita_20758480-table2, 2014 Aug 29.
2. The Commonwealth Fund. Mirror, Mirror on the Wall, 2014 Update: How the U.S. Health Care System Compares Internationally. 2014; http://www.commonwealthfund.org/publications/fund-reports/2014/jun/mirror-mirror, 2015 April 22.
3. Berwick DM, Nolan TW, Whittington J. The Triple Aim: Care, health, and cost. *Health Aff.* May-Jun 2008;27(3):759-769.
4. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA.* 2014;311(8):806-814.
5. Wang YC, McPherson K, Marsh T, Gortmaker SL, Brown M. Health and economic burden of the projected obesity trends in the USA and the UK. *The Lancet.* 2011;378(9793):815-825.
6. Popkin BM, Kim S, Rusev E, Du S, Zizza C. Measuring the full economic costs of diet, physical activity and obesity-related chronic diseases. *Obes. Rev.* 2006;7(3):271-293.
7. Finkelstein EA, Trogdon JG, Cohen JW, Dietz W. Annual Medical Spending Attributable To Obesity: Payer-And Service-Specific Estimates. *Health Aff.* 2009;28(5):w822-w831.
8. Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: Policy and environmental approaches. *Annual Review of Public Health.* Vol 29. Palo Alto: Annual Reviews; 2008:253-+.
9. Noble DJ, Casalino LP. Can Accountable Care Organizations Improve Population Health? Should They Try? *JAMA-J. Am. Med. Assoc.* Mar 2013;309(11):1119-1120.
10. Hacker K, Walker DK. Achieving Population Health in Accountable Care Organizations. *Am. J. Public Health.* Jul 2013;103(7):1163-1167.
11. Kindig DA. A pay-for-population health performance system. *JAMA.* 2006;296(21):2611-2613.
12. Oliver Wyman. ACO Update: Accountable Care at a Tipping Point. 2014; http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/files/insights/health-life-sciences/2014/April/NYC-MKT08001-034 (4).pdf, 2014 April 22.
13. Young GJ, Chou CH, Alexander J, Lee SYD, Raver E. Provision of Community Benefits by Tax-Exempt U.S. Hospitals. *N. Engl. J. Med.* Apr 2013;368(16):1519-1527.
14. Internal Revenue Service. Additional Requirements for Charitable Hospitals; Community Health Needs Assessments for Charitable Hospitals; Requirement of a Section 4959 Excise Tax Return and Time for Filing the Return; Final Rule. *The Federal Register.* 2014;79(250):78954-79016.
15. Sallis JF, Nader PR, Rupp JW, Atkins CJ, Wilson WC. San Diego surveyed for heart-healthy foods and exercise facilities. *Public Health Reports (1974-).* 1986:216-219.
16. Morland K, Wing S, Roux AD. "The contextual effect of the local food environment on residents" diets: the atherosclerosis risk in communities study. *Am. J. Public Health.* 2002;92(11):1761-1768.
17. Laraia BA, Siega-Riz AM, Kaufman JS, Jones SJ. Proximity of supermarkets is positively associated with diet quality index for pregnancy. *Preventive medicine.* 2004;39(5):869-875.
18. Morland K, Roux AVD, Wing S. Supermarkets, other food stores, and obesity: the atherosclerosis risk in communities study. *American journal of preventive medicine.* 2006;30(4):333-339.

19. Franco M, Diez-Roux AV, Nettleton JA, et al. Availability of healthy foods and dietary patterns: the Multi-Ethnic Study of Atherosclerosis. *The American journal of clinical nutrition.* 2009;89(3):897-904.
20. The Johns Hopkins Hospital. Community Health Needs Assessment. 2013; http://www.hopkinsmedicine.org/the_johns_hopkins_hospital/about/in_the_community/_docs/2013_needs_assessment.pdf, 2015 April 22.
21. Philadelphia Department of Public Health. Walkable Access to Healthy Food in Philadelphia, 2010-2012. 2013; http://www.phila.gov/health/pdfs/Food_access_report.pdf, 2015 April 22.
22. Johns Hopkins Center for a Livable Future. Baltimore City Food Environment Map. http://mdfoodsystemmap.org/2014-baltimore-city-food-access-map, 2015 April 22.
23. U.S. Department of Agriculture. Food Environment Atlas. http://www.ers.usda.gov/data-products/food-environment-atlas.aspx, 2015 May 6.
24. O'Hara JK, Palmer A. Health Care Sector Support for Healthy Food Initiatives. *Journal of Extension, National Value-Added Agriculture Conference Proceedings.* January 2015.
25. Blumenthal D, Tavenner M. The "meaningful use" regulation for electronic health records. *N. Engl. J. Med.* 2010;363(6):501-504.
26. Geisinger Health System. Environmental Health Institute. http://www.geisinger.org/for-researchers/institutes-and-departments/pages/environmental-health-institute.html, 2015 April 22.
27. Johns Hopkins Center for a Livable Future. Maryland Food System Map. http://mdfoodsystemmap.org, 2015 April 22.
28. Johns Hopkins Center for a Livable Future. Food Policy Council Directory. http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/projects/FPN/directory/online, 2015 April 22.
29. Harvard T.H. Chan School of Public Health: Obesity Prevention Source. Toxic Food Environment. 2015; http://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/food-environment-and-obesity/, 2015 December 18.
30. Chen W, Clayton M, Palmer A. Community Food Security in the United States: A Survey of the Scientific Literature Volume II. 2015; http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/CFS-Lit-Review-II-final.pdf, 2016 Jan 12.
31. Fruit and Vegetable Prescription Program. Wholesome Wave website. 2014; https://www.wholesomewave.org/our-initiatives/fruit-and-vegetable-prescription-program/, Jan 12 2016.
32. Healthier Hospitals: Healthier Food. Healthier Hospitals website. 2012; http://healthierhospitals.org/hhi-challenges/healthier-food, Jan 12 2016.
33. The Good Food Purchasing Pledge: A Case Study Evaluation and Year One Progress Update. 2014; http://goodfoodla.org/wp-content/uploads/2014/06/Good-Food-Purchasing-Policy_Final_0614.pdf, Jan 15 2016.