

Aligning Health Care with Planetary Health: Examining CSA Prescriptions as a Whole Health Intervention

“Let food be thy medicine and medicine be thy food.”
- Hippocrates

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Summary

Farm Shares for Health provides no-cost Community Supported Agriculture “prescriptions” to patients at the University of Vermont Medical Center. This exploratory study sought to inform future program goals by providing insight from a diverse group of program participants including: 1) current patients receiving a CSA prescription, 2) past and current CSA program farmers, and 3) healthcare providers who have helped coordinate and administer the program. Key findings suggest that the program provides a range of benefits to patients (decreased food insecurity, increased vegetable consumption), farmers (steady income), and the planet (support of local farms practicing environmentally-conscious practices). Several challenges remain, including identifying sustainable program funding, articulating shared program goals, and streamlining the efficiency of program delivery. Recommendations and insights for future consideration include opportunities for developing long-term program funding through innovative healthcare options (e.g. insurance reimbursement, group medical visits), and refining eligibility criteria and/or program resources to support patients with diagnosis-related dietary restrictions.

Background

Healthcare strategies that promote the adoption of and adherence to healthy behaviors have the potential to both significantly reduce the carbon footprint of the healthcare sector and improve quality of life for millions of Americans. A large body of evidence shows that eating a healthy diet overall can improve health outcomes for people (Quek et al. 2021), while newer research shows that plant-based, low-meat diets in particular can reduce the burden that humans place on planetary systems (Beal et al., 2023; Guasch-Ferre and Willett, 2021). Current estimates suggest that up to only one quarter of Americans follow a plant-rich diet (Consavage et al., 2023), and in Vermont only 16% of adults consume the recommended daily intake of vegetables (Lee et al., 2019). Given the benefits to both people and planet from eating lower on the food chain, there is a need for identifying effective strategies that encourage the adoption of and long-term adherence to plant-based diets in the U.S.

Produce prescriptions are one strategy that healthcare systems have employed to support an increase in vegetable consumption among Americans. Produce prescriptions around the country provide regular access to fresh vegetables for patients within healthcare systems through a variety of forms including cash-back rebates, vouchers, garden-based programs, subsidized food boxes, home-delivered meals, and collaborative food pantries (Veldeer et al., 2020). Growth in produce prescription programs across the country are largely attributed to support from the Wholesome Wave non-profit operating in 27 states, and the USDA Gus Schumacher Nutrition Incentive grant program (Little et al., 2022). Several produce prescription programs have been evaluated for their effectiveness in increasing vegetable consumption, as well as for their association with improved health outcomes. One recent systematic

review reported an average increase in fruit and vegetable consumption of 22% across 13 programs (Bhat et al., 2021), while another review of 22 programs reported clinically significant improvements in health outcomes including glycated hemoglobin, blood pressure, and body mass index associated with improvements in food security and fruit and vegetable intake among recipients (Hager et al., 2023). It is important to note that currently published research is consistently critiqued as being very limited, and many questions remain regarding the effectiveness and cost-benefit of these programs, especially regarding the effect of produce prescriptions on long-term vegetable consumption, shifts toward plant-based diets, and health outcomes among recipients. In addition, scientific evidence of the planetary health outcomes of produce prescriptions is extremely limited.

Brief History of Farm Shares for Health CSA prescription program at UVM Medical Center

The University of Vermont Medical Center (UVMHC) in Burlington, Vermont first began offering produce prescriptions in 2012 through the Vermont Youth Conservation Corps' "Health Care Shares" program. More recently UVMHC transitioned to working with additional farms in the region and updated the name of the program to "Farm Shares for Health" (FS4H). Funding for the program is provided directly from the UVMHC Nutrition Services annual programmatic budget, as well as supplemental grants. In the early days of the program, clinical staff would identify potential patient recipients through various eligibility criteria including food insecurity questions on patient intake questionnaires and screening for certain chronic health conditions with known association to low vegetable consumption. Farm partners delivered CSA shares directly to primary care clinics, where volunteers from within the clinical staff would distribute the food share boxes directly to patients in the program. In addition, these volunteers would highlight recipes that corresponded to the produce in the share each week. Over the years, participating primary care clinic sites included UVM Family Practices at Colchester, Hinesburg, Milton, and South Burlington.

In 2022, for several reasons including decline in patient enrollment from primary care and logistical difficulties associated with the Covid-19 pandemic, the program shifted its focus away from primary care and instead began providing CSA shares to patients receiving care through UVMHC's Comprehensive Pain Program (CPP). Patient recruitment in 2022 relied on a simple "first come, first served" email invitation to all CPP patients, and there was no food insecurity eligibility requirement. Interest in the program was high and every available share was taken within 30 minutes, and program staff developed a waitlist for future programming. The waitlisted patients were offered a CSA share the following season in 2023. In addition to the CPP waitlisted patients, the FS4H program also received grant funding to provide shares to food insecure patients receiving care through UVMHC's oncology clinics in 2023.

Study Objectives and Overview

This report summarizes the results of a pilot research project that investigated the challenges and opportunities associated with the FS4H program. The primary goal of the study was to examine the outcomes of the FS4H program in relation to both clinical and farm participation in the program, while providing insight and recommendations in support of future food prescription programming. To achieve

this goal, we collected data during the 2023 FS4H season during which the program worked with three local Community Supported Agriculture (CSA) farms to provide weekly food shares from June to October to 59 people receiving healthcare through UVMHC.

We worked with FS4H program coordinators and staff to design research questions and identify people (patients, healthcare providers, and farmers) to invite as participants in this study. Data collection included: 1) pre- and post-program surveys of 2023 UVMHC patient FS4H recipients, 2) interviews with UVMHC healthcare professionals, and 3) interviews with farmers. This research was approved by the University of Vermont Institutional Review Board (survey study: CHRBSS 2578; interview study: CHRBSS 2848).

Findings

Health-related outcomes among patients receiving FS4H in 2023

From June through October 2023, a total of 59 UVMHC patients received a farm share through the FS4H program (26 cancer patients who met food insecurity eligibility criteria, 33 Comprehensive Pain Program patients who were not restricted by food insecurity). Of these program recipients, 39 participated in the pre-program survey while 30 completed the post-program survey. Program coordinators were interested in two specific outcomes among farm share recipients: food security and vegetable consumption. Regarding food security, overall, program recipients indicated an increase in food security during the program (Table 1). However, it is important to note that a subset of recipients indicated that during the program they often experienced more worry about whether their food would run out before having money to buy more. Regarding vegetable consumption, program recipients indicated a slight increase of 0.1 cups in vegetable consumption per day during the program (Table 1).

Table 1. Comparison of food insecurity & vegetable consumption before and during the 2023 Farm Shares for Health program among patient recipients (pre-survey n = 39, post-survey n = 23).

Question	Pre-program survey (%)	Post-program survey (%)	% Change pre to post
In the past 30 days, we worried whether our food would run out before we got money to buy more.			
Never	46.2	75.9	+ 29.7
Sometimes	43.6	6.9	- 36.7
Often	10.3	17.2	+ 6.9
In the past 30 days, the food we bought just didn't last and we didn't have money to get more.			
Never	56.4	75.9	+ 19.5
Sometimes	6.9	13.8	+ 6.9
Often	17.2	10.3	- 6.9
In the last 30 days, about how many cups of vegetables (including 100% pure vegetable juice) did you eat or drink each day?			
Cups	2.1 Cups	2.2 Cups	+ 0.1 Cups

A strong majority of recipients indicated on the post-program survey that they were satisfied with the overall program, they felt the program increased their access to fresh local foods, they felt healthier as a result of participating, and they would recommend the program to others (Table 2). A smaller

percentage of recipients reported that the food selection they received through the program met their needs—a concern that we will revisit below in results from interviews with healthcare providers regarding the special dietary needs of people experiencing certain medical diagnoses.

In addition, program administrators were interested in knowing whether recipients experienced any positive benefits from social interactions related to FS4H, whether through connecting with farmers or with the local community during weekly farm shares pick-up events. About one third of recipients reported making social connections through the program, and less than one quarter indicated feeling less lonely because of the program (Table 2). These results may reflect the fact that most of the farm share pick-up sites were off-farm and unstaffed, making it possible for a recipient to drop-by at the time most convenient for them without experiencing any social interaction.

Table 2. Satisfaction with components of the Farm Shares for Health program among 2023 patient recipients (n = 30).

Question: Please state your agreement with the following statements:	% Agree	% Strongly Agree	Total % Agreement
I am satisfied with the overall Farm Shares for Health program.	25.8	67.7	93.5
The FS4H program increased my ability to access fresh, local foods.	6.5	90.3	96.8
The food selection I received met my needs.	45.2	32.3	77.5
I feel healthier because of my participation in the FS4H program.	33.3	56.7	90
I made connections with people through the FS4H program.	16.1	16.1	32.2
I feel less lonely because of the FS4H program.	12.9	9.7	22.6
I would recommend this program to others.	12.9	80.6	93.5

Planetary Health-related connections among patients receiving FS4H in 2023

Of particular interest to this pilot study were recipients’ awareness and perceptions of connection between the FS4H program and Planetary Health. Before the start of the program, 100% of recipients agreed that spending time outside in nature was beneficial for both people and the planet, and post-program responses showed that 32% of participants felt that FS4H had helped them actually spend more time outside than they would have otherwise (Table 3). Further research is needed to determine how CSA prescription programs contribute to people’s time spent in nature. One probable explanation for the low impacts of FS4H on time in nature is that many of the participants picked-up their weekly share at an off-farm site that was most convenient for their transportation needs and schedule, rather than visiting the farm itself where there would likely have been a better opportunity to connect with the natural environment.

Participants tended to agree that getting food from local farms could help people reduce their carbon emissions (89.5%), and that eating healthy foods supports health of both people and planet (89.5%), though a smaller percentage felt that the FS4H program actually helped them reduce their own carbon emissions (58%). Further research could help determine these discrepancies and identify opportunities for CSA prescriptions to better support the co-benefits of farm shares for Planetary Health.

Table 3. Perceptions of Farm Shares for Health Planetary Health connections among 2023 patient recipients (pre-program responses n = 39; post-program responses n = 30).

Question: Please state your agreement with the following statements:	% Agree	% Strongly Agree	Total % Agreement
Pre-program survey questions			
I believe that spending time outside in nature is a good way to support the health of both people and the planet.	26.3	73.7	100
I believe that getting food from local farms is a good way to help reduce carbon emissions.	23.7	65.8	89.5
I believe that eating healthy foods is a good way to support the health of both people and the planet.	34.2	55.3	89.5
I believe that feeling connected to people in the local community is a good way to support the health of both people and the planet.	28.9	52.6	81.5
It is important to me that my healthcare does not harm the health of the planet.	23.7	52.6	76.3
I believe that eating more fruits and vegetables is a good way to help reduce carbon emissions.	26.3	44.7	71
Post-program survey questions			
Participating in the Farm Shares for Health program helped me feel more connected to my local community than I would have otherwise.	41.9	41.9	83.8
Participating in the Farm Shares for Health program helped me do my part to reduce carbon emissions.	25.8	32.3	58.1
The Farm Shares for Health program supported my health in a way that could reduce my need for pharmaceuticals.	19.4	25.8	45.2
Participating in the Farm Shares for Health program helped me spend more time outside in nature than I would have otherwise.	9.7	22.6	32.3

Insights on the benefits and challenges of CSA prescriptions

A total of 17 people involved in providing food shares through FS4H participated in interviews for this study, including 14 healthcare providers (program administrators and staff who helped identify and recruit patients into the FS4H program), and 3 farmers (two current and one former FS4H participating farmers). These program providers described several benefits of the FS4H program that they identified over their years working with the program. In particular, the potential benefits of the program included providing assistance to patients experiencing food insecurity, supporting healthier eating, building community, and supporting the environment (Table 4). Similarly, interview participants described several challenges related to working with the FS4H program, ranging from physical limitation and transportation needs among patients, to farm labor shortages (Table 5). Each of these benefits and challenges offers insight into special considerations that would need to be taken with any future FS4H program development or revisioning.

Table 4. Benefits of the Farm Shares for Health program identified by healthcare professionals (n = 14) and farmers (n = 3).

Theme	Exemplary interview responses from healthcare providers	Exemplary interview responses from farmers
Assistance to patients experiencing food insecurity	<p>“Patients with food insecurity are challenged with the cost of food and having enough food...and the local food shelves, like they don’t have enough fresh [produce].”</p> <p>“When a patient's kind of weighing...loss of wages or you know additional expenses and paying utilities over buying healthier foods, they're going to opt out [of healthier foods in order to] cover their living expenses.”</p> <p>“Now that they're getting free vegetables, they can use that money to pay their heating bill or whatever the case may be, or for other food.”</p> <p>“[Patients] identified that the cost of traveling to get to their treatments and trying to purchase healthier foods, it just wasn’t in their budget. So many were trying to improve their diets and go to a more plant-based diet [by joining FS4H].”</p> <p>“[A plant-based diet prescription] includes healthier, more expensive foods that maybe they were not accustomed to eating...The fact that they want to do that is magnificent. It’s just a matter of is it financially feasible for them to do that?”</p>	<p>“I’ve noticed a lot of the [Farm Shares for Health] participants seem to be really grateful for the opportunity to eat really good tasting food...some participants have never had fresh, local food before. You know, some of these folks are definitely economically struggling and have been eating canned vegetables their whole life. So occasionally there’s a sort of, ‘what is this?’ There are different vegetables we grow that are new to them and I really enjoy sharing with someone what a new food is, and sometimes I’ll cut one into pieces so they can try it or expose them to a new way to make something with a fresher food. So those are the moments that make farming and providing food to people a joy. And when you add to that, that some of these folks have had economic struggles and now they’ve got the scariness of health struggles, it’s nice to be able to give someone a moment where they feel good, when for probably for a lot of the day they don’t feel particularly good whether physically or emotionally or both, because of their circumstances.” (F3)</p>
Introducing patients to new foods	<p>“They're telling us like, oh, yeah, I mean, I'm trying [vegetables] I haven't tried before.”</p>	<p>“I definitely want grow food for people who really need it, well we all need it. But a lot of people don't have access to it or don't have the recognition of the need. And I’ve had several participants through the [Farm Shares for Health] program who have said, ‘Oh,</p>

		<p>my gosh, I never knew that food could taste like this or that food could be this good. I'm never going back!' So that's like oh my gosh, talk about converter...so giving those opportunities for someone to participate for the first time in fresh food access, yeah, we'd love to be a part of that." (F2)</p> <p>"If you want to be a CSA member in Chittenden County, Vermont, there's many options and you can go become a CSA member. But if you don't even know what that is, or what kind of food comes off of local Vermont farms, if you haven't really accessed that or try that, then how are you ever going to unless someone introduces you to it, you know? So getting introduced through your healthcare provider who's saying, hey, this is something you should really pay attention to. Why don't you give this a try? And it's free, or it's low cost, depending on how the model is set up. You know? What better way to get rid of as many barriers as possible." (F1)</p>
<p>Encouraging healthy eating among patients</p>	<p>"A lot of times with chronic pain you have like inflammation, they'll have gut issues, they'll have, you know, other kind of issues. They don't have the best diets. So I think that one benefit is to incorporate the vegetables. Just that in and of itself. Like, let's incorporate vegetables. Let's show people that they can be tasty and that they can be beneficial."</p> <p>"We're seeing that, yeah, there is a correlation with people who are eating better, eating more fiber, eating more plant-based foods. This actually helps support immunotherapy and their treatment."</p>	<p>"We have these medical centers that over the years have really shifted their focus into...a more holistic approach to patient care and really looking at, like, what are all of the factors and what are the social determinants of health that overall really have the biggest impact on a patient's health...we have providers who are...telling our patients that they need more access to fresh fruits and vegetables...So having the medical centers, you know, they have that skin in the game. They're actively working to support a program like [farm shares] financially." (F1)</p> <p>"I think it's awesome and crucial, like food for medicine. I mean it's the base, right? It's where we all start with what we put in our bodies...If better nutrition is going to help [these patients] live a healthier life, then eating good food is the base...and however you can make that easier for people...that's awesome. So, I love being a part of that." (F2)</p>

		<p>“And as organic farmers who really value that you are what you eat, and combining that with people facing health struggles...if you want your body to fend off illness the best it can, then I think you ought to eat the most nutrient-dense, nutrient-diverse, and least compromised food possible.” (F3)</p>
Increasing patients’ confidence with cooking	<p>“We provide recipes and we provide information, because I think it can be overwhelming too, right? I think that the more comfortable you are in the kitchen and the more comfortable you are reading a recipe, the more likely you will be to use the food and to continue to do so in the future. And...we’ve had a couple of people who on their own have gotten a winter farm share and they’re like, hey, I signed up for this because I loved it so much.”</p>	
Connecting patients with the local community	<p>“I think the benefit of the local is...I think just like all the research that’s coming out about loneliness, and community, and...the importance of connection, and I think that’s a really common theme we see. So I do think even just seeing that local farmer...I think there’s value in that.”</p>	<p>“When I got into farming, it was like I wanted to be able to provide good food for people in a way that does not follow the industrialized food system. Like, that’s my whole purpose.” (F2)</p>
Connecting patients with nature		<p>“We have a pick-your-own garden where the members can go out and pick certain crops of their own...flowers and culinary herbs and a few other crops...people love that...mentally, they love that time and space and just being in a setting that maybe they don’t have access to otherwise in their own home or work environment...and it always strikes me when someone says, ‘Oh, I just love this moment where I can walk out in the garden,’ and I’m like, yeah, I guess I would, too, if I didn’t have one. So yeah, I guess there’s those benefits which I guess are a little more intangible.” (F2)</p>

<p>Benefit to farmers</p>	<p>“Increasing their clientele, increasing the number of people who say, hey, wow, local is better. Or...it's fresher, it's local, it's easy to get, it tastes really good. The more you get people interested in vegetables in general, but also the local stuff, that's only going to increase the people that are purchasing from them and allow them to increase their yields, allow them to maybe deliver to more locations.”</p>	<p>“Employees within the UVM Medical Center have identified patients who could benefit from a CSA share, and those patients become members within our existing framework. We haven't created a different CSA framework for them. They pick up at our already designated CSA pickup sites and they get the same shares as everybody else in our membership.” (F2)</p> <p>“Normally we sell one share at a time, so having a group come in and buy...ten or twelve shares, there's less marketing time and a good amount of money comes in a single check so you don't have to process as many checks. Those are kind of minor, but when you're doing 200 checks in kind of nice when five percent of them are one check.” (F3)</p> <p>“Diversifying the access to markets for farmers, I think that's a really hard thing in a state that's so agriculturally focused in sort of that normal model of like, sell it to farmers market, sell wholesale at the co-op, like those markets have been really tapped out...opportunities for young farmers...how do we build that next generation of farmers? I think trying to just build greater opportunities [for] where can that farm to institution relationship get built more.” (F1)</p>
<p>Benefits to the local environment</p>	<p>“I mean, I don't know that it's like true in every case, but I would hope that if you have more of a connection to the earth, but also like to the farmers, to their land, then you're going to care more about flooding or more about all of these other things that impact them...and you'd be more likely to...help....and then maybe the community would be more likely to protect it's land and protect, you know, itself because we have a vested interest in what grows here and in what we're getting out of the earth.”</p>	<p>“I definitely see the ways in which having this opportunity with [providing food shares through health care] has had, you know, both short term and long term impacts for the way that we're working with this land. I mean, every year we're doing soil testing and it's really fun to hear from our production team how we've been able to improve the organic material of the soil, which is like always so helpful. Especially coming from a land that, you know, was really like nutrient deficient because of how it had been farmed in, you know, the last 50 to 60 years before [the CSA farm] was here.” (F1)</p>

	<p>“I think [farm shares] can definitely be beneficial in that connection with the Earth and with the farms and where does food come from.”</p> <p>“Just yesterday I had a conversation with a woman...[who] was asking organic versus conventional and I can't help saying that, you know, if in terms of soil health and water quality and the farmers who are growing these things, you know, it's always wonderful if you have the choice to choose organic for all these different reasons.”</p>	<p>“Most of the farms that are running CSA programs are small to mid-scale farms...committed to sustainable, if not organic, but at least sustainable practices. [And] they're also part of our local community and our local economy. We're not shipping product from California to put into a CSA share, so it totally makes sense to support that local food infrastructure because eventually, it's my belief, in the next few generations, we're going to be relying a lot more on our local economies than we do now and we need to have that in place. We need to build those systems out more than we already have...the more we can support that model and the farms that are sustaining those models, the better off the environment's going to be for so many reasons...fossil fuel use...water...not to say that bad things don't happen on local farms. We all have our challenges...There's a lot of different farming systems out there, but in general, I would say, the less corporate the farm is, the more they rely on both the care of the people and the land within that farming system.”(F2)</p>
Benefits to the local community		<p>“For us the ‘community’ part of CSA is really important...feeding people is pretty profound in a lot of ways. When I think about kids [whose families have been members since before they were born], some legitimate percentage of their bodies is from food they ate from our farm for eight months of every year for the first 18 years of their life...and that same feeling exists for people who are participating in the [Farm Shares for Health] where, you know, this is an important piece of these people’s lives.” (F3)</p>

Table 5. Challenges of the Farm Shares for Health program identified by healthcare professionals (n = 14) and farmers (n = 3).

Theme	Exemplary interview responses
Barriers and challenges identified by healthcare providers	
Physical limitations make it difficult for patients to cook	<p>“Life is so stressful...and then when you have cancer that’s an additional layer on top, and how that impacts your ability to prepare food and access food and just thinking about what’s for dinner.”</p> <p>“I feel like a lot of our [gastrointestinal cancer] patients really struggle making foods for themselves, and I do find a lot of them turn to easy-to-make meals, something that’s microwavable. And I feel like it's hard for a lot of those folks to be able to take the time to do the meal prep...you know, I think a lot of these folks are just deconditioned and it’s hard for them to actually make that effort.”</p>
Historical barriers to eating healthy foods	<p>“In my experience, I would say it’s a handful of people who say they want the healthier food...I think a lot of our patients who are lower income have never really had access to healthy food and are used to eating highly processed foods. So, I don’t know that they really have a taste for healthy fruits and vegetables. And so some of the people I work with would say I don’t want it because I really wouldn’t eat it, even if the doctors are telling me it’s good for me. And that’s probably true of some of our economically stable patients as well.”</p>
Patients with certain diagnoses may not be the right people for FS4H	<p>“I’ll have [gastrointestinal cancer] patients who are saying they’re trying to just eat salads, and the nurses are like, ‘Oh my God, like, don’t eat salads,’ [because it causes intestinal upset]...so actually, sometimes “healthy” foods are not the right foods.”</p> <p>“We were getting feedback...like, it’s really hard to digest greens...or [they were] nauseous all the time...or just didn’t have the energy to cook the food. So maybe people in active treatment aren’t the target audience.”</p>
Transportation barriers for picking up CSA shares	<p>“Transportation is definitely an issue. And for all the patients not feeling well enough to get out and get their own food.”</p> <p>“I found with two patients last year [who were eligible for FS4H], the distance to the closest farm for them didn’t work. They were approved for the CSA, but then...notified [us] and just said it’s too far, and so [the program coordinator] passed it on to someone else. But distance, you know, to the farms was a barrier.”</p>

Barriers and challenges identified by farmers	
Lack of farm labor prevents expansion	<p>“Certainly if we had more labor we could grow more food and have a lot more CSA shares. But, we’re more limited by labor than by anything else...but for farming wages to compete with other private sector wages right now, it just doesn’t really cut it. And the people with the skills to be in the more managerial jobs, they can make a lot more money being in managerial jobs doing other things.” (F3)</p>
Winter season as a challenge for year-round food production and program expansion	<p>“One thing that we've found is that because [of] the seasonality of our growing season in Vermont, because it's not a year round thing, often it's harder for us to be playing a role in the national conversations of produce prescription...there's other programs where [they] just have coupons through a big box store, so you can buy fresh fruits and vegetables. You have to meet people where they're at, and if you don't live in an agricultural place, obviously the big box stores are going to be...important. But I just think the decision making bodies are trying to just work within our, you know, highly centralized and sort of environmentally negatively impactful food system with some of these produced prescription programs. Programs like [ours] could get swept up into our modern food system and just in the same way that like the organic certification process started as a very small movement to distinguish farms, you know, from conventional agriculture. I see the ways in which produce prescription programs [could] just kind of getting swallowed into the modern food system.” (F1)</p> <p>“The expansion that I want to see...is really just lengthening the season that we provide the shares. So in the coming winter, we're going to try and pilot a smaller number of winter shares with one of our partners, because we've increased our greenhouse and hoop house growing space. So we have a little bit more flexibility to do, you know, some winter greens, you know, root vegetable kind of smaller size shares.” (F1)</p>

Special considerations and recommendations for future Farm Shares for Health programming and policies

Clarifying the goal of FS4H

Interview participants offered several insights that may be useful with future program development. One of the primary questions raised by healthcare providers was: what is the true goal of the Farm Shares for Health program? For some, the goal of the program is to provide supplemental food—and specifically calories—for current UVMHC patients who are experiencing food insecurity.

“When I think that somebody really doesn’t have access to food, I think of calories. As much as I want to say that vegetables and fruits should be close to the top...vegetables and fruits are a luxury in the world of food security. [Food insecure people] need protein, they need carbohydrates, they need fats, and vegetables are not going to do that.”

Others saw the focus of Farm Shares for Health as increasing healthy eating through vegetable consumption.

“[Eating vegetables] is going to help lower your blood pressure. Its going to help lower your blood sugar. Its going to, you know, support your immune system. Hopefully all of those things add up to better health, better gut microbiome, those sorts of things.”

Program logistics – identifying eligible patients and meeting special dietary needs

Several healthcare providers voiced questions and concerns about how to identify patients who most likely benefit from receiving a free farm share. Food insecurity was a primary interest for many, along with concerns about ensuring that the farm shares would be given to people who would be able to fully utilize the resource. Of particular interest were concerns about patient interest in eating fresh produce, as well as limitations posed by certain diagnoses that influence the ability to eat certain vegetables. Many staff members voiced concerns that such limitations should be considered when determining program eligibility.

“I certainly think that there should be an element of need, you know, making sure that people who really have barriers to [accessing] healthy, fresh produce should be identified...whether they're in some sort of food desert where they are, or if it's a financial barrier. So all of those sort of concrete things I think are really important, but I also think an interest in wanting to use, you know, do more cooking at home, a curiosity about cooking at home...I think that's also really important.”

“We get to know these people fairly well you know, and figuring out what their transportation may be...can they get to a [CSA pick-up location]...but also what is the need? What's the motivation? Are they going to use it?...if I'm seeing somebody that's having diarrhea, you know, or bowel obstruction, having difficulty swallowing, would they still be eligible?”

“Once we have the list [of eligible patients], we go through and call people and see if they're interested...[we ask] Are you able to pick up your farm share? Are you able to prepare foods?”

Can you eat fruits and vegetables? Do you like them? Essentially, are you going to use the farm share?"

Both healthcare providers and farmers suggested various strategies to help overcome dietary restrictions among certain patient populations, including: 1) focus enrollment for people who are not in active treatment that limits their ability to tolerate/eat certain foods, and 2) work with farms to allow patients to customize the produce they receive. The simplest option described was for patients to have the option of a "take one, leave one" box:

"We'll work with partners sometimes where they might [set-up] a take-one-leave-one kind of box...it's like all the folks who are on Coumadin blood thinners will just leave the kale and somebody else will come and grab the kale. Like a lot of brassicas interact specifically with that drug...and so a lot of partners are very adaptable and we always say to folks, you know, you can leave something at the pick-up site. There's going to be plenty of other folks coming by that, you know, will probably want to take some of the veggies that you don't want to use." (F1)

Other farmers described options that allow CSA members (including FS4H recipients) to select their own produce, rather than receiving a pre-packed box of food. One option was farms that utilize a "credit" card system where CSA members (including FS4H recipients) select their own food types and amounts from the available options, and simply deduct the cost from their seasonal account. This type of system also allows recipients to follow a schedule that best fits their needs—rather than receiving a share each week, recipients at these farms could choose to purchase the amount of food they wanted each week or even skip weeks and use the credit card balance as they preferred. Program coordinators did note that despite these benefits, it was possible for recipients to choose foods other than fresh produce (e.g. eggs, meat) at these farms. (Note that in the case of food insecure patients, receiving calories such as from eggs and meat may be more important than fresh vegetables.)

"The shares that we're pre-bagging right now, we don't do like a customization...[but] we do have a farm stand card scenario where people can buy a farm stand card that they can then buy produce out of our farm stand. They can select whatever they want and they just swipe that card. And so if that makes more sense for people with dietary restrictions where they could just come whenever they want, we're open year round and they could select the products that work for them and then just take that off a card...[so] the organization could purchase a certain number of those cards." (F2)

"Not everybody likes everything in a CSA. So we were trying to make it so we didn't lose members because they were forced to take [foods] they didn't like. Over time, we moved to an even more flexible model which we have today, which is basically a gift card that is the value of the amount you sign up for...and you basically use that card up over the season. So not only do you not have to choose from between a few [produce items], but you can even not come for a week and you don't miss your food [share]. So we've created the ultimate flexible CSA...We have had it year-round in the past, but broken up into seasons so you still have to use up your card by a certain date. So you don't have too much money carry over into a different season or year, because that throws off the function of the system of CSA for the farmer." (F3)

This farm also stressed that if a member tells the farm that they've had a challenge that prevented them from coming to get their food share, "We're going to make it work. We're going to let their card extend

longer past the end of the season, for instance, in certain circumstances. That's the 'community' part. And our model works well for people who live farther away. They might tell us they can only come once a month. That works well with the way our program works. I mean, it does mean you aren't going to get fresh vegetables every week if you can only come once a month, but it will last for two weeks if it's harvested that day or the day before. And they can get some [vegetables like roots and onions] that will last for a month in the fridge." (F3)

One farmer described another option that might work well for customizing a CSA share to support certain dietary needs. This farm had recently worked with a local fitness club to open a wholesale account to keep the costs down for the club members while also allowing the club to select certain produce and customize food shares. With this approach the farmer stated that, "our handling is minimized so we can give you a better price and if you have the people in place to set it up, then your customers can get more specific to what they need...So that's definitely a way that you know we could move product to people at a more affordable price if there's someone in place to coordinate it at the pickup site...Or maybe you can have a little self-serve set up there where if the doctor's office had a fridge it can be like grab a bag of carrots, grab a bag of lettuce on your way out." (F2)

Program logistics - Overcoming transportation barriers for patients

Several interview participants noted that transportation can pose a barrier for many current and potential FS4H program recipients, and suggested several ideas for better accommodating transportation needs. Some healthcare providers questioned whether CSA shares could be delivered directly to patients' homes, healthcare clinics during regularly scheduled group medical visits, or through the weekly farmers market at UVM Medical Center. Others suggested that the best option for many patients might be to offer pick-up sites in the places that patients already frequent, such as schools, healthcare centers, community centers, or libraries. Any next steps for delivering farm shares to patients would need to be thoughtfully approached to ensure accessibility and convenience for both recipients and farmers.

One farmer addressed this question by sharing their recent experience with adding-on a new delivery site. The important thing to consider is what burden an additional site would add to the farmer:

"We're [dropping off shares] in the Greater Burlington area twice a week every week. So it's not that hard to add on some sites...this past summer we did just that with some senior centers that had gotten some grants where they could access local food and they bought CSA shares...we dropped them at the senior centers, and you know, that was a little more work for us, but it was on our route so, you know, it wasn't too bad." (F2)

Recommendations for streamlining program administration

The healthcare providers who were most involved in helping to identify, recruit, and enroll patients in the FS4H program expressed concern about the amount of time required to perform these duties, and suggested several ideas to help improve the efficiency of these tasks. It is important to note three specific comments that arose through interviews regarding patient identification, recruitment, and enrollment. First, program coordinators reported the amount of time required for the enrollment process as a burden and potential program barrier. These staff members described being caught in a game of "phone tag" at times when trying to speak with eligible patients to ensure that the program would be a good fit for the patient:

“Not everybody responds in a timely manner, and so then I just have to be cognizant of how many times am I trying to connect someone before they’re not going to be eligible anymore.”

Second, it would be beneficial to increase awareness of the FS4H program among healthcare providers, especially those who regularly recommend a plant-based diet to patients, so they can refer patients directly to the program. Finally, since the program currently runs only for the summer CSA season (June – October), the workload for program coordination is for a limited time (typically April – May for identifying and enrolling eligible patients). Any potential future program expansion beyond the summer season would need to consider staffing and workload requirements needed to successfully support patient identification and recruitment. One suggested option would be to enroll patients on a rolling basis over the course of the year, rather than all at once.

Options for overcoming barriers (time, efficiency in administering the program) include having a centralized staff position that coordinates the program, with additional program champions in each unit (CPP, oncology, cardiology, primary care, etc.). The central program coordinator would be responsible for identifying and working with the farms (assigning and paying for shares, providing contact information for recipients to be added to farm listservs, etc.), developing eligibility screening tools and recruitment materials, and providing educational resources to help educate patients about the vegetables in their shares, and how to cook with fresh produce. The clinic champions would be program liaisons responsible for helping identify, recruit, and enroll eligible patients. In particular, some healthcare providers felt that clinical staff have built relationships with patients that provide an extra level of program support:

“Our patients know us, they know our names, and there’s camaraderie and trust...[and it sends a message that] the practitioners in this clinic care about you. We’re not just shipping you off to this other clinic where...you might feel disconnected.”

However, other healthcare providers felt that program champions within departments would not have the “time, energy, motivation...or flexibility” to help coordinate the program and would be better with referring patients to the central coordinator for enrollment. One innovative suggestion for identifying eligible patients was to provide fliers, newsletters, or other communications to patients with a link to an online eligibility screening tool that would increase patient awareness about the program while decreasing the need for staff to identify and recruit potential program candidates. In addition, some staff expressed an interest in having FS4H recruitment fliers, eligibility screening tools, and program materials on a shared network drive so providers can easily access and share with patients.

Recommendations for resources to provide to FS4H recipients

Several healthcare providers expressed a desire for the program to offer additional education and resources to program recipients, such as cooking classes, culinary medicine demonstrations, and similar education and support for learning how to integrate fresh produce into healthy eating. At the same time, some healthcare providers felt that the current resources would benefit from being streamlined, especially since many of the farms send out weekly information describing what produce is in the share that week along with recipes.

Echoing concerns noted above regarding dietary restrictions for patients with certain diagnoses, several healthcare providers voiced the need to offer tailored recipes and resources to patients regarding their

specific dietary needs. For example, providing resources for people experiencing gastrointestinal cancer who are unable to eat raw salad greens, or patients undergoing radiation to the pelvis who should be taught to make applesauce rather than eating raw apples to decrease the risk of diarrhea.

Other specific comments that may be useful for re-designing program resources included making sure recipes are very simple for people undergoing treatments that decrease their energy:

“Break down as many barriers as possible for [people] to eat healthy.”

“Get people excited, you know...hey, this can be easy. Don’t make it more difficult than it needs to be, right?”

This would include providing very simple recipes for people undergoing treatments that change their sense of taste or decrease their ability to tolerate foods:

“As simple as like, hey, here’s these apples. You can stew them. You just need water, you know, you don’t need a lot of extra stuff. You can add cinnamon. You can do something really simple.”

Other recommended resources included group classes:

“...maybe once a month have a remote cooking class or talk about nutrition or something...maybe it would be helpful for some patients to feel like they’re a part of this larger community. It’s not just this box [of vegetables] and these recipes that land on my doorstep and that’s that...for some people, I think that what I hear from so many patients is about loneliness and not feeling connected and not feeling supported. So if this [program could say] okay, you have this box of things and now we can take half an hour to do a simple recipe together. Maybe that would be another way to make it feel doable for patients.”

...and incorporating health coaches into the program to support healthy behavior change:

“I think that health coaching has tons of opportunity and potential for being a partner with, you know, people who are receiving farm shares.”

Considerations related to farm partners

It is important to note several considerations regarding building long-term, reciprocal relationships with the local CSA farming community. Among healthcare providers, there was a strong interest in providing opportunities for patient farm share recipients to visit the farms where their food is grown, especially for people who pick-up their weekly share off-site.

“It might be more of a challenge too, but if one of the goals is to have people interact with the farms and have that connection and have that experience, and there's so many people that can't because you know they're far away...I was thinking that would be kind of cool if people are interested to do, like, set up farm tours and just say, you know, like once a month, if you're interested let us know, we'll put you on the list and, you know, we we'll find a way to get you to the farm that you're getting your food from so you can interact with the farmer. So you can see what the farm looks like.”

As noted above, some of the most important insights gained through farmer interviews were that CSA farm partners shared a strong dedication to growing healthy food for their communities and a willingness to develop innovative solutions that have reciprocal benefits for both the CSA members and

the farmers. Perhaps unsurprisingly, funding is a major constraint for CSA farmers, and interview participants noted that CSA prescription programs like FS4H can provide a consistent source of funding that allows farmers to expand production, pay a living wage for hired labor, and employ environmentally-supportive and regenerative agricultural practices. Importantly, farm partners are feeling the effects of recent cuts to pandemic-era funding, which had allowed medical partners to expand access to farm shares for patients:

“They had that influx of COVID funding to support their patients... we've had partners that we had been able to work with who suddenly found out within the span of months, like, all of our funding has just been cut to support buying produce. So, it's been difficult. We're having to find this balance... and inflation has been so impactful on the cost of things. Like, just the cost of seed alone, for example. Like this year we went to buy organic tomato seeds and a single seed cost like \$1.50...we're trying to contend with, like, OK, these partners are losing this funding at the same time that inflation has finally really started to impact us in a very big way.” (F1)

“[Our CSA peaked] in COVID, we got another 75 shares that year. But that fell away pretty quickly over the next two years. You know, we try to remind people, your CSA is only here if you keep it here. Folks were scared about getting food so they signed up for CSAs...and now we're down closer to around 200 [shares].” (F3)

Clear communication about healthcare program needs and funding availability will be key to ensuring mutually beneficial continued partnerships that support farm partners into the future and ensure the continued availability and success of CSA prescription programs.

Potential funding sources

Funding was noted as the primary constraint for the FS4H program, in general. The current FS4H funding model relies upon the hospital's operating budget and requires administrative approval. Many of the healthcare providers expressed concern about the sustainability of program funding and suggested a few options for longer-term program funding including grants, receiving a commitment from a philanthropic donor, holding fundraiser events, or working with insurance to cover the cost. One healthcare provider suggested the possibility of working with insurance companies to offer funding for CSA shares as part of wellness benefits, similar to gym memberships that some companies offer. Another stated:

“Across the country, a lot of programs that do some kind of produce prescription are starting to be able to get into the realm of insurance reimbursement...you know, patients having that as a claim that they can put through insurance.”

A few healthcare providers suggested that incorporating CSA prescriptions into group medical visits might provide a sustainable insurance-based option for continued program funding. In such an approach, CSA shares would be provided as part of regular group medical visits on a weekly or bi-weekly schedule where participants would receive culinary medicine education (e.g. cooking demonstrations, recipes and cooking instruction) from a healthcare provider and the session could be billed to insurance. Part of the funding could then be used to pay for the CSA share, thereby helping to support and potentially expand the program. In addition, one healthcare provider felt that integrating FS4H into

group medical visits would provide additional benefits to patients, “I think in the long run, that’s what’s going to help people keep some of these [healthy eating] habits...long-term is working with them around behavior change.”

Finally, one of the farmers pointed out an optional employee deduction program as a model that has worked successfully in other healthcare systems in Vermont:

“So when an employee signs up to work with that medical partner, they can actually choose [to] send like \$10 every paycheck to this healthcare share program.”

Future Opportunities for Produce Prescription Farm Partnerships at UVMMMC

High rates of food insecurity coupled with steady rates of diet-related diseases and increasing concerns about access to healthcare in Vermont suggest that there will be a need for programs that provide fresh produce well into the future. For the 2024 FS4H season, program coordinators implemented an online eligibility questionnaire to help identify potential program recipients. At the time of this report, 134 people had applied for a CSA share for the 2024 FS4H season, and funding was available to cover the cost of approximately 30 total shares.

The results of this study suggest multiple benefits to FS4H program participants, including both patients and farmers, and several avenues exist that could allow program sustainability and potential expansion in the future. In February 2024, the U.S. Centers for Disease Control and Prevention (CDC) released a new website on Strategies for Fruit and Vegetable Voucher Incentives and Produce Prescriptions (<https://www.cdc.gov/nutrition/php/public-health-strategy/voucher-incentives-produce-prescriptions.html>) that offers a thorough overview of state and local activities, including opportunities for healthcare to support access to fresh, local produce, and best practices for structuring food policy councils. Future work to build and strengthen partnerships between local farms and healthcare institutions in Vermont will benefit from ensuring representation from the diverse perspectives of farmers, patients, and healthcare providers.

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