

Research Article

Sustainable Hospital Food Service: Restoring Health and Prosperity to Rural Montana

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Abstract

Montana is a large, sparsely populated agricultural state experiencing both rural economic decline and high rates of chronic disease related to poor nutrition. Pursuing a more sustainable and self-reliant food system may help alleviate both of these problems. This investigation explores the sustainable practices foodservice directors in Montana's rural hospitals are implementing, their challenges and opportunities. A case study of one innovative rural hospital demonstrates the feasibility of incorporating sustainable practices, and reveals local food purchasing in particular as an excellent way to support the local agricultural economy and build social capital while addressing the mission of the institution. An in-depth investigation of this foodservice and interviews with ten additional hospital foodservice directors provided an initial assessment of the extent to which rural Montana hospitals are engaging in sustainable practices, and particularly local food purchasing. Key challenges include financial constraints, concerns about food safety, existing contractual relationships, and staff training needs. Conversely, the continued reliance on scratch cooking in rural hospitals is seen as a significant opportunity, and several hospitals studied have gardens on-site. Conclusions include resources for foodservice directors who wish to integrate sustainable policies and practices in rural hospital foodservice operations.

Keywords: Sustainable food practices; Food systems; Hospital Food Service

Introduction

Montana is a large, sparsely populated agricultural state experiencing both rural economic decline and high rates of chronic disease related to poor nutrition. Pursuing a more sustainable and resilient food system may help alleviate both of these problems. This investigation explores the sustainable practices foodservice directors in Montana's rural hospitals are implementing, their challenges and opportunities. By adopting sustainable practices, and particularly sustainable food practices, hospitals can better address their healthcare mission while also contributing to the re-localization and revitalization of food systems. Rural hospitals in particular have the opportunity to link support for local agricultural economies with providing high quality health services, strengthening rural communities as a result.

The purpose of this study is to explore the internal policies and practices implemented by foodservice directors in rural Montana hospitals that could potentially support increased sustainability in Montana's food system. The research begins with a case study of one innovative rural hospital to inform the development of questions for structured interviews with additional foodservice directors. Subsequent interviews with ten additional foodservice directors reveal both challenges and opportunities for Montana hospitals wanting to adopt new practices. Results include successful examples that can be replicated and conclude with a listing of relevant and useful resources for hospital foodservice directors who wish to take part in creating a healthier, more sustainable and self-reliant food system in Montana.

Food systems, sustainability and health

The food system includes all entities and processes involved in creating the food supply in both sociocultural and biophysical contexts [1]. Food system sectors include production (farming and ranching, fisheries, gardening, wild foods); transformation (processing, packaging, labeling), distribution (wholesaling, storage, transportation), access (retailing, institutional foodservice, emergency food programs), and consumption (purchasing, preparation, and waste management). Human resources and natural resources serve as food system inputs and its foundation, while technology, policy, economics, sociocultural trends, and education are sources of influence [2]. Sustainable food systems conserve and renew their natural resource base, advance social justice and promote animal welfare, build wealth in communities rather than concentrating it among corporate entities; and fulfill the needs of all eaters now and in the future [3]. For the purposes of this research, the authors are suggesting that sustainable practices in hospital foodservices can provide ecological, economic, and social benefits.

The current food system appears to be on an unsustainable trajectory. Industrial agriculture consumes fossil fuel, water and topsoil at faster rates than they can be replenished [4,5]. Additional threats to the economic, social, and ecological sustainability of the US food system include the rate of conversion of agricultural land, declining farmer incomes and agricultural profitability, the degree of food industry consolidation, food waste, and declining genetic diversity in food crops [5,6]. Our very means of food production is degraded when contaminated water run-off causes fish die-offs,

and public health is threatened directly by pollution from pesticides and other synthetic chemicals used in factory style or monoculture farming [4]. The industrial food system has created health problems that are currently evident in US hospitals such as antibiotic resistance, food borne illness, exposure to toxins, and respiratory illness [6,7]. Obesity and malnutrition are ironically related to the effort to create food security at a low price for consumers, which has resulted in the mass production of inexpensive and unhealthful foods [6-8]. Poor nutrition is a risk factor for four of the six leading causes of death in the United States, including heart disease, stroke, cancer and diabetes [9]. The prevalence of diet-related chronic diseases and the accompanying escalating healthcare costs suggests that our food and agriculture policies are not supporting US dietary guidance [5, 7,9-11].

Dietitians are encouraged to take an active role in re-shaping our food system and increasing its sustainability [2,12-13]. One predominant approach to increasing food system sustainability is to work at the local level to better connect consumers to healthful whole food choices, encourage low input agriculture, and improve agricultural profitability for small scale producers in particular [2,8, 13-15]. Local food systems may contribute to a reduction in food safety risks, as production and transformation are decentralized; conservation of agricultural land; and the preservation of environmental quality [15]. A revitalized local food system can increase the availability of healthful foods that are fresher, less processed, and have retained more nutrients [15]. For example, members of community supported farms (CSAs) who have paid ahead for a weekly share of produce consume more fruits and vegetables as a result [15]. While the public health community has not traditionally been concerned about food origins, production practices, and agricultural subsidies, food distribution, and justice for farm laborers, we need to acknowledge that dietary guidance and obesity prevention depend on all sectors of the food system and their interconnections [11].

Rural hospitals

Nearly one quarter of Americans lives in rural areas. Rural communities in particular rely on their hospitals as important components of the regional economy. Populations in these areas tend to be both older and poorer than urban counterparts, and chronic diseases are more common. Rural hospitals also tend to be smaller than urban hospitals, and less financially stable [16]. Because many rural hospitals are typically part of predominantly agricultural communities, the authors of the current paper suggest that they have the opportunity to link support for local economies through local food procurement with providing high quality health services and nutrition. Rural hospital foodservice operations can contribute to strengthening surrounding rural communities in this way. Foodservice in general represents ten percent of the US workforce and four percent of the GDP [17]. Therefore, positive changes in food procurement, meal production, and service have the potential to stimulate local economic growth.

Hospital foodservice and sustainability

Hospitals themselves are a source of environmental problems, and so have a significant role to play in resource conservation efforts, climate change mitigation, and the promotion of sustainability [18-

20]. Many sustainable practices make economic sense for hospitals, as reducing water use and garbage hauling fees saves money [21]. Categories of hospital foodservice practices related to sustainability include building and equipment, waste management and the procurement of food and other supplies [20]. The most common sustainable practices for hospital foodservice include recycling fat, oil, grease, cardboard and paper. The least common practices include composting, and serving organic locally grown foods [22]. Reports from another survey indicate that attitudes related to making changes in foodservice operations are least favorable when it comes to food issues. The authors conclude that foodservice directors may need more education related to the environmental impacts of food choices, and that dietitians can lead changes in education, practice and policy development [19].

The quality of hospital foodservice offerings has historically had a poor reputation among patients and visitors alike [23-24]. Research suggests that excessive levels of food waste are due to meal management systems, poor communication, and food quality [25-26]. Adequate and appropriate nutrition is an important aspect of healing and management of disease, yet malnutrition in hospital patients is common due in part to the presentation and quality of meals served [27-28]. Implementing farm-to- hospital programs is seen as one strategy to improve the quality and appeal of hospital meals [29-30].

Localizing the procurement and improving the quality of foodservice offerings has the potential to help hospitals address the general mission of promoting both the health of patients and the communities in which they are located [30]. In light of widespread chronic nutrition-related disease, hospitals can take a leadership role in their communities to create food and agriculture systems that foster both public and environmental health, social and economic equity [29]. Health Care without Harm encourages an ecological approach to food production, distribution, and procurement. This systems approach requires observation of the whole food system, while seeking to understand the connections among sectors. A variety of forces have shape our food supply and our choices, therefore a systems view is required to understand the complexity of interrelationships [6]. Many hospitals around the nation have taken steps in this direction [6,29,31]. In Minnesota and California, for example, hospital foodservices are supporting farmers by purchasing locally, serving as drop-off sites for community supported farms, and hosting farm stands or farmers markets [29,31].

Resources and recommendations for sustainable practices in hospital foodservice

Several resources are available to assist hospitals with developing internal policies and making changes in foodservice. The Health and Human Services (HHS) and General Services Administration (GSA) Health and Sustainability Guidelines for Federal Concessions and Vending Operations, provide general recommendations for institutional foodservice directed at improving dietary intake and increasing the ecological benefits of the food system [32]. Recommendations from a variety of sources include recycling, composting, reusing, green purchasing and cleaning practices, use of integrated pest management, green pest control, and use

of compostable or bio-based single service items. Food-related sustainability standards include the use of organically, locally, or documented sustainably grown products and processes, seasonal fruits and vegetables, labeling of products to demonstrate sustainable items, ethical and environmentally sensitive animal-product sourcing, promotion of tap water over bottled water, and incentives for use of reusable beverage containers. For locally grown foods, information should identify the farms, their locations, and the sustainable practices used. Additionally, use of signage or informational programs can communicate to staff and visitors the ecologically sound, economically viable, and socially responsible values of these practices [17,32-33].

Health Care without Harm has a Healthy Food in Health Care Program that includes a Pledge for hospitals to sign [6,34]. Aspects of the program include protecting antibiotics, local and sustainable purchasing, balanced menus, healthy beverages, making a connection between food choices and climate change, and public policy.

Foodservice operations in Montana have an additional resource and opportunity to pledge sustainable practices. The Western Sustainability Exchange, headquartered in Livingston MT, has a Sustainability Pledge that can be signed by restaurants and foodservice operations committing to a list of sustainable practices, and then displayed in the cafeteria to educate customers. Some of the practices outlined by the pledge include purchasing from local farmers and ranchers who practice sustainable stewardship, using biodegradable paper and cleaning products, and reducing energy consumption [35].

Site selection and background: Montana

Montana is chosen for this study because of its rural landscape, sparse population, predominance of agriculture in spite of declining agricultural profitability and rural economies, prevalence of rural poverty, and unique healthcare challenges. Montana's current food system includes significant gaps which create challenges for self-reliance. Incorporating sustainable practices into Montana's rural foodservice operations has the potential serve multiple objectives while strengthening rural communities.

Montana's rural landscape and agriculture

Montana is the fourth largest state in land area [36]. Montana's population of approximately one million people ranks 44th in the nation [37]. Fifty-five of Montana's 56 counties are defined as rural and 45 of them are defined as frontier counties, with fewer than 6 people per square mile [36].

Montana ranks second in land devoted to agriculture (60 out of 93 million acres), with more than 29,000 farms [38]. The rural landscape is populated by only about one million people but nearly three million cattle, hogs, and sheep. In all, Montana's agricultural industry is worth nearly three billion dollars annually, ranking only 31st in the nation [38]. Wheat, cattle and calves, barley and hay are Montana's most important commodities. Generally, agricultural sales only represent 80-90% of production costs. For example, in Western Montana, farmers produce \$167 million of commodities each year and spend \$198 million to raise them [39].

Montana is therefore heavily dependent on federal agricultural subsidies. As in other agricultural states, increased efficiency in

agriculture has not been accompanied by increased profitability for producers, the majority of which report a net loss before subsidies [40]. Half of the 30,000 agricultural producers in the state rely on off-farms jobs for their primary source of income, and the average age of farmers is 58 [38]. Of Montanans' 2.6 billion dollar annual food budget, 6 million dollars is spent buying food directly from farmers, which only represents six dollars per person per year [39].

In the 1930s, food processing was Montana's number one employer, but now, the majority of agricultural products produced in Montana are exported as low priced commodities, processed outside of the state, and sold back to Montana consumers at a profit [41-42]. The farmers' share of the food dollar has become quite small. For example, for every dollar spent on a loaf of bread, the typical MT wheat farmer gets only six cents [43]. In 1950, Montanans produced 70% of the food they consumed, but currently the figure is closer to 10% [41-42].

Health, poverty and critical access hospitals

In 2012, Montana's personal per capita income (\$38,555), ranked 45th in the nation and the state's 40.4 billion dollar GDP ranked 48th [37]. Many of Montana's counties are characterized by high poverty rates. This is due to the decline in rural jobs, including farming. The combination of poverty and small population mean limited health care options and higher costs for these isolated communities [36].

The top causes of death and high prevalence of nutrition related chronic disease in Montana mirror national statistics. The percentage of the population without health insurance is also the same as the national average (19%), and will likely be affected by the Affordable Care Act [16,36]. Rates of overweight and obesity are slightly lower than the US average, but the rate of diabetes is higher. The healthcare industry in Montana is one of the largest employers in the state, at 18% [36]. Montana's population is increasingly older and in need of health care. For example, by 2030 25% of Montanans will be 65 and older. Montana is expected to be the fifth most aged state in the nation by 2025 [36]. These challenges mean that Montana has to be creative to meet the health care needs of its citizens.

In response to healthcare facilities facing closure and rural residents losing access to medical care, Montana developed 23 Medical Assistance Facilities (MAFs) in 1992. MAFs later became the model for the current federal Critical Access Hospital (CAH) program, which was developed and piloted in the state. The goal of a CAH is to maintain local healthcare access by providing limited service hospitals to rural communities in geographically isolated areas [16,36]. Montana currently has 65 hospitals, 48 of which are CAHs, [36]. CAHs are characterized as having no more than 25 inpatient beds, providing 24-hour emergency care, and receiving cost-based reimbursement for inpatient and outpatient services. CAHs receive Medicare reimbursement at 101% of allowable costs [16,36].

In spite of struggling with economic depression and geographic isolation, communities with CAH hospitals are rich in social capital [44]. Many of these communities have strong connections to agriculture and would likely embrace the cultivation of a local food system and increasing self-reliance. Montanans' resourcefulness is an advantage in the pursuit of a sustainable health care system and greater food self-reliance.

Table 1: Interview Guide for Rural Montana Hospital Foodservice Directors

Part 1:
1. How long have you been the dietary manager at your facility?
2. Are you a Registered Dietitian? Certified Dietary Manager? Other?
a. If not an RD, does an RD sign off on their menus?
3. Who is your primary food service vendor? Secondary? Other?
4. Does your department use a cycle menu? How many days/weeks is it?
5. Did you write the cycle menu? Purchase it from your primary vendor? It was there when you started?
6. Do you serve staff and guests in addition to patients?
a. If so, do you use the same menu?
7. How many FTE's (full time employee's) and part time employees do you oversee in your department?
8. How many meals do you serve a day on average?
9. Do you have a LTC (long term care) attached to your facility? If yes, how many beds?
10. What is the average daily census for your CAH, LTC?
11. Do you prepare many of your menu items from scratch or do you use mostly pre made, heat and serve meals?
12. Currently, what percentage of food comes pre-prepared to your food service?
13. Do you source any of your food items from Montana producers?
14. Do you have any food producers in your county or neighboring counties?
15. Have you ever heard of the organization Healthcare Without Harm, or their Healthy Food in Healthcare Pledge? What about the Farm to Restaurant sustainability Pledge from the Western Sustainability Exchange?
16. Do you know of any other institutions or food service establishments nearby who participate in local buying, or farm to institution programs?
17. Do you have any policies written pertaining to the procurement of local food?
18. Have you ever considered implementing an edible garden, or farmer's market on your hospital campus?
19. As I mentioned in my introduction, sustainability is multi-facetted. Incorporating ecologically sound practices and practices which encourage social justice for all people. Keeping this mind, I want to ask a couple of additional questions.
a. Do you use biodegradable take-out containers and dinnerware?
b. Do you use any natural, biodegradable cleaning products and hand soaps?
20. Do you have any strategies in place to reduce energy consumption and minimize waste? and using energy star appliances.
21. Are you interested in integrating any of these practices into your establishment, if so which ones?
22. Additionally, a sustainable food system requires the fair and respectful treatment of people. Keeping this mind do you feel you and other employees have the opportunity to work in a healthy and safe environment.
a. Do employees enjoy wages that sustain them in this community?
23. Does the administration or do you as the food service manager, provide any opportunities to enhance the health and well-being of employees? Some examples might include; a wellness program, educational staff meetings on health or sustainability, providing opportunities for staff to participate in menu or recipe selection to encourage participation and ownership, team building activities to encourage cooperation between employees, an employee assistance program, or options for advancement?
Part 2:
24. If you were to change your menus to incorporate both recipes from scratch and/or local foods, what barriers would you anticipate? Some of the barriers may be listed below:
25. Can you explain your kitchen to me?
a. Do you have the infrastructure and equipment to process and cook meals from scratch?
b. Do you have storage (freezer/cooler) to procure process your own whole foods in bulk?
26. Do you feel staff have the skills and education to prepare meals from scratch and process fresh ingredients? This would include safety and sanitation training, culinary skills (ex. knife skills), and the ability to follow a recipe.
a. What type of training or education would you need to implement to feel confident your staff could prepare and serve safe healthy meals from scratch?
27. What types of changes would you have to make to your current menu to implement more local foods and from-scratch cooking?
28. How would patient, guest and staff satisfaction change if you implemented a different menu?
29. Are you challenged by your current budget? Do you think you could operate your food service with the same budget if you were to implement more local foods and from scratch cooking?
30. Any other barriers?
31. Change the menus to incorporate more recipes from scratch
32. Incorporate more local foods

33. If some of these barriers were overcome, do you see a benefit to changing your menu to include locally sourced food and/or cooking from scratch?
Part 3:
34. How important do you think food is in disease prevention? Explain?
35. Do you think pre prepared food is as healthy as recipes prepared from scratch? Explain?
36. Do you think foods produced locally are healthier than foods purchased from a large distributor? Explain?
37. Do you think the food you serve to patients is as healthy as it could be or do you think there is room for improvement? Explain?
38. Would you be interested in participating in a Montana Task Force focused on the implementation of more sustainable hospital food service?

Methods

Instrument development and sampling

Semi-structured interviews provided qualitative data. The interviews were conducted using an interview guide, which was written and refined after an initial in-depth case study of Livingston HealthCare (see Table 1 and Results).

Research participants included foodservice directors from 10 Critical Access Hospitals (CAHs) in Montana. Institutions were selected from a list of 25 CAHs that included all hospitals with a capacity of 20-25 beds. CAHs were divided into three different geographic groups; east (8), central (8) and west (9) (see Figure 1). Participants were alternately selected from each group and interviewed until no new information was gained (see Table 2). Two interviews were conducted in-person and included tours of hospital kitchens, the other eight interviews were by telephone. All were completed within a one-month period during the Spring of 2011 by the first author, who recorded them with hand-written notes. Interview notes were reviewed immediately to improve the quality of subsequent interviews. At the completion of 10 interviews, authors sorted and coded data manually to identify common themes and exceptions related to challenges and opportunities. The original case study has been revisited and updated with current accomplishments.

Results

Case study: Livingston health care

The CAH in Livingston, Montana (population 7,053 in 2012) has undergone a significant transformation in its foodservice operation, the director of which is second author of this paper. In 2007, Livingston HealthCare administrators decided to improve the quality of foodservice offerings to promote health and wellness among patients and staff, and model healthy food choices for the community. In a desire to start with the healthiest, most nutrient-dense ingredients, a Farm-to-Institution Program was started. Livingston HealthCare partnered with Western Sustainability Exchange [35], a nonprofit organization whose mission is to connect local producers with local buyers, building food system connections.

Prior to implementing the Farm-to-Institution Program in 2007, the hospital menu was on a ten-day cycle and consisted mainly of ready-prepared meals. The menu had not changed in several years, and there had been a steady decline in cafeteria usage. The foodservice director proposed healthier menu options, prepared from scratch, instead of the previously used frozen, premade options. These decisions were based on the assumption that the quality of food would be largely determined by the quality of ingredients, and that the quality and nutrient value of fresh food declines as the length of time and travel increases from the food's source. The program

was initiated with local beef, as cattle ranches surround Livingston. Once the foodservice director started investigating sources for local beef, she discovered that Montana produces a significant variety of foods, all of which could be purchased and served to patients, staff, and guests.

Livingston HealthCare has achieved the initial goals of providing healthier meals for patients, staff, and the community, while also contributing to the local economy by supporting farmers and ranchers. The effort also created four new jobs at Livingston HealthCare to accommodate cooking meals from scratch. Livingston HealthCare's local food purchases, averaging \$25,000 - \$32,000 per year, make a contribution to the depressed local economy. Overall, the desire to improve the health of Livingston residents and support the local agricultural community has been the motivation for changes.

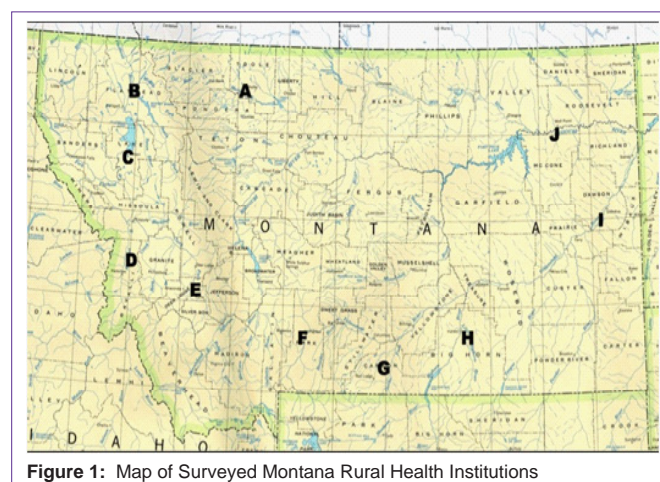


Figure 1: Map of Surveyed Montana Rural Health Institutions

Table 2: Location of Surveyed Montana Rural Health Institutions

	Institution	Location
A	Marias Medical Center	Shelby
B	North Valley Hospital	Whitefish
C	St. Joseph's Hospital	Polson
D	Marcus Daily Memorial Hospital	Hamilton
E	Community Hospital of Anaconda	Anaconda
F	Livingston Healthcare	Livingston
G	Beartooth Hospital and Health Center	Red Lodge
H	Big Horn County Memorial Hospital	Hardin
I	Glendive Medical Center	Glendive
J	NE MT Health Services	Poplar

Some of the challenges that had to be overcome included implementing new safety and sanitation procedures for processing and cooking whole foods. Kitchen staff participates in ongoing culinary training in scratch cooking, knife skills and recipe modification in order to accommodate local products that differ from the pre-processed food they had been accustomed to. Meeting the budget was made possible because the higher costs of better quality, local foods were offset by the savings associated with preparing meals from scratch in the kitchen, rather than buying expensive pre-prepared foods.

Livingston HealthCare has learned to operate with more flexibility, because producers cannot always supply produce in the quantity required by the institutional kitchen. To address a variety of environmental concerns, the food service director has provided leadership to initiate a Sustainability Committee at Livingston HealthCare which has overseen a successful facility-wide recycling program.

Accomplishments since 2011

In 2014, the organization purchases food from nearly 50 local and regional vendors and spends an average of 25% of the organization's food dollars in Montana. The Farm-to-Institution Program, has been recognized across the state in publications and at healthcare events. In the fall of 2012 Livingston HealthCare's Farm-to-Institution Program won the Innovation in HealthCare Award from the Montana Hospital Association and in the spring of 2012 their program was awarded the Eco Star Award for Sustainability from the Montana State University Extension Agency. Publicity gained by the program has inspired others—both hospitals and other institutions—to pursue local buying programs.

Currently, Livingston HealthCare has plans to build a new facility with a state-of-the-art kitchen designed with the capacity to process large quantities of fresh foods from local sources. A demonstration garden will serve to educate staff and visitors about the importance of and methods for small scale food production, while also contributing to the aesthetics of the landscape. Livingston HealthCare can serve as a model for other rural hospitals in Montana.

Description of rural hospitals

The surveyed institutions and their locations are listed in Table 2 and displayed in Figure 1. These institutions employ an average of 11 full time employees and serve anywhere from 20-450 meals daily. All serve patients, staff and guests and one hospital serves free meals to working staff. Just over half of the institutions also have an attached long term care facility, which dramatically increases the number of meals served daily. In two of the communities surveyed, resources have been consolidated such that one hospital foodservice institution is also serving meals to the city jail, while food is prepared at a nearby child care facility for another hospital foodservice institution. Foodservice directors in all institutions had been in their positions for an average of nine years when interviewed. While two directors have no certifications, two are Registered Dietitians (RDs), four are Certified Dietary Managers, and two are Diet Technicians, Registered (DTRs) or in the process of earning one of those credentials. One director also has had training in the Culinary Arts. Half the institutions purchase cycle menus from their food vendor. The other

half write their own menus, which vary from six-day to 4-week cycles, include café style menus, and allow for seasonal changes. Sysco is the primary vendor for the majority of the institutions, while others use Food Services of America, US Foods, and smaller distributors as secondary vendors. Secondary vendors are used to source additional foods items, including higher-quality produce.

Challenges

No foodservice institution surveyed has policies pertaining to the procurement of local food or specific sustainable food practices. Many identify a hesitance from hospital administration to create institutional policies that might increase financial obligations. Additionally, the directors at six of ten institutions surveyed are not procuring food locally because they are not comfortable with the food safety risk, or feel that their food safety inspector would not allow it. Supply-side barriers experienced by directors include adhering to vendor contracts, inadequate delivery options, lack of consistency of products, and anticipated increases in cost and workload.

Changing a hospital foodservice menu can be difficult. For example, introducing new menu items requires recipes to be standardized and analyzed for nutrient content by a Registered Dietitian. All food service directors cite taste preferences of patients and staff as a barrier to introducing new menu items. Correspondingly, staff members need to be trained to safely prepare foods from scratch. This requires ongoing trainings related to knife skills, recipe modification, food safety and sanitation, knowledge of equipment and time management. Staff would also need to be educated about the rationale for local food purchasing and the value of quality food, to understand the need for extra work, and also to be able to effectively communicate with patients, staff, and visitors about the program.

In reference to other sustainable practices, five of the ten institutions interviewed feel they have no influence over the decisions made at their institution about the purchase of renewable or biodegradable cleaning products or eco-friendly paper products. Additionally, several directors feel that kitchen equipment needs to be updated in order to improve energy conservation.

Foodservice directors' use of outside resources is limited. Only one institution has heard of Health Care Without Harm or the Western Sustainability Exchange and the campaigns of those organizations to improve the health and sustainability of food service operations. Only half of the institutions can identify other local foodservice institutions that may participate in local buying or that might be interested in collective bidding.

Opportunities

Over half of the directors report strong interest in local purchasing as means to support their communities, and eight of ten foodservice directors report a strong interest in sourcing local food if barriers are removed or decreased. On average these institutions are cooking nearly 79% of the food they serve from scratch and all support the practice. Directors report that scratch cooking allows their kitchens to be more efficient and to serve higher-quality healthful food with less sodium and preservatives. While only four are sourcing any of their ingredients from local sources, a scratch menu allows the flexibility to do so in the future. Currently, coffee, dairy products,

bread products, produce, meat, legumes, flax and oatmeal are all being sourced locally on a regular basis by two hospitals, and one hospital buys two cows and one pig every year from the local 4-H club. All local meat is slaughtered in USDA approved state inspected facilities and local farms are questioned by foodservice directors about their agricultural practices related to food safety. Nearly all directors can identify producers within their town or county from whom they could source food, including potatoes, wheat flour, pork, beef, bison and fresh produce.

Four of the ten institutions interviewed have a hospital garden or plan to install one, revealing an unexpected and promising opportunity. However, several food service directors are concerned about using their own produce due to food safety risk or health codes.

The majority of directors report a flexible budget with support from their administration to increase the food quality and sustainability of practices. Those who have introduced sustainable practices and more scratch cooking have found an increase in patient and staff satisfaction and media attention.

One hospital has introduced a community mug program for coffee, which has made a dramatic impact in their use of Styrofoam cups. Additionally, four of ten institutions are using biodegradable soap products and paper products. Food service directors who are interested in sustainable practices have found success by starting or joining a hospital-wide wellness or sustainability committee. These committees pioneer recycling initiatives and support facility updates that reduce energy consumption. Food service directors show interest in green practices including motion sensor lights for storage rooms, solar panels and removing plastic bottled water.

All institutions and directors support employee health through institutional wellness programs. These programs include encouraging exercise, regular meetings with RDs, healthy menu items, use of fitness centers, walking programs, stress reduction strategies and regular staff education and goal setting meetings where staff have the opportunity to contribute ideas for new menu items. All ten foodservice directors identified the positive association between healthful food and disease prevention.

Seven of ten hospital food service directors report an interest in participating in a hospital foodservice task force focused on the implementation of more sustainable practices. Many believe increased communication and knowledge of available resources will support the changes they would like to make. For example, if one hospital has success with a particular strategy, that could serve as encouragement or validation for utilizing the strategy in additional hospitals. This validation may be important in acquiring support and resources from hospital administrators. All hospital foodservice directors want to support improved health in Montana and many are beginning to see building a sustainable food system as a means to that goal.

Conclusion

Throughout the United States nutrition-related chronic diseases are prevalent. At the same time, it has become increasingly difficult for many farmers to make a living in the current food system. This conundrum seems especially challenging to accept in rural

agricultural states such as Montana. Hospital employees witness the problem first hand, especially in Critical Access Hospitals where health care options are limited and the community is aging due to the declining number of jobs in the area, especially in agriculture.

Therefore, hospital foodservice directors and staff have the opportunity to pioneer a return to a simpler system that allows them to engage in their communities through local procurement and resource conserving practices. Many of these hospitals still retain the staff skills and equipment to do scratch cooking, providing the opportunity to make seasonal adjustments in menus, and improve the healthfulness of menu offerings. Also, many of the people in these communities retain the knowledge of gardening and are interested in creating community gardens that are associated with the local hospital. The transition to more sustainable practices requires extra training and extra work for hospital foodservice staff, and so could be a source of job creation in communities where opportunities are desperately needed. Montana's healthcare industry is already a significant employer in the state, such that positive changes in hospital foodservice have the potential to create healthier worksites for many Montanans.

The Livingston Healthcare model illustrates how financial resources can be conserved, and the operation's budget redirected from buying more expensive "value added" processed products to paying hospital employees to process local whole foods. The result is healthier, better tasting food and more money re-circulating in the local economy. Additional work can result in increased job satisfaction for staff. The majority of organizations surveyed said they would like to source food locally so they could support their community, and all said they would like to find a way to support improved health for Montanans. Successful farm-to-hospital programs have the potential to directly benefit local producers, through the creation of new markets, but also might impact the kinds of foods they are producing, which might help diversify agriculture in a state where the production of commodities is so dominant. This study illustrates how food service programs in rural hospitals can participate in revitalizing their communities by striving to serve food that promotes rural health, resource conservation, and local economic development.

Excellent resources exist to help foodservice directors implement sustainable practices, such as Health Care Without Harm [45], the Health and Human Services (HHS) and General Services Administration (GSA) Health and Sustainability Guidelines for Federal Concessions and Vending Operations, [32], and in Montana, the Western Sustainability Exchange provides resources and facilitated meetings for building relationships between farms and foodservices [36].

Land grant universities and county extension offices can offer resources related to food safety and, Good Agricultural Practices (GAPs) [46]. Food safety concerns can also be addressed by contacting state health departments. At the time of this writing, there are no state regulations related to the procurement of fresh fruits and vegetables from local sources. Full implementation of the Food Safety Modernization Act is on the horizon and will likely include guidance for foodservice directors.

Finally, the authors recommend that the use of strategies

to increase sustainability in hospital foodservice not be limited to hospitals in the US or even hospitals in developed countries. Rural hospitals worldwide would benefit from connecting healthy consumption with local production, particularly in developing regions where there is an increased burden of disease, high levels of poverty, and challenges related to the sustainability of agriculture.

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