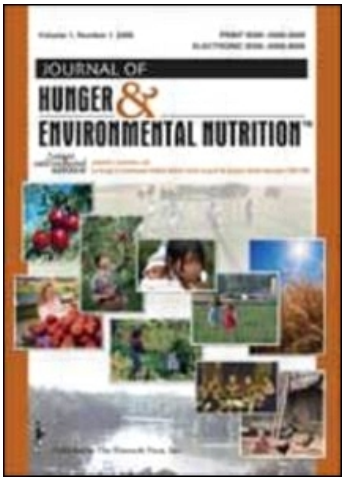

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A New Health Care Prevention Agenda: Sustainable Food Procurement and Agricultural Policy

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Health care leaders are broadening their awareness to include the need to address the food system as a means to individual, public, and global health, above and beyond basic nutritional factors. Key voices from the health care sector have begun to engage in market transformation and are aggregating to articulate the urgency for engagement in food and agricultural policy. Systemic transformation requires a range of policies that complement one another and address various aspects of the food system. Health care involvement in policy and advocacy is vital to solve the expanding ecological health crises facing our nation and globe and will require an urgency that may be unprecedented.

KEYWORDS sustainable agriculture, policy, climate change, food, hospital, health care, prevention, nutrition

INTRODUCTION

Over the last century, we have radically altered the way we produce and distribute food. The transformation of our food and agricultural system is fundamentally affecting the health of our planet and its inhabitants. We are already experiencing significant impacts in the form of increased antibiotic resistant bacteria, poisoned air and water, and foodborne pathogens. Rural communities and farm-based economies are collapsing and we are in the midst of epidemics of both obesity and malnutrition. Moreover, the increasingly energy-intensive industrialized agricultural model is a significant contributor

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to climate change, accelerating a feedback loop with resultant negative impacts on food production, human health, and ecosystem resilience.

Food production, distribution, and procurement intersect a wide variety of issues. Economics, immigration policy, spirituality, agriculture and trade, culture, environment, and nutrition are but several of the myriad of concerns associated with the food we grow and eat. And because food is a fundamental human need, there is a strong cross section of organizations and interests involved in food and agricultural policy and practice. There is perhaps no issue that has such a wide depth of actively involved interests. The complexity of interests requires a systems, or ecological, approach. By taking an ecological approach, we can attempt to see the complexity of interrelationships and hopefully provide a more useful analysis of the system.

An understanding of these complex relationships gives us an opportunity to restore control over a situation that has pervasively influenced the health of humans and our environment. The concurrent crisis in the US health care delivery model provides the perfect opportunity for the health care community to adopt a new primary prevention agenda that is focused on food system policy. Agricultural policy and climate change policy play such an influential role in food system design that key voices across the health care sector can articulate the urgency for engagement in policy development and legislative advocacy, areas that have heretofore not been considered.

This new agenda is close at hand. We are now experiencing an awakening to the intricate relationships health care has with food production and ecological health. Health care leaders are broadening their awareness to include the need to address the food system as a means to individual, public, and global health, above and beyond basic nutritional factors. And, the co-benefits to ecological health and the financial health of our health care system are now increasingly recognized by health care leadership.

THE INDUSTRIAL FOOD SYSTEM—IMPLICATIONS FOR HEALTH

Historically, farmers and farming played a pivotal role in stewardship of the land because the health of the land and their livelihood were mutually interdependent. Their personal success (and by extension, the success of their communities) was inextricably linked to the farmers' understandings of the complex interaction of ecological processes. Healthy communities require healthy ecosystems, characterized by functions and systems that allow the maintenance of biodiversity, biotic integrity, and ecological processes over time.[1] The technologies provided by industrialized agriculture such as commercial fertilizers, pesticides, and antibiotics afforded farmers the ability to circumvent natural systems. A historical knowledge and understanding of the land slowly became supplanted by a knowledge and relationship with technology. In short, a tremendous shift has occurred in the nature of farming

and agriculture with respect to the roles they play in the protection of ecosystem health and ultimately human health. Fundamental ecological processes have been interrupted. The shift has transpired over the last 60 years and has resulted in a predominance of large farms producing single commodities requiring significant inputs. Large multinational food corporations battling for consumers' food dollars characterize the system. And we have shifted from a being a society in which most people ate whole local foods to one that eats highly packaged and processed foods transported over great distances.[2] We are now experiencing the strains throughout our health care system. Though obesity is one health crisis, a wide variety of hidden health crises resulting from current agricultural practices are equally at play. These impacts have been well documented and include water and air pollution,[3–6] decline of socioeconomic health,[7–10] pesticide-related health impacts,[11,12] methicillin-resistant *Staphylococcus aureus* (MRSA), and antibiotic resistance.[10,13–19] A comprehensive overview of these issues is available in "Redefining Healthy Food: An Ecological Health Approach to Food Production, Distribution, and Procurement" in a paper presented at a Robert Wood Johnson Foundation–sponsored conference.[20] These impacts to human health from industrialized food production and distribution methods are both direct and indirect. Importantly, the majority of these impacts are interrelated and caused directly or indirectly by our intervention in and disruption of feedback loops regulating natural ecological processes and systems.

RELATIONSHIP BETWEEN FOOD SYSTEMS, CLIMATE, AND HEALTH

According to the Intergovernmental Panel on Climate Change, warming of the climate system is now unequivocal, and evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases.[21] The direct and indirect impacts to human health are not inconsequential, including asthma, loss of life, the range of infectious disease vectors, respiratory diseases and allergies, and impairment of childhood development.[22,23] In 2003, more than 35,000 people died in Europe as a result of heat stress.[24] Clearly, the health care system will be required to carry a significant burden in treating climate-related health care costs.

About 30% of global emissions leading to climate change are attributable to agricultural activities, including land use changes such as deforestation.[25] Industrialized agriculture methods are fossil fuel intensive; the US food system accounts for an estimated 10.5% of the nation's energy use and 19% of its fossil fuel consumption.[26] Industrialized food production is helping promote climate-related health threats.

A variety of changes to our food system have resulted in a highly consolidated food system characterized increasingly by a loss of small and mid-sized farms.[2] If present trends continue, mid-sized farms, together with the social and environmental benefits they provide, will likely disappear in the next decade or two.[27] It is predicted that the result of this consolidation will be 6 multinational retail firms determining not only the size of America's farms but the type of management decisions made on those farms.[28] Similar to other global business models, the commercial interests that drive these large consolidated firms are based on 3 primary business objectives: the development of supply chains, biological manufacturing (or industrial food processing), and the reduction of transaction costs.[29] This increasing concentration of size and decision making has resulted in a food and agriculture system that is highly linear and contrary to what is recognized at most effective at coping with system stress. As the Swedish Ministry of Environment and others have recognized, we will have to increase the resilience of our socio-ecological systems considerably if we are to cope with future climate change and other components of global change.[30] "Biodiversity plays a crucial role in ecosystem resilience by spreading risks, providing 'insurance,' and making it possible for ecosystems to reorganize after disturbance. A diversified decision-making structure at local, national and international levels is critical to building resilience in social-ecological systems." (p. 5)[30]

As described, the global industrial food system lacks resilience. It is highly concentrated, linear, and, as a result, fragile, less able to deal with system shock. In reports sponsored by the United Nations, the World Bank, and the Global Environment Facility (GEF), they recognized that, "Effective adaptation will require significant evolution of the current market-based drivers and the institutional incentives that set directions for agricultural knowledge science and technology. Innovations in policy, infrastructures and the 'rules of the game' to focus greater attention generating and delivering public goods . . . will be needed." (p. 4)[31] Our food system is driven by an industrial economic model that abhors inefficiencies and redundancy. It centralizes decision making and concentrates rather than redistributes wealth. Over the last several decades we have seen the growth of large packing plants, confined animal feeding operations (CAFOs), and national distributions centers. Instead of promoting a food system (and associated socio-economic system) that will be better ability to withstand and adapt to the predicted shocks of climate change, we have instead evolved one that has highly fragile to predicted disruptions.

A HEALTHY FOOD SYSTEM

No matter how we try to distance our food production from natural processes, the foods we produce are dependent upon delicate processes in a

complex system that has evolved over time. Pollinators, nitrogen-fixing bacteria, microbes, temperature and light variations, etc, all play a role in intricate biological processes. For approximately the last 60 years, we have experimented with an attempt to impose an industrialized approach to agricultural production and the larger food system in which it is contained. And the system has responded with antibiotic-resistant bacteria, morbidity and mortality from nutrition-related diseases, water and air pollution, and food marketing. From a public health perspective, our current system has failed. We need a new approach for food production and distribution with a health focus. Such a system will be preventive in nature and provide the capacity for self-renewal. By recognizing the linkages between human and global ecology, we can envision a food system that works to support health and we can work to implement this vision by rewarding and supporting agricultural and public policy in service of health.

HEALTHY FOOD

Though a variety of other indicators may exist, we propose that healthy food is derived from a food system that provides food that is healthy for consumers, the workers that grow it, and the environment that sustains us would be represented by the following principles[32]:

- Proximate—originating from the closest practicable source or the minimization of energy use;
- Healthy as part of a balanced diet and not containing harmful biological or chemical contaminants;
- Fairly or cooperatively traded between producers, processors, retailers, and consumers;
- Nonexploiting of employees in the food sector in terms of rights, pay, and conditions;
- Environmentally beneficial or benign in its production (reduced inputs such as pesticides, fertilizers, energy use, etc.);
- Accessible both in terms of geographic access and affordability;
- High animal welfare standards in both production and transport;
- Socially inclusive of all people in society;
- Encouraging knowledge and understanding of food and food culture.

And perhaps the most important principle is that agriculture should conform as closely as possible to natural systems. As will be discussed, a growing body of research demonstrates the viability of these types of agricultural practices.

Contrary to longstanding belief, considerable evidence shows that our current industrialized model of large monoculture is paradoxically less

productive than smaller scale, sustainable production. In fact, small farms are more productive than large industrial farms.[33] As a result of various efficiencies, if we are looking at food production per acre in tons, calories, or dollars, such as intercropping, the polycrop is far more productive for all farm sizes.[34] Farms that rely on fewer inputs (petroleum-derived fertilizer, pesticides, etc.) are more efficient in land use, nutrients use, and energy and cost less to maintain than chemical intensive monocultures.[35,36] A variety of studies from around the world reveal that low external input (LEI) or organic farming (farming without synthetic inputs) can produce as much as and sometimes much more than conventional farms[37–39] and, contrary to some misconceptions, produce adequate global supply.[40] A recent study on organic methods in Africa led the Executive Director of the United National Environmental Program to suggest, "The evidence presented in this study supports the argument that organic agriculture can be more conducive to food security in Africa than most conventional production systems . . . it offers not only improved food security, but also an array of other economic, environmental, health and social benefits." (p. iii)[41] In summary, we know that alternative agricultural systems not only can provide us with enough food but also that sustainable systems provide a host of tangible co-benefits to personal, community, and global health. Societal drivers are needed to help transition our current food system.

HEALTH CARE'S OPPORTUNITY

The creation of a healthy food system is not a simple task, cannot be done overnight, and is not the role of one sector. The health care community, which includes practitioners, hospitals, and health systems, and health plans cannot do it alone. Yet, as the evidence suggests, it is intuitively obvious that health care and the public health community must play leadership roles. Historically, they have risen to the task. For example, success was achieved in advancing policy and legislation to remove lead from paint and fuel. Health care has provided leadership in raising an awareness of the dangers of tobacco smoking. Hospitals and health care systems advanced the first smoke-free environments, and the American Medical Association called for divestment of cigarette company stock. Over the last 10 years, health care has laid the groundwork for national comprehensive mercury elimination by promoting awareness of mercury as an ecological health concern and by reducing and almost completely eliminating mercury use in health care. This has been achieved through support for mercury legislation, comprehensive education and advocacy, and implementation of alternatives by health systems and nursing and medical organizations. In short, through engagement in education, market-based strategies, and policy changes, the health care community has been at the forefront of making important public

health advances. As we shall discover, over the last several years, there has been a growing assumption of similar health care leadership through the adoption of new purchasing policies, education, advocacy, internal policy changes, and more. By no means does this change yet dominate the health care landscape or necessarily represent the majority of thinking. But we propose that adequate groundwork has been laid for the US health care community to leverage this momentum, assert its moral authority, and employ its political capital in the service of a healthy, or ecologically sustainable, food system.

FOOD SYSTEMS AND HEALTH CARE'S NEW RELATIONSHIP

The years 2005–2009 may be recognized as the development phase of health care's new relationship with food and health. As we will describe, health care professional organizations began to adopt policies and resolutions, hospitals began to adopt food procurement policies to support local and sustainable supply chains, and hospitals and health systems began to educate their patients, staff, and visitors about the relationship between food production and health. The obesity crisis did not lose momentum and efforts within health care facilities at improving nutrition continued, yet a new context, the food system began to emerge. Following is an overview of some of the significant changes in health care's developing understanding of the relationship between the food system and health.

EMERGING HEALTHY FOOD AND HEALTH CARE LEADERS

In 2005, several efforts coalesced to form what might be recognized as health care's first foray into addressing food from a systemic perspective. At that time, both Catholic Health Care West and Kaiser Permanente (KP) promulgated vision statements that include the aspiration to "provide healthier food in a manner that promotes agricultural practices that are ecologically sound, economically viable, culturally appropriate, and socially responsible." (p. 1)[42] They defined healthy food "not only by nutritional quality, but equally by a food system which is economically viable, environmentally sustainable and which supports human dignity and justice." (p. 2)[43]

Health Care Without Harm (HCWH), the campaign for ecologically sustainable health care, is a global network of over 450 public health, nursing, environmental, labor, and health care organizations. In 2005, HCWH launched its Healthy Food in Health Care Initiative and quickly introduced to the marketplace, the Healthy Food in Health Care Pledge. Without encumbering facilities with mandates, hospitals pledge to initiate a healthy food system approach. The pledge sends an important signal to the market-

place and policy-makers about their interest in local, nutritious, sustainable food. Signatories agree to initiate steps to work with local producers, procure local and/or sustainable foods, educate their community on the link between food production and health, and minimize and compost food waste.[44]

PROFESSIONAL ORGANIZATION SUPPORT

In 2007, an American Dietetics Association task force published a primer, which pointed to identification of opportunities to link emerging roles for food and nutrition professionals with principles of sustainable practice and means to promote partnerships and collaboration with local and state agencies and organizations.

In 2007, the American Public Health Association (APHA) passed a policy statement "Toward a Healthy, Sustainable Food System,"[45] which laid out a variety of public health concerns associated with our current industrialized model, including but not limited to antibiotic resistance, pesticides, and energy intensity. The comprehensive APHA policy urged support of environmentally sound agricultural practices to reduce pesticide contamination, resource use, and climate change, in addition to improved food labeling for country-of-origin and genetic modification and a ban on nontherapeutic antimicrobial and arsenic use. It recognized the urgency of transforming our food system to promote environmental sustainability, improve nutritional health, and ensure social justice.

In 2007, the California Medical Association endorsed a similar resolution, "Improving Health Through Sustainable Food Purchasing."[46] It encourages hospitals to adopt policies and implement practices that increase the purchasing and serving of food that promotes health and prevents disease. Included are meat and dairy products produced without nontherapeutic antibiotics, food grown on nonindustrial agricultural operations, and food grown according to organic or other sustainable methods. Finally, it calls on physicians and other health care professionals to serve as models and educators by participating in and promoting a healthier and more sustainable food system.

In 2008, the American Nurses Association recognized this same relationship between food production and health and endorsed a resolution "Healthy Food in Health Care,"[47] calling on their profession to advocate for policies that will support local, sustainable agricultural, to encourage health care institutions to commit to a sustainable food purchasing policy, and for nurses to serve as role models and educators.

In addition, in 2008 the World Medical Association endorsed a resolution supporting sustainable food systems, as did the Minnesota Academy of Family Physicians, through their resolution "Improving Health Through Sustainable

Food Purchasing."[48] The Academy, in an effort to identify and champion model hospitals, has sent letters to Minnesota hospital administrators and food service directors, encouraging them to sign the Healthy Food in Health Care Pledge and to serve nutritionally healthy and sustainable foods (personal communication, January 14, 2009).[49]

In 2009, the American Medical Association approved a policy in support of practices and policies within health care systems that promote and model a healthy and ecologically sustainable food system that "provides food and beverages of naturally high nutritional quality." Importantly, the AMA also supported a directive that encourages, "the development of a healthier food system through the US Farm Bill and other federal legislation" and that the "AMA consider working with other health care and public health organizations to educate the health care community and the public about the importance of healthy and ecologically sustainable food systems."[50]

And following on the AMA endorsement of the findings of the United Nations' Intergovernmental Panel on Climate Change, in 2009 the World Health Organization (WHO) and Health Care Without Harm (HCWH) released a report on global health care climate mitigation strategies that included a key recommendation to support and promote local, sustainable food production.[51]

HEALTHY FOOD AND THE HEALTH CARE SUPPLY CHAIN

Health care has realized its importance within the food system not only because of the tremendous resource it allocates to treating food- and nutrition-related disease but because it plays a critical role through its considerable food budget. Hospital food is big business. In 2004 alone, the top health care group purchasing organizations (GPOs) purchased approximately $2.75 billion worth of food.[52] The total health care market for food and beverages is about $12 billion.[53] Though patient food receives considerable attention in the media, cafeteria and catered food make up the largest percentage of food in the budget, accounting for approximately 55% to 70% of hospital volume.[52] Hospitals and hospital systems are now becoming aware of their ability to use their purchasing dollar to affect change in the marketplace. Demand by health care facilities is creating momentum within the GPOs, who, until recently, were completely unaware of food system issues. As a result of hospital-driven demand, GPOs and distributors are offering and labeling products in food catalogues and are now contracting for sustainable products. Yet hospitals are also recognizing a variety of hurdles at the distribution level. For example, food service departments typically order from their distributor's electronic catalogue, but these sophisticated databases provide almost no information on which products have been sustainably produced. Hospital systems are driving a change of contract language for more disclosure. In early 2009, CHW announced a new purchasing

policy geared toward the avoidance of genetically engineered (GE) foods and were beginning to survey GE policies of their suppliers. And now one of the top GPOs is requiring GE disclosure from its suppliers. Hospitals around the country have been building model internal policies and practices and working to change the supply chain by incrementally implementing preferential procurement polices serving local grass-fed beef, fair trade coffee, and organic fruit and vegetables.

We have witnessed these considerable changes in the health care supply chain within the last few years. Yet, the complexity of a systems approach, compounded by the current financial crisis, has provided tremendous challenges for these organizations attempting to change our existing agricultural model and food supply chain. Still, by July 2009 over 250 hospitals had signed the HCWH Food pledge providing a significant aggregation of the health care understanding of the relationship between food, agriculture, and health and commitment to action. Furthermore, with the adoption of the AMA Policy on Food Systems, it can be argued that the varied community of professionals that make up health care had arrived at a new level of awareness and readiness to engage in a serious and fundamental transformation of our food system. To facilitate this transition successfully, a combination of market-driven supply chain and policy changes will be necessary. For this to occur, it will be imperative that the health care community understand where, and how, to take action and engage in the policy arena.

HEALTH CARE AND FOOD POLICY

Unquestionably, if we are to solve the expanding ecological health crises facing our nation and globe, the health care community is going to have to become much more involved in policy and advocacy with a voice and urgency that is unprecedented. Significantly, these changes in health care and society will require more than small changes in behavior. As Dr. David Pencheon, director of the United Kingdoms National Health System Sustainable Development Unit, shared when announcing the dramatic elimination of meat from UK hospitals menus, "This is not just about doing things more efficiently, it's about doing things differently, because efficiency is not going to get us to big cuts. . . . What will health care look like in 2030–2040 in a very low carbon society? It will not look anything like it looks now."[54]

Policy is a critical tool for shifting the food system to help reverse the trend of spiraling health care costs, widening health inequalities, and rising rates of disease related to food and food production. Health professionals, in partnership with other sectors, have an extremely important role to play in achieving the public policy changes that will create a sustainable food system able to meet environmental, nutritional, and social goals. Widely recognized as experts, health professionals bring tremendous credibility and influence to the conversation.

Two critical pieces of federal legislation—the United States Farm Bill and the Child Nutrition and WIC Reauthorization Act—influence agricultural production, community food retail, school lunches, and more. Both pieces of legislation are up for reauthorization every 5 years, and it is essential that health care leaders provide input to ensure that they support healthy diets, are ecologically protective, and foster a sustainable agricultural economy.

Increasingly, climate change policy will play a role in advancing both mitigation and adaptation strategies and it will also be important for policymakers to include the food system in climate legislation. Climate change policies that provide incentives for farmers to switch toward organic and sustainable practices will be important. From an adaptation perspective, policies that promote decentralized decision making with respect to agricultural practices and policy, recognize right to water and food as a basic human right, and regulate food and agriculture concentration and monopolistic practice are essential.

A broader agenda—complementary policies addressing various aspects of the food system—is also needed. Public policy at the local, state, and federal levels can help to create a healthful food system that is sustainable, safe, and accessible to all.[55]

POLICIES TO SUPPORT A SUSTAINABLE FOOD SYSTEM

What farmers grow, how they grow it, and how it gets to our tables has a profound impact on what we eat, our health, and our environment. Sound agricultural policy is therefore the starting point for sustainability.

Our current federal food policy provides subsidy payments for the commodities corn, wheat, and soybeans, products ultimately used for animal feed and as ingredients in our highly processed food supply.[56] The 2008 Farm Bill allocated $41.6 billion to Commodity Title Programs. Alternative policy is needed to reward and incentivize farmers to produce healthful products and to support small and mid-sized farmers who struggle to make a living.

To operate viable businesses, farmers need training and ongoing support; marketing assistance and opportunities; access to land, water, and other inputs; and credit. State and local policies that support farmers' markets and farm-to-institution programs create local markets for agricultural products and help farmers earn a living wage. This includes investing in production, processing, and distribution infrastructure for local farms. This practice allows small and mid-sized farmers to aggregate their products and provide light processing, such as precut vegetables or washed fruit, to allow them to sell to large institutions and retail establishments.

Another important aspect of preserving the farming profession is protecting farmland through agricultural district programs, growth management laws, agricultural protection zoning, and mitigation ordinances. For example, an

ordinance in Davis, California, requires one acre of farmland to be permanently protected for every acre of agricultural land developed for commercial or residential use. At the federal level, the 2008 Farm Bill's Farm and Ranch Lands Protection Program helps farmers and ranchers keep their land by providing matching funds to localities working to protect agricultural land.[57]

Policy can also directly promote sustainable agricultural production practices that protect human health and the environment. Reducing pesticide use is a key health priority,[12] as well as a critical strategy for preserving the environment. A major priority includes support for farmers to transition to organic agriculture or, at the least, to utilize pesticides less intensively.[58] This can be achieved by expanding federal USDA programs such as EQIP (Environmental Quality Incentives Program), which sets aside funds for organic conversion, as well as by lobbying the EPA to ban highly hazardous pesticides. Locally, the Organic Conversion Resolution in Woodbury County, Iowa, provides property tax rebate incentives for farms that stop using pesticides and adopt methods that meet the standards of the USDA National Organic Program. Regulatory policy is needed to regulate CAFOs in order to protect local water sources, prevent antibiotic resistance, and reduce pollution and the promotion of gene transfer and human flu.[10] A 2008 report by the Pew Commission on Industrial Farm Animal Production outlined policy recommendations, including improving federal, state, and local enforcement of existing regulations; relocating facilities in order to protect the health of neighboring residents; and developing a new, more rigorous system to deal with farm waste and its health impacts. To this end, Congress should examine and strengthen the role of the EPA, the USDA, and the FDA.[10] State, county, and local decision makers can implement zoning and siting laws regulating proposed CAFO operations.[10]

POLICIES TO KEEP FOOD SAFE

From spinach to peanut butter to pet food to hamburgers, outbreaks of foodborne illness have garnered attention in recent years. One important policy target is the Federal Food and Drug Administration, the regulatory body for all foods other than meat, poultry, and eggs (which fall under the Department of Agriculture). Important improvements include granting the FDA authority to (1) set standards for food processing and on-farm safety; (2) monitor and inspect for standards compliance; (3) detain food from distribution and issue food recalls as necessary; and (4) penalize manufacturer violations.[59] Together, these steps would minimize foodborne outbreaks.

In addition, transparency is needed around food labeling and false health claims. Consumers want transparency about their food in order to make informed purchasing decisions—what is in their food, how it is produced, how animals are housed, and what additives, chemicals, and hormones are being used. Many food manufacturers label packaging with

misleading terms to link products with healthful or green qualities. Expanding the FDA's authority to address claims on product classes, rather than only on individual products, would enhance the agency's capacity to protect the public from misinformation.

Increasing rates of antibiotic resistance in humans is making otherwise treatable illnesses harder to treat; the use of nontherapeutic antibiotics in meat and poultry production contributes to this problem. The European Union has taken a stand in addressing this problem by banning the use of nontherapeutic antibiotics in animal feed.[60] The United States has yet to follow suit, although legislation has and will again be introduced at the federal level.

POLICIES TO INCREASE ACCESS TO HEALTHY FOOD

The availability of healthy foods—in grocery stores and restaurants, in schools, and on the job—can be seen as the hallmark of a thriving community that supports the health of its residents. Yet in the United States today, access to healthy foods is marked by inequities. In many communities of color and low-income neighborhoods, it can be particularly difficult, if not impossible, to find fresh, high-quality fruits and vegetables and other nutritious foods. These inequities take their toll on health, because residents with better access are more likely to consume healthier foods and less likely to have diabetes.[61,62] Policy approaches can increase the availability of healthy food availability by ensuring healthy food retail in disadvantaged communities and providing low-income residents with additional resources to purchase healthy food.

Government investment can provide financing and technical assistance for supermarkets, grocery stores, and other healthy food retailers looking to open in underserved communities. Pennsylvania's Fresh Food Financing initiative, passed in 2004, has so far provided $38.9 million in grants and loans for healthy retail projects, resulting in the creation of 50 stores that offer fresh foods, 3723 jobs, and 1.2 million square feet of floor space. Initiatives are now beginning in other parts of the country, and federal legislation is under consideration. Additionally, at the local level, public agencies can aggressively recruit potential stores and provide financial and regulatory incentives, site-related assistance, expedited permitting, and tax breaks, all of which can help stimulate grocery store development and improvements.

Federal nutrition programs provide critical nutrition support for low-income families in the United States. The Federal Child Nutrition and WIC Reauthorization (CNR) Act and the Farm Bill determine guidelines and funding for a range of critical food assistance programs that serve as important nutrition sources to children and low-income families and provide families with additional resources to buy food.

Child Nutrition Programs operate with limited resources to provide healthful and appealing meals in schools. A key policy proposal centers on

increasing federal reimbursement rates for school meals and then leveraging them to enhance nutrition standards as part of the 2009 Child Nutrition Reauthorization Act. Such a policy can also improve schools' selection of commodity foods and support locally grown produce. Additionally, the upcoming Child Nutrition Reauthorization will most likely establish federal standards for "competitive foods," food and beverages sold outside of school meals, including in vending machines, at snack bars, and through fundraisers. Unlike school meals, competitive foods are not required to meet federal nutrition standards, and current USDA statutory authority to regulate competitive foods is limited.[63] The Institute of Medicine (IOM) report *Nutrition Standards for Foods in Schools* urged schools to establish standards for the nutritional value of competitive foods (e.g., amount of fat, sugar, and calories), to limit products with caffeine and nonnutritive sweeteners, and to set rules about when competitive foods may be sold during the day and how they may be used at fundraisers and as student rewards.[64]

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) provides free nutritious foods, nutrition education, and access to health and social services to low-income pregnant, postpartum, and breastfeeding women, as well as to children up to 5 years old. The National WIC Association (NWA) is working to ensure that funding increases to meet a surge in demand due to economic recession.[65]

The Supplemental Nutrition Assistance Program (SNAP), formerly the Food Stamp Program, is the primary hunger mitigation program in the United States. It provides monthly benefits through an electronic benefit transfer (EBT) card, which can be used to buy foods and beverages at authorized outlets. New rules adopted in the 2008 Farm Bill increased benefits, bringing SNAP closer to what families actually need to purchase healthful foods. Despite this success, ongoing advocacy will be necessary to maintain and expand these federal benefits, as well as to simplify the application process and increase community outreach.

Increasing access to nutritious food is essential for improving the nutritional quality of US diets. At the same time, we must reduce the overall consumption of energy-dense highly processed foods if we are going to improve health outcomes. One important influence on the consumption of these unhealthful food and beverage choices, especially among children, is food and beverage marketing.[66] In 2005, the IOM issued a seminal report, *Food Marketing to Children and Youth: Threat or Opportunity?* which concluded that "food and beverage marketing practices geared to children and youth are *out of balance with healthful diets* and contribute to an environment that puts their health at risk." (p. 374)[66] Though the United States lags behind other countries in its attempts to address marketing to children, the IOM report has led to calls for legislation to limit the exposure of children to advertising messages for unhealthful foods and beverages. Advocacy efforts are underway to establish federal regulations on interactive advertising and digital marketing (a currently

unregulated arena) aimed at children to help curb the amount of advertising as well as the collection of their personal information. Localities or states can take action by eliminating all commercial messages in schools or restricting marketing for food and beverages that do not conform to school nutrition standards.

TAKING ACTION

There is no lack of good policy ideas and models. Policy change results from an active and engaged community. For example, in 2008, nurses concerned about the use of rBGH (an unnecessary hormone given to dairy cows to promote milk production) began a letter writing campaign asking yogurt producers Dannon and Yoplait to stop purchasing milk produced with rBGH, they wrote letters to their state nursing journals, and sent letters to state legislators asking for enforcement of labeling laws. Hospitals sent letters asking dairy users to use milk produced without rBGH and to their distributors asking for rBGH-free milk. By the Fall of 2008, both Dannon and Yoplait announced they would stop using rBGH milk and a variety of states maintained label disclosures. Though this was a national initiative that also had tremendous grassroots support, there is reason to believe that engagement by the health care community helped change the nature of the debate. This epitomizes the face of health care engagement in practice and policy. That professional organizations have passed resolutions or policy actions is not enough; doctors and nurses must educate one another, hold their professional organizations accountable for the implementation of these policies, and ask that these organizations engage in lobbying and political advocacy. They might ask their organizations to end those relationships that are inconsistent with the promotion of healthy, nutritious, sustainable foods. For example, in 2008 the American Dietetics Association welcomed Coca-Cola as a major corporate sponsor, clearly a mixed message for those interested in health promotion. Nurses and doctors can educate their patients, write letters to their legislators, and ask that their hospitals support the aforementioned policy actions. Nurses and physicians can encourage and champion hospital practices that model and promote healthy food systems. The physician voice is essential in this regard. Hospitals can work individually or through their association to lobby and engage in policy debate. They can meet with legislators to propose and support policy. Hospitals can support the Healthy Food in Health Care Pledge, provide information to their patients, and educate their community through their Web site, and more. The Health Plan community can provide incentives to those hospitals and plan members who model and promote a healthy food system, through membership in community-supported agriculture food box programs, and through changes in cafeteria and inpatient meals. Importantly, health care actors must also recognize their shared interest with other public interest groups and work together.

CHALLENGES

We are at an important juncture. We are experiencing a host of health impacts from a food system that exacerbates health care's financial crisis. The public has little understanding of where and how its food is produced. Paradoxically, the obesity crisis may be the blessing that propels us to step back and examine the big picture. By approaching this crisis with a systems model and applying a health lens, we can begin to address a host of health concerns through preventive interventions and to build a new food system—a healthy food system. It is only appropriate that health care be the messenger. In the last few years, we have begun to witness an important awakening to these issues within the health care community, driven in large part by several leading health care institutions, individual health care practitioners, and now finally professional health care organizations. Though significant, these efforts are not enough to fully move some of the most important levers of change in the supply chain and public policy. We now need an ability and willingness to act with urgency.

There will also be challenges. Many of the financial costs to the health care system from our current food production system are hidden or have been purposefully externalized. Though we know that the costs associated with antibiotic resistance,[67–69] pesticides,[11,12] and obesity[2,70] are significant, and unquestionably negatively impact the cost of health care, we do not have a sufficient economic analysis to understand the magnitude of these costs to engage the health care community from a strict economic perspective.

Health care is accustomed to technological fixes and tends not to "reward" primary prevention. The breadth and burden of the obesity crisis may be big enough to awaken health care to the need for a systems approach. By contrast, sustainable agriculture is part of a food systems approach that requires less technological inputs, though still very much dependent upon science and knowledge transfer.

As a result of government policy inaction on climate change between 2001 and 2008, we have not experienced as rich a discussion on climate change and associated impacts as other countries. The UK National Health Service has adopted a climate action plan with target reduction goals and associated mitigation and adaptation strategies. These include the elimination of bottled water and support of local, sustainable foods. It is likely that they have recognized the paradox that an energy intensive health care model promotes an increasing cycle of global warming gases, followed by human and public health impacts, followed by even more health care delivery.

CONCLUSION

Until recently, humans have been able to dissociate their activities from ecological processes. The air, water, and land have carried the burden of these

activities. As our population and activities have increased, we now have little room for error or disregard. We are reminded from the recent United Nations Millennium Ecosystem Assessment, "At the heart of this assessment is a stark warning. Human activity is putting such strain on the natural functions of Earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted."[71] We are beginning to fathom that we cannot be healthy on an unhealthy planet and that we have little time to act.

Over the last 60 years we have developed a food system that superficially appears very efficient. This food system is dependent on a practice of agriculture completely at odds with the functioning of natural systems. We have developed synthetic inputs, decreased diversity, and contaminated the food web. We have evolved a food system that supports and has accelerated a high technology industrialized agriculture, which is now out of control, critically affecting cultural, social, and ecological systems. We have arrived at a crossroad. We can choose to continue to intervene and tweak an incredibly complex network of relationships and feedback mechanisms and to hope that we understand these dynamic intricacies that have evolved over eons of time, or we can advance an agricultural model that works in concert with these ecological processes. Health care leaders are now beginning to play a decisive role in advancing a food system that is healthy for patients, communities, and the planet. Moreover, these leaders recognize that ultimately, such a system is imperative for human, community, and global health. The question remains whether we will act with appropriate urgency.

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