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FOOD AS MEDICINE: CURRENT EFFORTS AND POTENTIAL OPPORTUNITIES

HEARING

BEFORE THE

SUBCOMMITTEE ON
FOOD AND NUTRITION, SPECIALTY CROPS,
ORGANICS, AND RESEARCH

OF THE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

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C O N T E N T S

Tuesday, December 13, 2022

FOOD AS MEDICINE: CURRENT EFFORTS AND POTENTIAL OPPORTUNITIES

Tuesday, December 13, 2022

U.S. SENATE
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research
COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY,
Washington, DC.

The Committee met, pursuant to notice, at 10 a.m., in room 328A, Russell Senate Office Building, Hon. Cory Booker, Chairman of the Subcommittee, presiding.

Present Senators Booker [presiding], Klobuchar, Bennet, Smith, Luján, Braun, Boozman, Ernst, Marshall, and Fischer.

STATEMENT OF HON. CORY BOOKER, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator BOOKER. I keep forgetting when I am rolling with Senator Braun that he is fashion forward, on time, tie-less, and he is what the Senate should be, although I hear he may be leaving me to another job soon, which, as a person who has been in that problem I feel already sad.

I am really grateful to be here, and I want to begin by heaping more praise on Senator Braun. Early in this Congress, when he and I both got this post, this Chair and Ranking, we talked a lot about our common ground, and this idea that the private sector was doing a lot to reduce prices really intrigued us a lot, as well as increased health.

I want to just thank the witnesses that are here. I want to let you all know that we have been, as a team, focused on the nutrition crisis that our country is facing.

Voice. Gavel in.

Senator BOOKER. Oh, I am sorry. All this official-ness. We have begun. How is that? Good? That satisfies it? All right.

Senator Braun and I have been focused on the nutrition crisis, and I want to start today by reminding our audience of the scale of the crisis we are facing in America and the explosion of diet-related diseases.

Currently in the United States, half our population is pre-diabetic and has type 2 diabetes. Each month diabetes causes 13,000 new amputations, every month, 5,000 new cases of kidney failure, 2,000 new cases of blindness in our country, and that is something that is not exclusively affecting older people. We are seeing growing rates of diabetes in our youth as well. One-quarter of our teenagers today are pre-diabetic or have type 2 diabetes.

Much of that can be attributed to the alarming fact that ultraprocessed foods now compose two-thirds of the calories in the diets of our children and teens. It is estimated that half of all children today will be obese by the time they are 35 years old—half of all children today.

Broadly speaking, diet-related chronic diseases are now the leading cause of death in the United States. According to the FDA, on average, 2,700 people die per day from diet-related diseases, and the effects of diet-related diseases are not limited to the health care field. They are causing an economic crisis that is spiraling out of control. Nearly 1 out of every 3 dollars in the Federal budget now goes toward health care spending. In five years, the health care costs of type 2 diabetes alone has risen 25 percent to a staggering $237 billion. This is simply not sustainable in the long term.

Right now it is imperative that embark on a whole-of-government approach to address diet-related diseases, and one of the most promising solutions that we can adopt is something that is alluded to in the 2000-year-old writings of Hippocrates, and it is rooted in the practices of many of the indigenous communities in our own country. It is the idea that the food we eat is intrinsically tied to our health, the growing recognition that food can act as medicine. Researchers, health care professionals, farmers, policymakers across the country are already putting this idea into practice and achieving successes.

Let me take you back in time. When I was mayor of Newark, one of the challenges we faced was the fact that many communities in our city were suffering from food deserts, places where residents did not have access to healthy food. We did many different things to address this crisis, including starting to grow more fruits and vegetables and distribute them locally in our city.

One of the projects was the creation of the largest urban farm in New Jersey, a multi-acre farm on an entire city block in a low-income neighborhood. I recently went back and visited that farm. While there I met two women who came up to me and told me their stories. The first one said that she had been having gastrointestinal issues. For the treatment, she was paying $100 per month co-pay for medication. The Federal Government took on the remaining cost of $600 a month for her prescription drugs. She was able to change her diet by taking advantage of the Gus Schumacher Nutrition Incentive Program (GusNIP), run through the New Jersey-based nonprofit City Green, which allowed her to double her Supplemental Nutrition Assistance Program (SNAP) benefits for the purchase of fruits and vegetables. When the woman used the GusNIP program at the community farm to incorporate substantially more fruits and vegetables, she saw her gut issues disappear.

The second woman was in her 80's and was a diabetic. After she began to source the majority of her food from the farm she told me that her diabetes went away.

Those two stories are not anomalies. We hear today from our witnesses about how food as medicine programs can be transformative for the health of individuals and families receiving foods, as well as lowering costs. We will hear how these programs can lead to that health care cost savings and the savings of human misery.

Finally, our witnesses will testify how programs like GusNIP, Double Bucks and produce prescriptions can be transformative economic opportunities for families across the country. These investments are enabling farmers to grow healthy food for their neighborhoods and are helping to build resilient local and regional food systems.

I am encouraged to see the Federal Government begin to recognize the promise of food as medicine. In September, as part of the White House Conference on Hunger, Nutrition, and Health, which Senator Braun and I led the call for, the White House released a bold blueprint to end hunger, improve nutrition, and reduce the epidemic of diet-related diseases. A key component of the national strategy is a call to continue researching and scaling up of food as medicine programs such as funding pilot programs to integrate medically tailored meals and nutrition counseling into our Medicare and Medicaid programs. Although these are promising steps, we also need to integrate food as medicine strategies directly into our FDA programs.

This is a top priority for me in the Farm Bill will be to increase the incentives for farmers to grow fruits and vegetables to a level that we currently support in commodity crop production. Our dietary guidelines tell us that 50 percent of the food we eat should be fruits and vegetables, but less than 10 percent of our farm bill subsidies currently go there.

One, we must substantially scale up programs like GusNIP, and two, we should create a new USDA specialty crop food box program to provide locally sourced fruits and vegetables to Medicaid participants. I look forward to working with Senators of both sides of the aisle on these commonsense, pragmatic steps to make for a healthier America and lower costs in our Federal Government.

I am excited about the witnesses, I am excited about the insights that we are going to hear, and I want to recognize my friend and someone who has been such a strong partner on these issues, Senator Braun, for opening comments that he would like to make.

STATEMENT OF HON. MIKE BRAUN, U.S. SENATOR FROM THE STATE OF INDIANA

Senator BRAUN. Thank you, Mr. Chairman. It is interesting when you come together on a topic like this that should be so obvious to everyone, that an ounce of prevention is worth a pound of cure.

We have been at it with the White House forum that was put together, but I go back to when I was a CEO. I did that for 37 years prior to becoming a Senator. You know, it was 15 years ago when I said enough is enough, with how lucky I am that my health care costs are only going up five to ten percent this year. I had to do something, just like you did as mayor, that was going to take a dynamic that was built in and try to change it.

Very simple. When they told me that so much of the health insurance cost is not a catastrophic accident or a very catastrophic disease. It is the minor health care that you overuse and use too much of due to type 2 diabetes, heart conditions that brew over a long period of time.

In a nutshell, I took all that, because I was frustrated, and we built a system based upon wellness and avoiding the health care system in making my employees engage in their own well-being, created the incentive, gave them a free biometric screening. If you did not get it, you were going to get penalized because you were not doing the right thing.

We did all of that, and all I can tell you is I checked just to make sure how we were doing, since I have not been there for a while, thinking we were eating a lot of cost increases. Employees have not had a premium increase in 15 years, and they go into their deductible less now than they did then because they have become health care consumers.

In a nutshell, that is what we need to do more broadly across the country and try to incentivize that through this Committee and how we can just get that word out again that an ounce of prevention is worth a pound of cure.

According to the CDC, nine percent of Americans do contend with type 2 diabetes, 33 percent have pre-diabetes. American Heart Association, half of American adults have cardiovascular disease or hypertension, two of the easiest things to treat, No. 1, but even before you get into a treatment you can avoid it by lifestyle changes. If left untreated they become a significant health care consequence.

Nutrition and wellness are the ideas that each of us should incorporate into our lives. Companies need to be promoting it across the country, and at every level of government we need to be getting the word out.

Market mechanisms need to come into play as well. Basically what I did is create an incentive for my employees to be health care consumers, not just telling them to do it, offering those tools of wellness that created kind of a mini-market that got everybody thinking in that same direction. It got people to acknowledge what their own health care issues were. They embraced that free biometric screening, and you heard the results.

Through employers, through government we need to all be working in that direction. If not, we are never going to address the fact that health care is 20 percent of our GDP. That is nearly 50 percent more that almost all other developed countries, and they generate results that are as good as ours. A lot of what ails our health care system is overutilization because we have never changed the lifestyles that take us into the health care system in the first place, and that starts with your diet. What you eat is what you are.

You know, how we are going to get to the point where we convince all of America, we do it through our agriculture programs currently. You know, we push nutrition. Something just seems like it is not quite working. I think we need to find, with all the money that we have spent over like 200 programs, 20 agencies, there may need to be a focus on this in and of itself. Because like back in Indiana, when we were working on work force development, we had 20 agencies spending tons of money, not coordinated, never to get to the right results there. We started focusing on it, started getting to some of the solutions on something unrelated, but it was disaggregated.

I think here what we ought to strive for is maybe to focus on how we narrow this into something that focuses purely on what has got

to be one of the most important things in our society—how do you eat well to avoid the health care system in the first place? How do you take care of yourself so that you prevent it before you get there and have to spend a fortune on getting remediated?

I yield back.

Senator BOOKER. Thank you for that opening statement. Let the record show that I said "Hallelujah, amen" to his comments.

I want to recognize that the Ranking Member of this entire Agricultural Committee is here, the powerfully pragmatic pugilist, Senator Boozman. I do not know if you want to say anything at all, sir?

Senator BOOZMAN. No. Thank you.

Senator BOOKER. All right. Then I am going to go ahead and introduce the witnesses, and I am going to start with Martin Richards. Mr. Richards is the Executive Director of the Community Farm Alliance in Kentucky. Formed from the farm crisis of the 1980's, Community Farm Alliance is a Statewide, grassroots organization whose mission is to organize and encourage cooperation among rural and urban citizens and to ensure an essential, prosperous place for family scale agriculture in economies and communities.

Mr. Richards has been an active member of the Community Farm Alliance for over 20 years. He has served on the board as board chair and as Executive director since 2010. From growing up in steel towns to Kentucky's tobacco fields and coal towns, Mr. Richards has a long history of working with communities to revitalize their economics. Prior to the Farm Alliance, Mr. Richards was a tobacco and cattle farmer.

I want to thank you for being here, Mr. Richards. I am grateful for you.

Ms. Leah Penniman is a Black Kreyol farmer and mother, author, and food justice activist from Soul Fire Farm in Grafton, New York. It is finally good to see you in person. She co-founded Soul Fire Farm is 2010, with the mission to end racism in the food system and reclaim our ancestral connection to the land. As Executive Director and Farm Director, she is part of a team that facilitates powerful food sovereignty programs, including farmer training for Black and brown people, a subsidized farm food distribution program for communities living in food deserts, and domestic and international organizing toward equity in the food system.

She is a member of clergy in the West African Indigenous Orisa tradition, and through her work at Soul Fire Farm she has been recognized by the Soros Racial Justice Fellowship, Fulbright Program, the Pritzker Environmental Genius Award, Grist 50, and James Beard Leadership Award, amongst other. Extraordinary.

Thank you so much for being here today.

Dr. John Bulger is the Chief Medical Officer for Grisinger

Am I pronouncing that right?

Dr. BULGER. Geisinger.

Senator BOOKER. Geisinger. Forgive me. My staff told me that seven times—Geisinger Health Plan, which is Statewide a health care provider and insurance company in Pennsylvania that serves more than one million people. I am just mad that the Giants lost to the Eagles recently. That is why I am doing this.

Dr. Bulger is responsible for working with community partners to improve the quality of medical care for the patients and members of Geisinger Services.

Dr. Bulger is a general internist and has practiced in inpatient and outpatient settings. Dr. Bulger earned his bachelor of science degree from Juniata College in Huntington—help me out here, sir. Come on. I am failing. I am sinking here.

Dr. BULGER. Juniata.

Senator BOOKER. Juniata—Pennsylvania, and his Doctor of Osteopathic Medicine degree from Philadelphia College of Osteopathic Medicine. He also holds a master's degree of business administration from Penn State University.

I want to thank you for being here, even though I have butchered multiple times the things you are working on so well.

I want to turn to my Ranking Member Braun who will introduce our next two witnesses.

Senator BRAUN. Thank you, Mr. Chairman. Our next witness is Dr. Kevin Volpp, who is Founding Director of the Center for Health Incentives and Behavioral Economics, and the Mark V. Pauly President's Distinguished Professor at the Perelman School of Medicine and Health Care Management at Wharton at the University of Pennsylvania.

As you will hear today, Dr. Volpp's work focuses on developing and testing innovative ways to apply behavioral economics in improving patient health behavior and affecting provider performance. He has also worked with groups at nearly every point in the health care delivery chain to test the effectiveness of different behavioral economic strategies in addressing tobacco dependence, obesity, and medication non-adherence.

Dr. Volpp earned his MD from the University of Pennsylvania's Perelman School of Medicine, and a Ph.D. in health economics, public policy, and management from Wharton at the University of Pennsylvania.

The final witness this morning is Dr. Bob Chestnut. Dr. Chestnut serves as the Chief Medical Officer at Cummins. Cummins is a great company, not too far away from where I live, in southern Indiana, Columbus, Indiana. In this role he works with other key leaders within the company to support the physical, mental, social, and financial well-being of Cummins employees and their families. Sounds like kind of what did back in my company. Love it.

Previously, Dr. Chestnut leveraged his expertise in occupational and environmental health to shape Cummins' strategy during the pandemic. He also served as a medical director at the Cummins LiveWell Center in Columbus, Indiana, for several years prior to his current role.

Dr. Chestnut earned his MD and master's degree in occupational health at the University of Utah. He is residency-trained and board-certified in both occupational and environmental medicine and family medicine.

Thank you to everyone for being here today.

Senator BOOKER. All right. To the witnesses again we thank you. We take it not for granted that you give up your time and resources to be here to testify before your Federal Government in this Subcommittee. I want to remind you that your written testi-

monies are going to be included in the record, but we are very eager to hear from you in your cogent, five-minute opening testimonies.

Mr. Richards, you may proceed first with your testimony.

STATEMENT OF MARTIN RICHARDS, EXECUTIVE DIRECTOR, COMMUNITY FARM ALLIANCE, BEREA, KY

Mr. RICHARDS. Thank you and good morning Chairman Booker and Ranking Member Braun, for this opportunity to talk about the challenges and opportunities that food as medicine presents for Kentuckians.

An apple a day may keep the doctor away. Unfortunately, Kentucky consistently ranks in the bottom five nationally for diet-related disease and leads the Nation in rates of food insecurity, with over 15 percent of Kentuckians living in food-insecure households. Kentucky also ranks 50th in the consumption of fruits and vegetables, with only 4.7 percent of the State's population reporting eating two or more vegetables or three or more fruits each day.

As a former farmer this is unacceptable. Kentucky is a proud farm State with over 74,000 family farms, the sixth-most of any State in the country, and we should be able to feed our neighbors.

To address these hunger and nutrition challenges, Kentuckians have undertaken innovative approaches from the grassroots to the hunger initiative launched by Agriculture Commissioner Ryan Quarles. My organization, Community Farm Alliance (CFA), was proud to launch Kentucky Double Dollars (KDD) in 2014, and Fresh Rx for Moms on Medicaid in 2019, as strategies for increasing the consumption of Kentucky-grown healthy foods for Kentucky families. These programs have been incredibly beneficial to recipients utilizing SNAP, WIC, and Seniors Farmers Market Nutrition Program benefits to increase their buying power at farmers markets, community markets, and retail locations.

From 2017 to 2022, this past year, over $900,000 in Kentucky Double Dollars leveraged the same amount in Federal funds, putting almost $1.9 million into Kentucky farmers' pockets and creating over $3.1 million in economic impact for Kentucky communities, and we have just begun to scratch the surface.

Equally important, 99 percent of Kentucky Double Dollar customer survey noticed positive changes in at least one of the seven food-related behaviors that we measured, and 49 percent reported positive changes in all seven behaviors.

Food security has also been severely impacted by COVID and extreme weather events. Approximately 54 percent of KDD customers said that COVID made it more difficult to access fresh and healthy foods, but 82 percent said they began visiting farmers markets more often. The KDD program seems to have provided both consumers and producers in Kentucky with an important safety net during this time of uncertainty.

The physical and human infrastructure that has developed around Kentucky Double Dollars has also played an enormous role in mitigating crises. During COVID, CFA, the Department of Agriculture, and other organizations were able to quickly provide farmers markets with additional resources and technical assistance that enabled many farmers markets to not only remain open but made

them safe places to shop. Following historic floods of 2022, this infrastructure proved to be an important mechanism for getting food to those most impacted while also supporting farmers.

It turns out building strong local food infrastructure is critical for communities to create food system resiliency in the face of adversity.

Although Community Farm Alliance administers Kentucky Double Dollars, the program is a collaboration of many organizations. Besides the 70 KDD outlets, 26 stakeholder organizations make up the KDD Advisory Council to continue to improve this program. KDD funding is also diversified with almost a dozen Federal, State, and private philanthropic organizations having contributed over the past eight years. The program's two largest funders, the Kentucky Agricultural Development Fund and USDA GusNIP programs, have been critical catalysts in helping many Kentuckians access healthy food.

Sustainability for food as medicine programs like KDD and Fresh Rx for Moms is an ongoing challenge. The USDA GusNIP grant program has been critical for CFA. However, with only $38.7 million available this year, just eight GusNIP projects were funded. Unfortunately, Kentucky Double Dollars, along with many other applications, did not receive awards that could have had an extraordinary impact on communities' food and nutrition security.

Without those much-needed GusNIP resources we find ourselves asking how to sustain this work. Food as medicine represents a vast opportunity to help Kentucky farmers, communities, and those who are dealing with diet-related diseases, but Federal funding for this work is critical. I would strongly urge that the Senate Agriculture Committee to scale up the GusNIP program while reducing the match requirement in the next farm bill so that more food as medicine projects in Kentucky and around the country can reach their full potential in both rural and urban communities.

Thank you again for this opportunity, and I look forward to any questions.

[The prepared statement of Mr. Richards can be found on page 36 in the appendix.]

Senator BOOKER. Thank you for your testimony.

Ms. Penniman, rightfully a finalist for an Environmental Genius Award, no pressure, but we are looking forward to your five minutes.

STATEMENT OF LEAH PENNIMAN, FOUNDING CO-EXECUTIVE DIRECTOR, SOUL FIRE FARM, PETERSBURG, NY

Ms. PENNIMAN. Good morning and thank you, Chairman Booker, Ranking Member Braun, and members of the Subcommittee. I am honored to be allowed to speak before you today from my 25 years of direct experience as a farmer providing food as medicine to those in greatest need in our community. I am the co-founder, executive director, and farm manager of Soul Fire Farm in Grafton, New York, and a member of the Northeast Farmers of Color Land Trust and the National Black Food and Justice Alliance. I am also a mother of two.

As a mother I know of no greater yearning than the sacred imperative to feed our children. When Emet was a newborn and

Neshima was just two, we moved to the South End of Albany, New York, a neighborhood termed a "food desert" by the Federal Government due to the paucity of grocery stores, high poverty rates, and disproportionate burden of hunger, diabetes, heart disease, and other diet-related illness.

Our family struggled to feed our children fresh fruits and vegetables, not for lack of effort but because there was no accessible public transportation, grocery stores, farmers markets, or community garden plots. In getting to know our South End neighbors, we found we were not alone in the struggle to nourish our children. In fact, around 40 million Americans live in food deserts where we cannot access or afford the life-giving foods that make us whole.

When our neighbors learned that we were seasoned growers they started teasing us—"Why not start a farm for us, a farm for the people?" We took that challenge seriously and started exploring nearby land to see which parcel would claim us as friends and stewards.

In 2006, we wed ourselves to 80 acres of eroded, Degraded, affordable mountainside land in Mohican territory which would become Soul Fire Farm. We spent years healing the soil with cover crops and mulch, regenerating the forest, building a straw bale, solar-powered home and education center by hand, and assembling a team.

Soul Fire Farm opened in 2010 from the collective yearning of Black, multiracial, and low-income families to feed ourselves. We established a sliding-scale doorstep delivery program for vegetables and eggs that allowed members to choose how much to pay, based on what they could afford. Starting with the South End of Albany, this "Solidarity Shares" grew and now covers four neighborhoods in Albany and three neighborhoods in Troy, reaching over 200 people every week. The weekly box reflects the bounty of the land's 100-plus heirloom and heritage crops, like callaloo, plait de Haiti tomato, and fish pepper.

Our members grew inspired to learn to cultivate their own food, so we created a home gardens program that provides lumber, soil, plants, seeds, and mentorship to aspiring urban gardeners. We surveyed our members, and 100 percent reported every year that they were eating more fruits and vegetables and that health indicators like blood pressure and cholesterol were improving. They also reported increased feelings of overall well-being, energy levels, and a sense of empowerment. Local health clinics started to take notice and make referrals, as did the refugee resettlement program. We could not meet the demand for no-cost and affordable doorstep deliveries of vegetables, so we started talking to other farmers and collaborating with farmers across the region. Folks like Corbin Hill Food Project, Rock Steady Farm, Poughkeepsie Farm Project, Schenectady Food Box, Sweet Freedom Farm, and Rocky Acres Farm become some of the many New York, farmer-led food as medicine projects in our networks.

Our farmers soon realized that our members struggled to afford even the lowest tier of the sliding scale pricing system, and when the pandemic hit, folks' capacity to pay evaporated completely. As farmers, we need paid for our crops in order to sustain ourselves and remain economically viable, but we could not charge our strug-

gling customers, and we were not willing to drop them from the program because of their dire economic situation.

That is why Federal nutrition programs are so important. The farmers in our network started collaborating and created partnerships and working with initiatives like SNAP, the USDA Farmers to Families Food Box Program, GusNIP, and the Farm to Food Bank Projects. These programs provide a way for farmers to access a steady and reliable revenue stream for their crops while providing food to at-risk families. It is a win-win. The farmer is able to stay afloat and communities can access nutritious food.

In preparation for this hearing, I reached out to hundreds of Black, indigenous, and people of color farmers in our national network to hear about their experience with Federal nutrition incentive programs. Every respondent who participated said these programs are essential.

By fully funding and expanding farm to community nutrition incentive programs we benefit both the farmer and the consumer, and by increasing outreach to young farmers and farmers of color we invest in the future of American agriculture.

Those young children I mentioned at the beginning of my statement are now nearly grown up, with my eldest in college studying sustainable agriculture. She wanted me to tell you that "the food system is everything it takes to get sunshine onto our plates," and as civic leaders it is our responsibility to make sure that process is unimpeded. From the farmer to the food business owner, to those with hungry bellies, it is our duty to move that sunshine along so that everyone can thrive. Thank you.

[The prepared statement of Ms. Penniman can be found on page 40 in the appendix.]

Senator BOOKER. Thank you.

Dr. Bulger, please.

STATEMENT OF JOHN BULGER, DO, CHIEF MEDICAL OFFICER, INSURANCE OPERATIONS AND STRATEGIC PARTNERSHIPS, GEISINGER HEALTH PLAN, DANVILLE, PA

Dr. BULGER. Thank you. Good morning. I would like to thank Chairman Booker, Ranking Member Braun, and members of the Subcommittee for the opportunity and the invitation to participate in today's discussions on the challenges of food insecurity and food as medicine as a viable solution to treat chronic health conditions.

My name is Dr. John Bulger. I am the Chief Medical Officer of Insurance Operations and Strategic Partnerships at Geisinger. As was noted, Geisinger is an integrated delivery system so we have clinicians, hospitals, and we also have a health plan, and in my role I sit between the two as Chief Medical Officer of the health plan but also working on the clinical side.

Geisinger has a long history of innovation, impacting the health of populations. One of those interventions that we have championed is the Fresh Food Farmacy, which was developed with the following goals in mind: One, to improve healthy food access for residents in our communities with chronic conditions. We started with diabetes. Two, to educate members on the connection between nutrition and health through clinical interactions and evidence-based programs. Three, to reduce the burden of type 2 diabetes and

related medical complications and optimize the use of prescription drugs and ultimately to lower the cost of medical care. Four, to narrow the meal gap for those who are food insecure by ensuring participants have access to at least 10 fresh, healthy meals per week for them but also for the other members of their household. Last, to collaborate with community partners to align and enhance the operations and the offerings of the Fresh Food Farmacy.

How does a Fresh Food Farmacy work? First, patients are screened in the primary care setting, one, to see if they have diabetes. We took people who had a hemoglobin A1C greater than 8, which means they are at least 1 1/2 times higher than normal for their average blood sugar. We then asked people, as well, if they were food insecure using the USDA food insecurity questions, and matched those people that had diabetes and were food insecure, to be qualified for the Fresh Food Farmacy.

Those people were enrolled in clinical interventions like care management, dieticians, diabetic education, and had consultants on a team. They were also given access to a facility, the Fresh Food Farmacy facility, which offers healthy products that meet the American Diabetes Association recommendation, which includes lean meats, whole grains, fruits and vegetables, and limited sodium and cholesterol and fat content. Then the program provides enough food to cover 10 meals per week, as I said, for the patients, but it also important that we provide those meals for the household members.

What are our results? How does it work? We have had about 1,600 patients enrolled in the Fresh Food Farmacy so far. Those are in three communities, both urban and rural—Scranton, Pennsylvania; Shamokin, Pennsylvania, which is in the coal region of Pennsylvania; and Lewistown, which is in a rural area in southcentral Pennsylvania. We screened more than 800,000 patients to get into the program. We provided almost two million pounds of food and 1.7 million meals.

What we found is we could lower the patient's average blood glucose as measured by something called the hemoglobin A1C by about half. Those beginning were about twice as high as they should be, getting them close to the normal range.

We also decreased hospital utilization, so they end up in the hospital less, and about 30 percent emergency room visits.

The one great example of this is the first person in the program, Rita. She is a 55-year-old widowed grandmother, caring for her grandchildren. When she enrolled in the program her sugar was about three times what it should be. She weighed 181 pounds, and her cholesterol was twice what it should be. After going through the program she actually had normal blood sugars, so she dropped her blood sugars by two-thirds, she lost 50 pounds, to 135 pounds, and dropped her bad cholesterol from being twice what it should be to being about half the high end of normal.

Given our initial results, we have expanded the Fresh Food Farmacy now to additional diseases like kidney disease and heart failure.

Again, I would like to thank you for the opportunity to present today on this critical health issue. We stand ready to be a resource at Geisinger for the Committee on this issue, and we are really ex-

cited about the further discussion. For the benefit of the Committee, my written testimony provides further information on the Fresh Food Farmacy, and I am happy to answer any questions you have. Thank you.

[The prepared statement of Dr. Bulger can be found on page 44 in the appendix.]

Senator BOOKER. Thank you, Doctor. I am excited about the results you are seeing as well.

I would like to now recognize Dr. Volpp for his five minutes.

STATEMENT OF KEVIN VOLPP, MD, Ph.D., FOUNDING DIRECTOR, CENTER FOR HEALTH INCENTIVES AND BEHAVIORAL ECONOMICS (CHIBE), UNIVERSITY OF PENNSYLVANIA, MEMBER, ADVOCACY COORDINATING COMMITTEE, AMERICAN HEART ASSOCIATION, PHILADELPHIA, PA

Dr. VOLPP. Good morning, Chairman Booker, Ranking Member Braun, and members of the Subcommittee. Thank you for the opportunity to testify on behalf of the American Heart Association about why food as medicine programs are promising and why more evidence is needed.

My name is Dr. Kevin Volpp, and I am the leader for the planning committee for the Rockefeller Foundation, American Heart Association Food is Medicine Research Initiative as a volunteer member of the Association's Advocacy Committee. I am founding director of the Penn Center for Health Incentives and Behavioral Economics and the Mark V. Pauly President's Distinguished Professor at the University of Pennsylvania's Perelman School of Medicine and the Wharton School.

For 20 years I served as a part-time primary care doctor and hospitalists at the Philadelphia Veterans Affairs Medical Center. Many of my patients struggled with chronic diseases such as congestive heart failure and diabetes, which were exacerbated by their challenges finding affordable, healthy food. As a behavioral economist I focused on testing strategies for improving patient health behavior and clinician performance. Through work with health plans, health systems, consumer companies, and individual patients, I developed deep understanding about what physicians, individuals, and families need to promote health, prevent disease, and manage chronic conditions.

As you know, chronic diseases represent seven of the ten leading causes of death in the United States, with heart disease as the No. 1 killer. These chronic diseases account for most of the Nation's nearly $4 trillion in annual health care costs.

The connection between nutrition and chronic disease is undeniable. For example, WIC has been shown to be associated with improved birth outcomes, lower consumption of added sugars and saturated fats, and improved academic achievement. Unfortunately, many individuals in the United States are nutrition and food insecure and do not have access to affordable, nutritious food.

Food is medicine refers to diet-related intervention for patients with a diet-related health risk or condition and food insecurity to which they are referred by a health care provider or health plan. Evidence indicates that incorporating food is medicine programs into health care can be associated with improvements in outcomes.

For example, medically tailored meals are associated with fewer hospital and skilled nursing facility admissions, fewer emergency room visits, and health care cost reductions. Produce prescription programs increased fruit and vegetable consumption and reduce household food insecurity.

That said, there are important limitations in food is medicine research conducted to date. These programs have typically been evaluated in small-scale pilot studies. Many have been conducted using pre-post assessments of interventions without comparison groups, and the measured impact of such interventions may be overstated. Only a small number of randomized controlled trials have been done, and they have typically been small and thus unable to provide definitive answers.

Food is medicine interventions have not generally incorporated freedom of choice and input from patients, reducing potential rates of engagement. Finally, these interventions have not generally been tested using intervention infrastructure or data platforms that are scalable beyond the context in which they were tested.

To unlock the full potential of food is medicine we must systematically answer important questions regarding intensity, duration, and delivery of food is medicine interventions, the role of patient preferences and choice, the incorporation of educational behavioral strategies or coaching, the comparative effectiveness of ways to change behaviors and habits, and cost effectiveness.

In conjunction with the White House Conference on Hunger, Nutrition, and Health, which came to fruition this fall, thanks to your leadership, Chairman Booker and Ranking Member Braun, the Rockefeller Foundation and the American Heart Association have committed to mobilize $250 million to build a national Food is Medicine Research Initiative, planned to launch in spring of 2023. We are designing a research initiative that will accelerate the speed of generating evidence on what works and for whom that can be used by public and private sector payers to inform coverage decisions. Working with patients and partnering with health plans, health system, food companies, and delivery services, we aim to create a platform for testing of ideas that significantly increases the availability of healthy foods to Americans, no matter where they live, our collective ability to learn from studies by integrating heretofore separate streams of data, and that facilities assessment of the cost-effectiveness of different interventions for higher-and lower-risk populations.

Chronic disease and unhealthy diets are inextricably linked. Continued Federal support for nutrition research, including food is medicine, is needed to inform our efforts to prevent and treat chronic diseases, lower health care costs, and improve quality of life.

Thank you for the opportunity to offer my perspective today and for your continued leadership. I look forward to your questions.

[The prepared statement of Dr. Volpp can be found on page 51 in the appendix.]

Senator BOOKER. Thank you, Dr. Volpp.

Our final witness and the third in our tremendous trio of doctors, is Dr. Chestnut. You are recognized for your five minutes.

STATEMENT OF BOB CHESTNUT, MD, CHIEF MEDICAL DIRECTOR, CUMMINS INC., COLUMBUS, IN

Dr. CHESTNUT. Chairman Booker, Ranking Member Braun, and members of the Subcommittee, thank you for inviting me here today and for your interest in using food and nutrition to reduce death, disease, and disability.

My name is Dr. Bob Chestnut. I am the Chief Medical Director at Cummins. Cummins is a 100-year-old company with headquarters in Columbus, Indiana. While Cummins was originally known for diesel engines, we now have solutions in natural gas, hybrid, electric, fuel cell, and other technologies. We employ more than 70,000 employees globally, in over 190 countries. We have manufacturing facilities in 10 States throughout the U.S., and a distributor network in almost every State. For me, growing up in a rural farming town in central Utah, Cummins was a household name, known for quality and dependability.

My hometown was a food desert. We had a single gas station with a few rows of nonperishable items, and few were healthy. The nearest grocery store was more than 30 minutes away. It was a town of farmers and craftspeople who worked hard, had poor access to healthful food, and could not easily prioritize their health.

As I began my journey into the practice of medicine I set about searching for how I could best help people like those in my hometown. As I looked around I realized that employers have unique potential in supporting population and individual health. This is at least for several reasons. People spend a lot of time at work. Over 145 million Americans are workers, and most spend half their waking hours at work. This opens an opportunity for companies to be places of influence, for encouraging and supporting healthier lifestyles.

The next is alignment. The combined health care spending and lost productivity from suboptimal eating costs the economy $1.1 trillion yearly. Address diet-related health conditions may reduce absenteeism and presenteeism and increase productivity. Companies benefit directly from the improved health of their employees.

The last is a consistent, health-promoting environment that may or may not exist at home or otherwise be available to employees. At Cummins we are mindful that our success as a business is only achievable through the work of a healthy work force. I will share several programs at Cummins specific to nutrition to improve health outcomes.

In Columbus, Indiana, we have a patient-centered medical home. More than 10,000 employees, plus their dependents, live nearby and have access. When a person comes in with a diet-related disease like diabetes or heart disease, they meet with a doctor who is trained in lifestyle medicine in addition to primary care. This means that nutrition and lifestyle modifications are an integrated part of the person's treatment plan. The person will also be introduced to a team who provide multiple layers of support. They will meet with an ambulatory pharmacist who can optimize their medications and balance them with lifestyle changes.

Our wellness coaches check in with them often and offer individualized plans for adopting new lifestyle behaviors. They can also be referred to our teaching kitchen, to meet with our chef who pro-

vides hands-on experience with healthful food selection, food preparation, and health literacy.

At many of our locations we offer our Lifestyle 365 program. This is a 10-session, hands-on experience focused on healthful foods, physical activity, and building health-promoting behaviors. Participants receive a prepared lunch of healthy food to try in each session. We also offer healthful cafeteria and vending items.

Congress can take meaningful in helping the business community support nutrition and health initiatives. First, continue to include the business community in health discussions exploring how employers may crate health-promoting work environments. Federal support like tax incentives on corporate food as medicine investments would increase the ability of businesses to offer health products and services. Increased flexibility to offer telehealth and medical services across State lines would be particularly helpful to increase access to all of our employees.

Congress can also support programs such as Total Worker Health by the National Institute for Occupational Safety and Health. Increased resources for the Total Worker Health program could help businesses developed tailored, comprehensive health solutions, including increasing daily access to healthier food and lifestyles.

Thank you again for the great honor and privilege of speaking to you all today. For more comprehensive background please refer to my written testimony. If I can provide any more information on behalf of Cummins I would be honored to do so.

[The prepared statement of Dr. Chestnut can be found on page 57 in the appendix.]

Senator BOOKER. We are grateful for your testimony, everyone.

We are going to jump right in with member questions. I am going to begin with you, Dr. Bulger, not just because you have a great haircut but because I am extraordinarily excited about Geisinger, which just brings such practical wisdom that should inform, really, government policy. You all have three brick-and-mortar locations and provided healthy food to nearly 1,600 diabetes patients. What is extraordinary is a paper that was written about your work shows that diabetes patients who take two or three medications, having access to your program can expect their A1C to drop between 0.5 and 1.2 points, but that the patients at your Fresh Food Farmacy, in comparison to the people taking the drugs, were seeing drops of over 2 points.

That is an amazing comparison. People who do the drugs are seeing one drop, but you all are seeing, just from the access to fresh and healthy food, 2 points. Can you explain to me, who has an honorary doctorate from Yeshiva University—that is true—but not a medical doctorate, what is A1C and what is a 2-point drop? What does that mean for the quality of health for patients?

Dr. BULGER. Sure. Great. Thank you. That is a great question.

The hemoglobin A1C is a measurement of your average blood glucose over about three to four months. Medical professionals use that to tell, instead of just doing a finger stick and seeing what you are right now, it actually gives us an estimate of what your sugars look like over a longer period of time. Of course, it is that longer period of time with your sugars being high that affects you and is

a chronic disease and changes things in your body. These changes create things like heart attacks and strokes, and you said earlier, vascular disease in the extremities, so you end up with amputations and other type of things.

A normal hemoglobin A1C is generally in the 5's, less than 6, and that equates to an average blood sugar of about 125. For every one that you go up it is somewhere between 25 and 30 for average blood sugar. When you go to 7, it is a little over 150, 8, and so forth. If you want to get someone to normal it is trying to get them to less than 6.

Now a lot of people with diabetes, the example I talked about in the testimony, that woman had a hemoglobin A1C of over 13, which meant her blood sugars were running in the 300's, on average, and if your blood sugar is running at a 300, on average, chronically, that is where you have significant damage being done throughout the body from that sugar. By dropping it, in the case of our situation, dropping it by 2 1/2, is dropping the hemoglobin A1C about 100, 150 points toward normal. It is big difference for people.

Senator BOOKER. I think it is a massive difference. Let us think about this for a second. Drugs, expense to the American public, that is one thing, but the health benefits. What seems to drive Senator Braun and myself is obviously the human misery, reducing that in our country, having type 2 diabetes rates in our country where half of our country has got type 2 diabetes or is pre-diabetic. As I said before in my opening statement, every month 13,000 new amputations in American because of diabetes, 5,000 new cases of kidney failure because of diabetes, 2,000 new cases of blindness because of diabetes. This is a stunning set of numbers that I think drives Senator Braun—if I could speak for him for a moment—and I.

We also are concerned about the cost savings, and that is what is my last question to you. There was a 2018 paper that detailed how Geisinger was seeing health care cost savings from its Fresh Food Farmacy program. Just really quickly, are you still seeing that cost-savings from this program? As two guys who had to run stuff before we were Senators, and that was one of our biggest concerns was these growing costs, are you seeing cost savings?

Dr. BULGER. Yes. That is a great call out. If you look in the medical literature, as the hemoglobin A1C drops, cost drops. We have seen that same thing with our program. The other thing we have seen, as I noted, is the patients end up in the hospital much less, which is one of the big reasons for health care costs, they end up in emergency room much less. We have seen participants have a decrease in those complications you noted, like amputations, kidney disease, those type of things, and that all relates to the decrease in hemoglobin A1C.

Yes, we continue to see the cost savings around the use of food as medicine.

Senator BOOKER. You are fiscally conservative and liberal in healthiness.

All right. Senator Braun.

Senator BRAUN. Thank you. I will start with Dr. Chestnut. How long has LiveWell been in place at Cummins?

Dr. CHESTNUT. Six and a half years.

Senator BRAUN. That is a pretty good stretch of time to see if you are getting some results. Have you ever published that data so others can learn from it, and would you share what you have accomplished with it from when you started to where you are now?

Dr. CHESTNUT. Yes, so we definitely share our activities and our programs as best practices with others. As far as our results, we do track them internally but do not publish them broadly. I can say we have had some tremendous results. We have had many individuals with diabetes who have experienced complete reversal, and many others who have had dramatic experiences with reducing the medications that they are on.

Senator BRAUN. Have you incorporated free biometric screenings into what you offer your employees?

Dr. CHESTNUT. We have, at various times, biometric screening. For example, our Lifestyle 365 program we do pre and post biometric screening. Individuals will get their cholesterol checked, their hemoglobin A1C, and their blood pressure prior to those 10 sessions. What is impressive is that even that intervention, 10 healthy meals, ten 30-minute sessions of talking through lifestyle behaviors, we have seen individuals have a measurable difference between that pre and post and see an improvement in those biometric data.

Senator BRAUN. Have you found when you give your employees those tools, do they readily accept it or sometimes do they need to kind of have time to sink in that they need to use that information? That is one thing that we found early is that even when you provided it, they did not necessarily pay attention to it. What have you found?

Dr. CHESTNUT. Much of the same. We found that we need to create initiatives that meet people where they are, and we need to be consistent over time and keep our messaging on going. An intervention for one group of employees needs to be very different than another. We have several unique groups within Cummins, where we do have our manufacturing employees, our distribution employees, and our exempt employees. For each of these we offer different programs and different ways to engage to help them become mobilized in their own health care.

Senator BRAUN. Even you have not published the arithmetic—which that was very important to me. I wanted to make sure what I was doing was actually going to be working in terms of the cost of it—has it moved in the right direction in terms of your cost per employee, per year, which should be the universal measurement when it comes to health care, and that it is making your employee healthier over time as well? Have you been moving in the right direction even though you may not want to share the particulars of it?

Dr. CHESTNUT. Yes. We have seen improved health outcomes, and for the past few years our employee premiums have stayed the same.

Senator BRAUN. For the past few years? Would you say for the last 6 1/2 years?

Dr. CHESTNUT. I will have to followup with you on that to confirm where it has been over the last 6 1/2 years.

Senator BRAUN. Well, the reason I emphasize that is we have done it for 15 years, and not had the increased premiums, and actually cut family premiums by a decent amount. This works, but you have got to get your employees to buy into it. The demand for remediation is very inelastic. If you have a bad accident or you get sick, employees, it is human nature, want to be fixed immediately. That is part of our system, what is wrong with it, because then you are in the highest-cost per remediation that you can get when you do not get them to buy into the fact that you could prevent a lot of it.

I think a lot of what we need to do is not only from here but to try to share there are not many, like Cummins or Meyer Distributing, that ever wanted to fiddle with it because it is part of benefits. It is hard enough to hire people when you are tinkering around with the health benefit plan. We had to make a bold move 15 years ago and it paid off. It sounds like you have done the same thing. If we have a second round of questions I want to get into what were the macro issues.

Senator BOOKER. We will have a second round. I just want you to clarify for the record, you keep saying "we did it," "we have been doing it for 15 years." You are not talking about the U.S. Senate or Federal employees.

Senator BRAUN. No, no, no.

Senator BOOKER. Who are you talking about?

Senator BRAUN. Our own company that I ran.

Senator BOOKER. Yes.

Senator BRAUN. Because it is not happening in enough places because folks like Cummins, folks like the company I ran do not want to take the risk because the easiest way is just to provide the remediation, regardless of the cost. That is why we suffer from the highest health care costs in the country.

Senator BOOKER. All right. Thank you very much.

We are going to turn to Senate superstar, Smith.

Senator SMITH. Thank you so much, Chair Booker and Ranking Member Braun. It is great to be here with my colleagues. A terrific panel. I really appreciate this.

I want to start with questions to Ms. Penniman and Mr. Richard. We acknowledge that it is hard to be healthy if you do not have access to healthy food, and the link between good nutrition and health is undeniable, and it is also what our grandma taught us.

The problem we have, it seems, is that our nutrition system in this country does not always support healthy eating, especially for people who rely on nutrition assistance. These are also, not coincidentally, the folks with the biggest health challenges, caused by poor nutrition.

Let us talk about EBT cards, which are like debit cards for people who are eligible for SNAP benefits. They can be used not just in traditional grocery stores but also farmers markets and other places where people can buy healthy food, like fresh fruits and vegetables. Of course, then when they are buying from farmers markets or CSAs they are also supporting the local food system, which has other benefits.

Here is the thing that I want to ask you about. I am hearing that EBT cards do not always work for farmers markets or at small ven-

dors because of technology problems. It is like a good idea that is not executing because the technology does not work. My question is are you familiar with? What should we do? What can we do, in Congress, to fix this problem so that that EBT card is a ticket to healthy food and support for local food systems?

Ms. Penniman, would you like to start?

Ms. PENNIMAN. Absolutely. Thank you so much for that question. Our farm has been accepting of EBT over the years, and we have made progress. You know, in the past CSAs were not eligible. Farmers markets, it was very difficult to use them. I do commend legislators for paying attention to that.

When you come to food box programs, delivery programs, on-demand programs, there is still a technology mismatch. In order for me to go drop off my food, ring the doorbell, leave it at the doorstep of someone, I am going to have to do a voucher system and then redeem it remotely later, from my portal. Then if I do not use it for months in the wintertime I have to go through a whole process of a store shutdown. Many of our farmers in our network have just said, "It is too cumbersome. It is not worth taking EBT."Moreover, many of the people who would want to use EBT, their benefits have run out by the middle of the month anyway, so without Double Bucks or some other supplementary program we are running into the problem where we are footing the bill anyway for our recurring customers.

If we could modernize, get that system online, you know, allow for people to make orders of their produce online and pay online through EBT, I think it would do a lot to make it more accessible to the up-and-coming generation of farmers.

Senator SMITH. That is great. Mr. Richards, would you like to add to that?

Mr. RICHARDS. Yes. I mean, I think you have got to—well, you know, because we operate these programs in both urban and rural areas, and in particular Appalachia, you know, sometimes you are very lucky just to get a cell signal. A lot of farmers are very interested in doing this, and one of the things that we have found is we provide technical assistance to those markets, right. I think the Double Dollars program, they are attracted to it, they want to do it, but they are a little intimidated by the technology.

We do it, and it is that warm body that gets up every day and helps make this stuff work, right, that is so important. That is like the third leg of this stool besides the Federal benefits and the incentives is the warm bodies who get up every day and make it work, whether it is the farmers market manager or those kinds of folks. People want to do it, and they are pretty resourceful to do it with a little helping hand.

Senator SMITH. Thank you. That is very helpful. Mr. Chair, I think this is an area where we could figure out work that we could do together in the farm bill to improve how this works so that it is actually delivering on the promise of connecting people with healthy food. I would love to work with everybody on this panel on this.

I just have a minute more and I have another question for Ms. Penniman. This has to do with something that is near and dear to my heart, which is for Tribal Nations and for indigenous people

food is nutrition, it is also culture, and it is also sovereignty. We know that if you have nutrition programs that are connected to people's food that is part of their culture then they are going to be healthier. In fact, there is often a mismatch between the food that is delivered to distribution programs and the food that people want to eat, should be eating in order to be healthy. I hear about this on Minnesota's Tribal Nations and indigenous communities where distribution programs, for example, have the inclusion of milk when so many people are lactose intolerant.

My question is, from your work with food distribution systems, can you talk about what we can do better? I have a bill that is the SNAP Tribal Food Sovereignty Act which would give Tribes more control over their food distribution program. Senator Booker is one of my partners on this. Could you just address that briefly?

Ms. PENNIMAN. You have warmed my heart with that question, knowing that you are working on that. I would never purport to speak on behalf of any indigenous or Tribal nation. We do work in deep solidarity with indigenous nations and we see the very same issues in the Black community, where school lunches, institutional food distribution programs are a mismatch for cultural foods, and the lactose intolerance statement that you made is very pertinent also to Black community.

I will say that small is beautiful in a lot of ways, so the farmers that we work with in our network, many hundreds of Black, indigenous, and people of color farmers across the country, are growing the foods that their members ask them to grow. That type of responsiveness is something that you cannot necessary get in an anonymized kind of distribution program. Every year we survey our members. If they want fish pepper, you know, for their soups, if they want callaloo, if they want scotch bonnet, we grow that for them and we make sure that that is delivered. We have a wonderful Japanese monk in our program down the street, and if I do not grow her specific Japanese sweet potatoes she will come for me.

I think that whether it is because there is a direct relationship to the farm or the consumer or because we have made focus groups and we make sure that what is in the box generally matches what people are asking for, there is no way to have success in these programs without some level of choice and cultural responsiveness. That absolutely has to be part of it.

Senator SMITH. Thank you very much. Thank you.

I will just say I took some of Senator Klobuchar's time.

Senator BOOKER. Okay. Understood.

All right. There has been Booker. There has been Braun, but the best of the B's is Boozman.

Senator BOOZMAN. I think Senator Ernst was here first.

Senator BOOKER. I will always defer to the great Senator, the star from the Midwest, Senator Ernst.

Senator ERNST. Thank you, Chairman Booker and Ranking Member Braun, and our Chair, John Boozman, as well. Thank you.

This has been a great panel. Thank you all so much for being here. I really appreciate the time to talk and hear about some of the initiatives that we see across the United States, and I am going to divert a little bit and talk about a pressing issue that we have out there as well, because this week we are going to be voting on

the National Defense Authorization Act. Most recent statistics that are out there, only 23 percent of Americans aged 17 to 24 actually meet the necessary qualifications to enlist in our United States Armed Services. There are many things that will cause folks not to qualify for military service. There is a lack of education, there is obesity, and other disqualifying health issues. When you look at just obesity, out of those that do not meet the necessary qualifications, 27 percent are obese, and most of that is, of course, related to their nutrition and exercise, or lack thereof.

I just wanted to bring up that issue. I know it is a topic for another day, but making sure that our children and young adults have access to healthy foods is extremely important not just across the board, just because we want to be healthy Americans, but because of our readiness issues with national security as well. I wanted to take that twist.

If we can come back to some of the programs that we are offering, many Iowans, both our children and adults, will suffer from digestive or inherited metabolic disorders. I have worked with a number of families in Iowa that are dependent on medically necessary foods, vitamins, amino acids for their treatments. Unfortunately the products come at a very high cost to those who depend on it, and that is why I am an original co-sponsor of the Medical Nutrition Equity Act. All Americans deserve to know that they are covered for their medically necessary nutrition under Federal health programs and private health insurance, to support their proper growth and development and to prevent other types of medical complications.

I have also heard, as many have, from Iowans, about incentives-based approaches as a preferred method to empower SNAP customers to purchase healthy foods. An example of this is the Healthy Fluid Milk Incentives projects program, which I led and was established in the 2018 Farm Bill, with the goal to help improve nutrition security for SNAP families through healthy and nutritious dairy products. I also want to note that there is a project in Newark that I think maybe Chairman Booker has maybe visited, and that is important as well.

The dietary guidelines for Americans have repeatedly recommended milk and other dairy products as critical for a healthy meal pattern, and under this Healthy Fluid Milk Incentives project, shoppers that use SNAP benefits to purchase a qualifying fluid milk product also then receive a matching dollar-for-dollar coupon to use for additional free milk or other types of healthy dairy products.

Mr. Richards, I see you nodding your head there, and I know that you are supportive of these incentive approaches for those nutritious dairy products. Can you talk a little bit mor about those types of incentives or those types of projects?

Mr. RICHARDS. Sure. Yes, because I mentioned Kentucky Double Dollars but there are actually four incentive programs, right. There is the SNAP fruits and vegetables, which the GusNIP grant has typically done, but we also double up WIC and Senior Farmers Market Nutrition Programs. Then Kentucky is a livestock State too, right, so we double up meat. We have meat, eggs, and dairy

double up, because we recognize all those benefits and the fact that access to high-quality, healthy protein is just part of a good diet.

It is all Kentucky-grown meat, eggs, and dairy. I am a former livestock farmer and my grandfather was a dairy farmer, so I am right there with you, Senator.

Senator ERNST. Outstanding. Well, I appreciate it, and I am running out of time so I just want to once again thank our panelists. Extraordinary. Thanks for what you are doing for your communities and, of course, for the greater health of our Nation. We truly do appreciate it.

Thank you, Mr. Chair. I yield back.

Senator BOOKER. Thank you, Senator, for mentioning the Medical Nutrition Equity Act. It is also something I support and hope Congress will pass quickly.

Senator ERNST. Yes.

Senator BOOKER. We turn now to Senator Klobuchar.

Senator KLOBUCHAR. Thank you, Chairman Booker and Ranking Member Braun, for holding this important Subcommittee hearing, and I am looking forward to working with this Committee in the new year on the farm bill and so many other things. As we know, the Committee has authorized and passed bipartisan bills on child nutrition many, many times, through many different administrations. Clearly this is going to be a priority of ours.

I have a bill with Senator Lummis, from Wyoming, to better integrate mental health promotion and education in schools. We know that the spike in food insecurity may impact not only the nutritional needs of our students but also their mental health. Can you talk about that connection, Dr. Volpp?

Dr. VOLPP. Well, I think for a lot of kids they are living with horrible food insecurity, they are living with nutrition insecurity, and they are living in poverty, and that combination of factors clearly affects kids' mental health and it affects their physical health. When you look at the data from WIC you can see that not only do we see better nutrition intake by kids on WIC, you also see better academic performance. I think that link of really trying to help the next generation get a better start so they are not susceptible to the same inequities of current adults is really important for us all to be thinking about.

Senator KLOBUCHAR. Very good. A 2021 Minnesota Department of Health work force report showed 80 percent of Minnesota's qualified shortage areas for mental health professionals. We actually have the lowest unemployment rate in the country. Two months ago we had the lowest unemployment rate of any State in the country in the history of America. We are down across the health care sector and manufacturing and the like. It is, in some ways, a good problem to have. There are good jobs out there. It is also, especially in the health care area, becoming a real issue. It is one of the reasons I am such a big proponent for immigration reform and for the Conrad 30 bill that I carry, which would allow people who are doing their residencies in the U.S., from other countries, to stay.

The Improving Mental Health and Wellness in Schools Act would help address these shortages. From your perspective, what else could we do to provide training and to get help in rural settings? Obviously, doing this is something we did in the pandemic, and

doing it via Zoom and other platforms was helpful, but ideas on that front.

Dr. VOLPP. Well, I think more broadly, coming back to something Senator Braun said a few minutes ago, we spare no expense to treat disease once it happens, but we do not do nearly the same in terms of trying to prevent disease. Thinking more holistically about we invest in people's well-being and both create incentives for them to have healthier choices but also availability of services should they need them is really critical.

The shortage in health care of mental health providers is really a crisis, but the larger question we have to ask ourselves is why do our kids need so much mental health services? There seem to be real crises with anxiety, depression. What is causing that is really the question that we should be trying to answer.

Senator KLOBUCHAR. Very good. Last question, just someone else on the panel can take it. According to the Centers for Disease Control, more than 42 percent of American adults, about 100 million people, had obesity issues before the pandemic. As we know, having just visited Mayo and talked to them about that, it has only upticked, I believe, since the pandemic. Nearly three-fourths of American adults have issues with weight. Roughly one in five kids have obesity. Furthermore, studies have estimated that nearly two-thirds of COVID hospitalizations are related to obesity and diabetes.

What strategies can the Committee consider as we move forward with nutrition programs to not only make up for lost ground during the pandemic but to promote healthier lifestyles, healthier eating?

Anyone want to take that? Except not Dr. Volpp. He answered everything.

Dr. CHESTNUT. Something that was frustrating for me in practice was that oftentimes the only weight loss programs you could enroll a patient in was the weight loss program that was associated with bariatric surgery. It was essentially a high-cost procedure that was subsidizing weight loss. It would be to uncouple that and better fund deliberate weight loss programs that people could engage with.

Senator KLOBUCHAR. Thank you. Anyone else?

All right. Thank you. Oh, Dr. Volpp?

Dr. VOLPP. It was mentioned a couple of times. One of the reasons why in the work we have done we provided food to the whole family is it really starts in the younger ages. Once you get to the point where you do not have access to fresh fruits and vegetables, you do not know how to cook fresh fruits and vegetables, it ends up being a lifestyle change over time.

I think really targeting at the younger ages and trying to change it from the beginning up I think is one place to focus.

Senator KLOBUCHAR. Very good. Thank you. Thank you, Mr. Chairman.

Senator BOOKER. Thank you, Senator Klobuchar. Senator Boozman.

Senator BOOZMAN. Thank you, Mr. Chairman. Thank you for having this hearing, you and Senator Braun. This is really important.

Dr. Volpp, I was listening to you in the sense of being an old VA doctor, and you saw lots of patients, and you also, Dr. Chestnut, really kind of were saying the same thing that I am trying to express. You saw lots of patients, lots of folks that drank too much, ate too much, smoked too much, and you did your best to help them get through that, but you really were not changing their behavior. I mean, that is really, in the sense, you know, you are a busy practitioner, you are seeing patients, and it is just not part of it.

My brother was an ophthalmologist, and before he became an ophthalmologist he was a pediatrician. It has been a while ago, but at that time they really had not seen hardly any cases of type 2 diabetes in kids. That is rampant right now, as you all know.

This is just not an easy thing, and I am struck by the panelists here that are doing such a good job. You all have a systems approach. Senator Braun had a systems approach. You know, you just cannot do this by being a practitioner, prescribing this or that, handing somebody a prescription for vegetables or whatever. It just does not work.

We really are going to have to rethink this and provide incentives, but the incentives do not work, to me, unless it really is an approach where you start changing—it is behavior modification. We are doing a good job. In fact, I think we are ratcheting down too much on our school lunch programs, where it is going to be equivalent to, you know, if you are on essentially a severe heart disease diet. It is not only what you eat, in that regard, the good stuff. It is staying away from eating too much of the bad stuff.

All of this goes together, and I am really interested, again, in your being here, your great testimony, great work that you are doing. What we have got to do is figure out, it is just not that easy, you know, again, to think that we can—I do not know that the BMI average of health care workers is any better than the general population, and certainly they know what is going on. The same, I am sure, the farm community. You know, they are out there in the fields and have access to all this stuff. Like I say, their BMIs, it is not any better than anybody else's.

Will you comment on that real quick, Dr. Volpp, because you are going to get into this. You know, I am excited about the fact that—and I want to learn more about the Rockefeller Foundation's effort to get into this. I would just encourage you, like I say, whatever we come up with has to be more than the simplicity.

Dr. VOLPP. Yes. As you summarized——

Senator BOOZMAN. Especially with the children. We are going to see the devastating effects of that because they are getting sick at a much earlier age. That is going to cost society a great deal, besides their health.

Dr. VOLPP. As you summarized, health care practitioners around the country are in a reactive mode of taking what comes and trying to do the best they can with the patients in front of them, but we do not have a system that is very good at being proactive and trying to prevent disease, change behavior.

A lot of what we are trying to do with the American Heart Association Rockefeller Fund Initiative is figure out how can we really increase access to healthy foods, how can we create incentives, how

can we make it easier for people to access those foods, and how do we determine what is sufficiently cost-effective that private or public payers would be willing to pay for that.

Senator BOOZMAN. To keep them away from eating too much of the bad stuff.

Dr. VOLPP. That is one of the central problems.

Senator BOOZMAN. Or drinking too much, or whatever.

Dr. VOLPP. Because we all pay for the consequences, health care cost consequences when people get sick, but we do not invest very much in trying to keep people healthy, and we need to figure out what evidence would help make that logical for either private or public payers to do more widely.

Senator BOOZMAN. Very good. With that I yield back, Mr. Chairman, and again, thank you for a really good hearing.

Senator BOOKER. Thank you for that, and I will turn to the very patient, marvelous Mr. Marshall.

Senator MARSHALL. Well, Senator Chairman Booker, thank you so much, but before I start I just want to take a quick drink of the most wholesome, healthiest, nutritional drink every known to mankind. Here is to the farmers and the dairy folks.

I am excited to be here to talk about food as medicine. This has been a priority for my entire professional life. I think it would be good to take a moment of pause, what is working out there when it comes to food as medicine. I think the WIC programs are outstanding. Food banks are doing a great job, and more and more there are opportunities for healthy choices at food banks. Meals on Wheels is doing an incredible job. Our senior citizen centers, where they get lunches, not only are they getting nutrition but they are getting some psychosocial help there as well. Something else I have seen out there that has worked in the real world are the Double Bucks for rewarding healthy choices.

As we write a farm bill, it is part of my job as a Senator to figure out what is working and how can we accentuate them.

As we think about nutrition, I cannot help but think about Medicare and Medicaid, that Medicare is facing a cliff, really insolvency, in 2028. Medicaid funding is always a challenge up here. What would be the impact of good nutrition on Medicare and Medicaid?

I want to submit for the record an article from JAMA. It is April 22, 2019. It is entitled "The association between receipt of a medically tailored meal program and health care use," an article that I read several years ago, and it demonstrates that the readmission rate for Medicare patients sent home with 10 tailored meals per week, that readmission rate was 20 percent of the control group. If you think about it, the average cost for a Medicare admission is $13,000. If there were 80 percent less of those, how could that be used to fund good nutrition? You know, maybe you make it an investment of $400 or $500 to save taxpayers $13,000, and not to mention it is the right thing to do.

I think that is a great concept. Chairman of the all-power Ag Congress, as Senator Roberts taught me, and I are introducing legislation that would be a Medicare pilot project to do just that, to take a bigger group of patients, sending them home from the hospital with medically tailored meals. I think that is a great bipartisan opportunity.

Next, Senator Booker and I, I think, are working on a project maybe that would attack more of the Medicaid population, and specifically I think there is the lowest-hanging fruit are pre-diabetic folks. What could we send them home with? What should they be getting as far as a nutrition diet as well? We look forward to continuing that discussion, maybe based on BMI. Let us not even do a blood test. Just let them enter the program very easily. Use BMI perhaps, and maybe followup hemoglobin A1Cs as well. We are looking forward to that.

Then Senator Gillibrand and I are working on getting milk back into the lunch program, specifically whole milk. We are going to have a generation of women that have osteoporosis and osteopenia in their 40's rather than in their 50's because they are not drinking milk at school. We want to bring that back into the program as well.

This whole concept here reminds me about dynamic scoring, and when you have the CBO does not use dynamic scoring and how do we overcome that as well.

I am preaching to the choir here, of course. One of my concerns is that the FNS recently provided recommendations for WIC that included additional non-dairy substitutes for moms and children in the WIC program. Again, the WIC program near and dear to me, something that my patients used every day. I think this is contrary to the recommendations of increased consumption of dairy products in the dietary guidelines for Americans.

Then I am concerned about meatless Mondays and the impact of less protein in people's diets as well.

I think my question is for Dr. Volpp. Do you believe meat and dairy are important sources of nutrients, like protein and calcium, for children and pregnant women?

Dr. VOLPP. It is a complicated question to answer. A lot of what you said I really agree with. The study you cite I believe was a Berkowitz et al. study that really showed very impressive results in terms of medically tailored meals for chronically ill post-hospitalization patients. I think those kinds of initiatives for the patients' post-acute care who are frail are really important.

We also really need to think about programs for patients for primary prevention, so the patient with diabetes, the patient with diabetes who is not frail but who would benefit from easier access to healthy food, subsidized access to healthy food.

I think the questions about meat are complicated because there are some meats that are healthier than others. Saturated fat is obviously a problem for people with heart disease, and the same thing with dairy. There are healthier alternatives in some cases, but it is very important for people to have enough protein in their diet. We need to figure out, holistically, how do you accomplish that, given the full range of food options.

Senator MARSHALL. I appreciate that. I just hope we do not forget, though, that we need to be able to absorb the fat-soluble vitamins somehow as well. I think for pregnant women especially it is very important. Those vitamins A, D, E, and K are very important as well. There are some good fats as well.

I think I have passed my time. The last comment I would make is we almost need coaches as much as we need nutritionists and

experts. I think most of us know what a healthy diet looks like, and we can make that more accessible. Somehow we have to get this coaching part of it as well and changing lifestyles, changing healthy lifestyles, and that is where it tends to break down.

Dealing with pregnant women is probably the only time I saw huge lifestyle changes, and that is because they had a secondary motivation. The WIC program, all those folks so involved. How do we take that concept and expand it? It has been a question I have tried to answer for over 30 years, and maybe we will make some progress.

Thank you. I yield back.

Senator BOOKER. You had a paper you wanted to be put into the record. Without objection, that is put in the record.

[The documents can be found on pages 62–92 in the appendix.]

Senator BOOKER. No. 2 is you all know it is Senator Dr. Marshall, and he carries a lot of weight, I think, not only on this Committee but also in the entire

U.S. Senate, and your passion for medically tailored meals and your partnerships on both sides of the aisle. I just wanted to recognize how grateful I am to work with you on some of these key issues.

We are going to go into a second round because Senator Braun and I are in charge.

[Laughter.]

Senator BOOKER. We are going to jump right in to Ms. Penniman.

The more I have learned about food as medicine programs such as yours in New York, which really should be in New Jersey, the more excited I am for the potential of these programs not just for the recipients of the healthy food but also for the positive benefits that these programs can have for small family farms.

Can you please talk about that, about the benefits that your program has had on the farmers themselves, who are a group in America that are really struggling, especially independent family farmers.

Ms. PENNIMAN. Absolutely. Thank you very much, Senator Booker.

As mentioned, when you all called me up and asked me to come to the Senate for the first time in my life I was nervous, so I asked for help. I called hundreds of farmers in our national network, and our network is small, beginning farmers, Black, indigenous, and people of color farmers, to say, you know, what are your experiences with this program?

I got hundreds of responses. Everyone said these are essential, and I will highlight a couple.

I spoke with Corbin Hill Food Project, which is a New York-based, Black-led food distribution program, and they are able to keep 200 regional farmers afloat with purchases through the GusNIP program. That is incredible.

I also talked to Bil Thorn, at Sky Island Farm, which is the largest Black producer in Washington State and a participant in the Farm to Pantry and Prescription program, and he said these programs keep small and midsized farms afloat. Otherwise they primarily sell wholesale, and those outlets often do not take quantity,

and they do not take quantity reliably. Having that steady market is really important.

As you mentioned, Senator, farmers in this Nation are absolutely at risk. The average age of the U.S. farmer is now 58. For Black farmers it is almost 62. 96 percent of farmers are relying on off-farm income just to survive.

We are part of the National Young Farmers Coalition, which did a survey nationally of the up-and-coming farmers, who we really need to pay attention to or farming will die out in this country. They said that, again, the super-majority of farmers are struggling to make ends meet, but importantly, 83 percent of young farmers are motivated by social concerns, like ending hunger, as one of the primary reasons they want to farm.

There is a huge opportunity to connect these Federal programs with these up-and-coming young farmers who are socially motivated, who want to make a difference in their communities, who care deeply, and are connected.

As we noted, these anonymized programs just do not work. People need to be in communities that have a culture of health, and these farmers are in community with folks who need this food and are ready to engage in that way.

Senator BOOKER. Thank you very much. That was incredible, firsthand testimony.

Really quickly, Mr. Richards, you testified that your most recent application for GusNIP was not funded. Could you talk about what impact that loss of Federal funding will have on your work?

Mr. RICHARDS. Well, we are working very hard to minimize that impact, and we are reaching out to many of our funders.

The fastest-growing sector of the work is the retail, right, and most folks utilizing SNAP use their benefits at retail outlets. We have worked at five retail outlets. Four of those are members of the Independent Grocers Association Eastern Kentucky, in which 40 percent of their customers are utilizing SNAP. Without the dollars to double up the SNAP fruits and vegetables, just at those four locations, we are talking about eastern Kentuckians, Appalachians not getting almost $200,000 worth of fresh fruits and vegetables. We are talking about those same Appalachian farmers not getting almost $200,000 worth of sales. It is going to be pretty tough, right.

I think, you know, we have built this momentum over the last six years, and even a pause in it is going to destroy that kind of momentum. For anybody in Kentucky, there is a story about the time that the Bell Pepper Co-Op came in to help tobacco farmers, instead of growing tobacco growing bell peppers, and they formed a co-op, and all the farmers signed up for it. Then the co-op kind of went away.

Any time you talk about something in Kentucky and you mention the Pepper Co-Op, farmers are like, "Yes, I know what you are talking about." I do not want Kentucky Double Dollars to be used in the same sentence as the Bell Pepper Co-Op.

Senator BOOKER. Amen to that. Senator Braun.

Senator BRAUN. Thank you. What we were able to do, in the business I ran, is put in a solution that worked. It was in a broken system. There is nothing like health care, as it has currently evolved into, where there is more lack of transparency, where there

are barriers to entry to get into the business of health care at so many levels, competition so growing less rather than more, and then I mentioned earlier you do not have an engaged consumer.

The classic market, if it is going to work, has to have full transparency to where the suppliers and the consumers have an equal amount of information. You have got to have a lot of competitors, and you cannot have barriers to entry that normally come from lobbyists.

We were able to tease out some of the transparency that is in the system on the fringes. Like if you pick up the phone, you get on the Web, you can generally find savings of 30 to 70 percent on a lot of prescriptions, and some of the procedures like MRIs, colonoscopies, CT scans.

If we could take the cost out of it, you could all of a sudden start investing more in the wellness portion of it. I would like the opinions of a couple of doctors that I have not spoken to—Dr. Volpp, Dr. Bulger—how much of our problem is the system itself lacking the engaged consumer, having a delivery system that gives you none of the features of a competitive market, 20 percent of our GDP, 12 percent everywhere else, and if we brought that cost down then you could start pouring resources into where it ought to be—prevention, wellness, and so forth. What do you think?

Dr. BULGER. I think that is a great question. I do think that inherent in the payment system is you are paid for doing things.

Senator BRAUN. Yep.

Dr. BULGER. Not necessarily paid in most cases, for keeping people healthy. I think one of the things that we have been able to do in our neck of the woods at Geisinger, in the fact that we are both a payer and a provider, and one of the places in that nexus of those two where we created the Fresh Food Farmacy, where we do both, I think one of the reasons we were incented to do that is because we were the payer, and we know that by focusing on prevention you will decrease the total cost of care, and on our provider side that created something like the Fresh Food Farmacy.

I think that disconnect where the payment system is paying for doing things as opposed to worrying about the total cost of care and keeping people healthy, and I think that was probably one of the differences why, in your business, you did something different because you were at risk for the total cost of care for your employees, so you said, "What can I do differently here?" and thought about prevention and how that would decrease the total cost of care, instead of worrying about what you were paying out.

Senator BRAUN. Do you think the system, as it currently exists, especially where hospitals have now grown to like 43 percent of that health care bill that used to be closer to 30, try getting some transparency to find out what that is going to cost? It is nearly impossible. The fact that they do not make it easy—where else do you spend that much money and do not really have any idea what it is going to cost until you get your bill, two to three months later, and then you hold your breath?

Dr. BULGER. Yes.

Senator BRAUN. On the other hand, the consumer has no incentive because they do not have skin in the games. That is one of the features we created, so they do not shop around.

When you see someone at a grocery store trying to save a buck on a $5 item, that is transparency. That is competition because it works there.

I think we are kind of spinning our wheels because we know what needs to be done, but we have got a broken system we are working within.

Dr. Volpp, what do you think?

Dr. VOLPP. A few additional observations. When you look across countries and you look at the combination of health and social service spending, the U.S. actually is right in the middle of the OECD countries. When you look at just health spending, we are an outlier. As you know, we rank something like 36th in life expectancy. We are trying to address a lot of issues by paying for expensive health care, and that is obviously not a very cost-effective solution.

Thinking critically about what do we pay for, how much do we pay, and can we encourage innovation of cost-effective ways to keep people healthy outside of health care is very important for us to do, and food as medicine can be part of that.

Second, I agree with you that we need more price transparency. People have no idea how much it is going to cost them to go to the emergency room and get hospitalized. If you are trying to encourage people to use urgent care instead of the emergency room, it would be very helpful if people knew what the relative prices were ahead of time.

We could do a lot more with transparency and incentives to encourage people to use both lower-cost providers and higher-quality providers if that information were more widely available.

Senator BRAUN. Most of those other systems are closer to a one-payer system because the clout of the payer has got a little more parity with the system itself that provides health care. I do not think we need to go there, but if we do not fix it, I think it is up to the health care industry to embrace transparency, competition, bring the cost down, and then have them, as the remediators, start promoting wellness as well. That is when we get to the best of both words. We are just so far away from it.

Dr. VOLPP. Yep.

Senator BOOKER. All right. Even though I have been warned by the higher-ups in the U.S. Senate that there is too much common sense being discussed at this hearing—it is very un-Senate-like—I just want to jump really quick to some speed rounds so we can all get out of here.

Real quick, Dr. Bulger, I think that both Senator Braun and myself focused on the data and follow the data, but I imagine there are things you are seeing that right now are not really being measured. Your program, for example, the Fresh Food Farmacy, is it having an impact on the entire family beyond just your patient?

Dr. BULGER. It is, and I think one of the things we have seen is that—and we are beginning to measure this—is that our patients and their families engage much more in health care when they get the food. The food is almost the carrot to bring them in and get them to engage with clinical nutritionists and nurses and other things which they would not engage with necessarily if the food was not there.

Senator BOOKER. Even though you are measuring, you are confident this has a multiplier effect on the health and well-being of the entire family.

Dr. BULGER. Right.

Senator BOOKER. You guys, it is common sense. You are looking at this in diabetes but you are probably going to expand this program to patients with other diet-related diseases. Yes?

Dr. BULGER. Absolutely.

Senator BOOKER. Yes, because it would be malpractice, of sorts, not to try to continue to do that and expand it. Correct?

Dr. BULGER. Yes.

Senator BOOKER. Thank you very much.

Ms. Penniman, you talked about the impact that this kind of scale of funding is having on a lot of different farmers you surveyed in your world. Just thing we really have not talked about is this growing reality in America that we have these massive health care disparities along racial lines in this country, where African Americans, in particular, have some of the highest morbidity rates on diseases. It is stunning that besides Native populations, Black men have the lowest life expectancy.

Can you just really quickly give me a concise thought on how this kind of funding for these key programs, like GusNIP, really have, from an equity perspective?

Ms. PENNIMAN. Absolutely, and that is both for the consumer and the farmer. We work with low-income people of color populations that we distribute food to, who have fibromyalgia, diabetes, heart diseases, struggle with weight, kidney failure, and again, 100 percent of respondents over the 15 years of this program have said "improved outcomes."

On the farmer side, we also have to reckon with the fact that the USDA has a huge racial equity issue—97.8 percent of all government payments are given to white farmers. In that National Young Farmers Coalition survey I mentioned, they were asking young farmers, "How many of you, of all races, how many of you applied for any USDA program?" Half of them have never applied, and 75 percent do not even know which ones they would qualify for.

Something that is fascinating, though, and there are historical reasons why, you know, they are a little problematic for this, but farmers of color tend to disproportionately grow fruits and vegetables and livestock. White farmers disproportionately grow grain and oil seed crops. It has to do with access to good land and the history of that and the failed promise of 40 acres and a mule, right?

Asian farmers, Black farmers, Latina farmers are growing these specialty crops disproportionately and are also underfunded by the USDA. There is an opportunity here, by scaling up GusNIP and other programs that target these specialty crops, in also starting to address the equity issues because farmers of color are the ones disproportionately growing these crops.

We do have to make sure we are talking to these communities because there is a mismatch often in the growing season with the application process, with produce delivery scheduled in the winter months when there is no produce, with culturally inappropriate food. It is not just as simple as increasing funding. We need to

make sure we are talking to these people. I think there is a huge opportunity to address inequity in funding farmers through these programs.

Senator BOOKER. I wish we had more time to talk about that, but what you just said is so powerful in closing racial wealth gaps, closing racial health gaps. Not necessarily a program that is targeted toward Black people but programs that are targeted to these larger societal problems, not only heal health but also heal a lot of these historic divides.

Last, back to Kentucky. It all comes back to Kentucky. Last, Mr. Richards, you are a farmer yourself. I love that you were a tobacco farmer. I am never going to forget the bell pepper example. If I am ever in Kentucky I will never bring up the Bell Pepper Co-Op. "Hi, I am from the Federal Government. Let's talk about bell peppers" will never come out of my mouth.

Finally, can you close us out with a high point of talking about really scaling up the GusNIP program? As a former farmer yourself, besides all the benefits the other doctors were talking about, could you just last—because it is a big rural divide. We talked about an ethnic divide, there is a real rural divide in this country. Could you please just allow us to understand how really scaling up will help rural America in a significant way?

Mr. RICHARDS. Yes. I mean, I can only talk about my experience. As a tobacco farmer, every February I got the letter, I got my quota. This is how much tobacco I could grow that year and market, and that set my whole year out. The infrastructure was there. All the technical, the TA was all there for me.

When I started growing food I did not have any of that support system. I did not know what I was going to make that year. It was all completely unknown.

So we, at CFA, looked at the Federal food nutrition programs, the 14 of them that are in Kentucky, specifically how many SNAP dollars were coming into our State. We thought, how can we leverage these Federal food nutrition programs to create the equivalent of the tobacco program for farmers who are growing food? That is how this work started.

Why it is so important for these GusNIP fund is because it creates a baseline of support that farmers know, from year to year, how much they can expect to sell. Right now—well, this December, but starting next month folks are going to start ordering seeds. They are going to start planning the year. For almost 1,200 Kentucky farmers that is dependent upon Kentucky Double Dollars and the Fresh Rx Program for Moms.

The other important think, and I think as Leah said, for beginning farmers, for BIPOC farmers, growing fruits and vegetables, that is it. Our State FSA office recently testified that the fastest-growing sector in Kentucky agriculture is from one to nine acres, and that is because those are the folks that are growing fruits and vegetables as an entry point, and then they start scaling up.

I could go on and on, obviously, but I will stop there.

Senator BOOKER. No, we appreciate that.

Before I do the official closing I just want everybody know this is the last Subcommittee hearing of the 117th Congress of this Subcommittee. I want to say, for the record, how much of an honor and

a privilege it has been to work with Senator Braun. He has been a really powerfully, prodigiously, pragmatic partner—how is that for alliteration?—but really courageous in his willingness to step out there, in a bipartisan way, whether it is with the White House, with me. You have just been truly a gift to me, as my first time chairing a subcommittee in the Agriculture Committee, and you have made this work not only more pleasant, but you have helped to push, I think important conversations that we need to be having about how to make American greater, more healthy, more economically wise.

It has just been an honor to work with you, my friend.

Senator BRAUN. My pleasure to do it.

Senator BOOKER. Right. I wish you the best on wherever your journey takes you.

Then on closing, to everybody, we would ask that any additional questions that anybody has, to the staffs of the other Senators that are here, be submitted to the clerk five business days from today, or 5 p.m. next Monday, December 19th.

I want to thank the incredible panel that is here. You all have been extraordinary. This hearing is adjourned.

[Whereupon, at 11:50 a.m., the hearing was adjourned.]

A P P E N D I X

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Testimony before:

Subcommittee On Food And Nutrition, Specialty Crops, Organics, And Research

FOOD AS MEDICINE: CURRENT EFFORTS AND POTENTIAL OPPORTUNITIES

Martin Richards
Executive Director
Community Farm Alliance

Good Morning and thank you, Chairman Booker and Ranking Member Braun for this opportunity to talk about the opportunities that Food as Medicine presents for Kentuckians.

My name is Martin Richards and I have the honor of being the Executive Director of Community Farm Alliance for the past twelve years. Community Farm Alliance is a grassroots membership organization formed by tobacco and dairy farmers during the Farm Crisis of the 1980s.

Before I became Executive Director, I served on CFA's Board, as its Board Chairman, and as a CFA Fellow in 2000 when Kentucky passed HB 611 that dedicated Master Tobacco Settlement funds to diversifying Kentucky agriculture and improving Kentuckians health.

Before any of that, I was just a traditional Kentucky cattle and tobacco farmer who saw the writing on the wall and began to grow food, organic food. I joined CFA when CFA and the Burley Tobacco Growers Coop helped form an organic farmers cooperative.

An apple a day may keep the doctor away. Unfortunately, Kentucky consistently ranks in the bottom five nationally for diet-related disease, as well as leading the nation in rates of food insecurity with 673,672 (15.1%) Kentuckians living in food-insecure households. Kentucky also ranks 50th in consumption of fruit and vegetables, with only 4.7% of the state's population reporting eating two or more fruits or three or more vegetables each day. As a former farmer, this is unacceptable. Kentucky is a proud farm state with over 74,000 farms, sixth most of any state in the country, and we should be able to feed our neighbors.

My organization Community Farm Alliance (CFA) was proud to launch Kentucky Double Dollars (KDD) in 2014 and Fresh Rx for Mothers on Medicaid in 2019 as strategies for increasing the consumption of Kentucky-grown healthy foods for Kentucky families. These programs have been incredibly beneficial to recipients utilizing SNAP, WIC, and the Seniors Farmers Market Nutrition Program to increase their buying power at farmers markets, Community Markets, and retail locations.

From 2017 to 2022, over $939,478 in KDD leveraged an additional $939,478 in federal funds, putting over $1,878,955 in Kentucky farmers' pockets and creating over $3.1M in economic impact for Kentucky communities. From the farmers surveyed who accepted KDD, 76% agreed

that participation in KDD increased farm income overall, 50% indicated that they increased the number and type of products offered at the markets, and 36% of farmers increased employment due to the KDD program. In short, the KDD had diverse, positive impacts on farms. While these impacts were experienced by the smallest producers, all size classes saw benefits.

Equally important, 99% of the KDD customers surveyed noticed positive changes in at least one of the seven food related behaviors we measured: increased physical activity, less consumption of processed foods, weight loss, better digestive health, better food preparation skills, greater nutritional awareness, and greater awareness of food sources and farming. 95% of customers experienced positive changes in 3 or more of the behaviors measured, 85% reported that they had positive changes in 5 or more of the behaviors measured, and 49% reported positive changes in all seven behaviors.

Over the past three years Kentuckians' food security was severely impacted by COVID and extreme weather events. Approximately 54% of KDD customers said that COVID made it more difficult to access fresh and healthy foods. Yet, 82% of respondents said they began visiting farmers markets more often. Over half of the surveyed farmers market vendors with KDD in Kentucky either maintained or increased sales overall during this time and the majority saw increases in sales related to the KDD program. The KDD program provided both consumers and producers in Kentucky with an important safety net during this time of uncertainty.

The physical and human infrastructure developed around KDD also played an enormous role in mitigating recent crises. During COVID, CFA, the Kentucky Department of Agriculture, and other organizations were able to quickly provide farmers markets with additional resources and technical assistance that enabled many Kentucky farmers markets to not only remain open but to be safe places for shoppers.

Following the historic floods of 2022, this infrastructure proved to be an important mechanism for getting food to those most impacted while also supporting local farmers. Immediately following the flood, support organizations coordinated efforts and funding streams to launch "free markets" in four of the counties most impacted by the floods. The free markets were the result of intentional and strategic coordination of agricultural support organizations, institutes of higher education, local farmers, and private funders. This well-connected network of support organizations was able to secure significant donations of fresh produce from farmers across the state whose operations had not been impacted by the flood. These donations were then distributed to participating markets along with significant funding from private sources. Utilizing these resources, groups were able to tailor the structure of their free markets based on what might work best in their community, and in the process were able to impact food insecurity brought on by the flood, with many markets directing some – if not all -- of the private funding into the pockets of farmers whose farming operations had experienced significant disturbances. The only reason that the free markets worked was because of the existing infrastructure and networks that

were established well before the floods. This provides an exceptional look into the potential for community food systems to exhibit resiliency in the face of adversity.

Though Community Farm Alliance administers Kentucky Double Dollars, the Program is the collaboration of many, many organizations. Besides the 46 farmers markets, 12 community markets, and 5 retail KDD outlets, 26 organizations (including NGOs, state agencies, and other food system stakeholders) make up the KDD Advisory Council to provide oversight and input to improving the KDD program.

Funding for KDD has also been diversified with almost a dozen federal, state and private philanthropic organizations contribution to KDD over the past eight years, including the Foundation for a Healthy Kentucky, the Blue Grass Community Foundation, the Foundation for Appalachian KY, the Greater Clark Community Foundation, WellCare, BB&T/Truist, Passport-Molina, the Education Foundation of America, and Grow Appalachia. The program's two largest and committed funders have been the Kentucky Agricultural Development Fund (KADF) and the USDA National Institute of Food and Agriculture (NIFA) Gus Schumacher Nutrition Incentive Program (GusNIP), which have been critical catalysts in helping many Kentuckians access healthy food. Both of these programs require a 1:1 match.

Sustainability for food as medicine programs, like KDD and Fresh Rx MOMs, is an ongoing challenge. The USDA GusNIP grant program has been critical for CFA. However, with only $38.7 million available in 2022, just eight GusNIP Nutrition Incentive projects were funded. Unfortunately, Kentucky Double Dollars, along with many other applicants, did not receive awards that would have had an extraordinary impact on our community's food and nutrition security.

Without those much needed GusNIP resources, we find ourselves asking how to sustain our work. The opportunity to utilize food as medicine to help Kentucky farmers, communities and those who are dealing with diet-related diseases is incredible, but federal funding for this work is critical. I would strongly urge the Senate Agriculture Committee to scale up the GusNIP program and reduce the match requirement in the next Farm Bill so that more food as medicine projects in Kentucky and around the country can continue their work in both rural and urban communities.

In this moment we find ourselves being asked to sustain what is going well, and to also continue to think outside of the box. I would add that the issues may be the same in urban and rural America, but the solutions can look very different.

Establishing food as medicine as acceptable, even prioritized in Medicare and Medicaid, would potentially have short and long-term impacts for not only the nutritional health of Americans but also for our farmers.

To learn more about Kentucky Double Dollars: https://kentuckydoubledollars.org

To learn more abput Fresh Rx MOMs: https://cfaky.org/freshrx/

FOOD AS MEDICINE: CURRENT EFFORTS AND POTENTIAL OPPORTUNITIES

A short video from the Foundation for a Healthy Kentucky: https://youtu.be/cYpghLDJcgQ

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Testimony
Submitted to The Committee on Agriculture, Nutrition, and Forestry of the United States Senate Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research

Hearing
"Food as Medicine: Current Efforts and Potential Opportunities," Tuesday, December 13, 2022

Witness
Leah Penniman, Founding Co-Executive Director of Soul Fire Farm Institute Inc, Author of Farming While Black and farmer for over 25 years

Statement

Chair Booker, Ranking Member Braun, and Members of the Sub-Committee, thank you for allowing me the opportunity to speak before you today from my 25 years of direct experience as a farmer providing "food as medicine" to those in greatest need in our community. I am the co-founder, executive director, and farm manager of Soul Fire Farm in Grafton NY and a founding member of the Northeast Farmers of Color Land Trust and the National Black Food and Justice Alliance. I am also a mother of two.

As a mother I know of no greater yearning than the sacred imperative to feed our children. When Emet was a newborn and Neshima was just two, we moved to the South End of Albany New York, a neighborhood termed a "food desert" by the federal government due to the paucity of grocery stores, high poverty rates, and disproportionate rates of hunger, diabetes, and heart disease and other diet-related illness.

Our family struggled to feed our children fresh fruits and vegetables, not for lack of effort, but because there was no accessible public transportation, grocery stores, farmers markets, or community garden plots. We applied for assistance under the Special Supplemental Nutrition Nutrition Program for Women, Infants, and Children (WIC), which provides federal food grants to low-income pregnant women, breastfeeding women, and children under the age of five. But when I attempted to use my check at the corner store to purchase milk and eggs, the customer behind me spat on my shoes for holding up the line with the cumbersome redemption process. The only way we could get greens and tomatoes on the table was to join a costly CSA (Community Supported Agriculture) subscription system that rivaled our rent in terms of budgetary outlay. The CSA pickup was 2.2 miles from our home, so each week we packed Neshima into the stroller and I carried Emet on my back to make the long trek for groceries on foot.

There was a cruel irony to the fact that my partner and I had been laboring as farm workers since we were teenagers, from the urban gardens of Boston to the rural organic farms of central Massachusetts, but

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couldn't afford those crops for our own table. In getting to know our neighbors, we found that we were not alone in the struggle to nourish our children. In fact, around 40 million Americans live in food deserts where we cannot access or afford the life-giving foods that make us whole. When our neighbors learned that we were seasoned growers, they asked, "Why not start a farm for us? A farm for the people?"

We took that challenge seriously and started exploring nearby lands to see which parcel would claim us as friends and stewards. In 2006, we wed ourselves to 80 acres of eroded and degraded mountainside land in Mohican territory which would become Soul Fire Farm. We spent years healing the soil with cover crops and mulch, regenerating the forest, building a straw bale solar-powered home and education center by hand, and assembling a team. Soul Fire Farm opened in 2010 from the collective yearning of Black, multiracial, and low-income families to feed ourselves. We established a sliding-scale doorstep vegetable and egg delivery program that allowed members to choose how much to pay. Starting with the South End of Albany, this "Solidarity Shares" initiative now covers four neighborhoods in Albany and three neighborhoods in Troy. The weekly box reflects the bounty of the land's 100+ heirloom and heritage crops, such as callaloo, plait de Haiti tomato, and fish pepper. Members grew inspired to learn to cultivate their own food, so we created a home gardens program that provides lumber, soil, plants, seeds, and mentorship to aspiring urban homesteaders. We surveyed our members annually and 100% reported that they were eating more fruits and vegetables, and that health indicators like blood pressure and cholesterol were improving. They also reported increased feelings of overall well-being, energy levels, and a sense of empowerment. Local health clinics took notice and started making referrals, as did the refugee resettlement program. We couldn't meet the demand for no-cost and affordable doorstep deliveries of vegetables. So, we started training other farms across the region in our method and soon Solidarity Shares were a multi-farm phenomenon. Corbin Hill Food Project, Rock Steady Farm, Poughkeepsie Farm Project, Schenectady Food Box, Sweet Freedom Farm, and Rocky Acres Farm are just some of the NY farmer-led "food as medicine" projects in our networks.

However, our farmers soon realized that their members struggled to afford even the lowest tier of the sliding scale pricing system, and when the pandemic hit, folks' capacity to pay evaporated completely. As farmers, we need payment for the crops in order to remain economically viable, but we could not charge our struggling customers. And we were not willing to drop members from the program because of their dire economic situation.

This is why federal nutrition programs are so important. The farmers in our network created partnerships and got involved with initiatives like:

- SNAP (Supplemental Nutrition Assistance Program)
- USDA Farmers to Families Food Box Program
- GusNIP Produce Prescription Program
- Farm to Food Bank Projects

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These programs provide a way for farmers to access a steady and reliable revenue stream for their crops, while providing food to at-risk families. It's a win-win. The farmer is able to stay afloat and communities can access nutritious food.

In preparation for this hearing, I reached out to the 500+ Black, Indigenous, and people of color farmers in our regional network to hear about their experience with federal nutrition incentive programs. Every respondent who participated in these programs sung their praises, calling the programs "essential." For example:

Bil Thorn of Sky Island Farm is the largest Black producer in Washington State and said, "I participated in Farm to Pantry and the Prescription Program with our local hospital… I do believe that these programs are super important for the farmer and the recipient of the food. Locally grown food is oftentimes way more nutrient dense and organic, so people who can't afford locally grown should absolutely have access to this produce too and these programs are making it possible. These programs also help keep small to mid-size farms afloat. We primarily wholesale through these outlets and if they weren't there we would have to turn to distributors or stores which do not always take as much quantity and are not as reliable."

Bil and others also reported that they wish there was more outreach to small farmers and farmers of color about these programs, who are often looked over in favor of white producers and large aggregators. Farmers also reported that the timing of the grant cycles are often a mismatch for the growing season, for example - produce delivery scheduled in the winter months, or applications due in the middle of peak summer season.

The National Young Farmers Coalition recently published their 2022 survey, which received over 10,000 responses. Key findings echoed what I found in my informal interviews:

- 83% of young farmers are motivated by social concerns like ending hunger.
- 41% of all young farmers and 59% of Black farmers are struggling with revenue and access to capital.
- 49% of young farmers have not utilized any USDA program and 71% are unfamiliar with programs for which they qualify.
- Farmers of color are more likely to report an adverse experience attempting to apply for a USDA program than white farmers.

Farmers in this nation need our support - the producer population is aging and struggling to make ends meet. The average age of an American farmer has been steadily increasing to 57.5 years, with Black farmers averaging 61 years of age. Ninety-six percent of farming households rely on off-farm income to make ends meet, and that outside income comprises 82% of their annual revenue. At the same time, we have a growing health crisis of diet-related illness that was thoroughly presented during your last hearing.

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By fully funding and expanding farm-to-community nutrition incentive programs we benefit both the farmer and the consumer. By increasing outreach to young farmers and farmers of color, we invest in the future of American agriculture.

Those children that I mentioned at the beginning of my statement are nearly grown up, with my eldest in college studying sustainable agriculture. She wanted me to tell you that, "the food system is everything it takes to get sunshine onto our plates" and as civic leaders it's our responsibility to make sure that process is unimpeded. From the farmer, to the food business owner, to those with hungry bellies, it's our duty to move the sunshine along so that *everyone* can thrive.

Geisinger

Food as Medicine: Current Efforts and Potential Opportunities
U.S. Senate Committee on Agriculture, Nutrition and Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research
December 13, 2022, 10:00 a.m.
Testimony provided by John Bulger, DO, MBA
Chief Medical Officer, Insurance Operations and Strategic Partnerships

Good morning. I would like to thank you Chairman Booker, Ranking Member Braun, and members of the subcommittee for the invitation and the opportunity to participate in today's discussion on the challenges of food insecurity and food as medicine as a viable solution to help treat chronic health conditions.

My name is John Bulger, DO, MBA and I am the Chief Medical Officer, Insurance Operations and Strategic Partnerships for Geisinger. Prior to my appointment at the Health Plan, I served in various clinical roles at Geisinger including Chief Medical Officer, Population Health; Chief Quality Officer; and I continue to be a practicing physician for General Internal Medicine.

Geisinger serves more than one million people and is committed to making better health easier for those we serve. Founded more than 100 years ago by Abigail Geisinger, the system now includes ten hospital campuses, 130 primary care and specialty clinics, a statewide health plan with more than half a million enrollees, two research centers and the Geisinger Commonwealth School of Medicine. With nearly 24,000 employees and more than 1,700 employed physicians and 7,000 nurses, Geisinger is one of the largest, rural, vertically integrated health delivery systems in the nation.

Food for Health

Geisinger has a long history in population health. We are proud to have developed a social determinants of health strategy to align data collected from patient screenings and electronic health record information with our work alongside community partners to develop a multisectoral approach to addressing access to care and health disparities for our patients and our communities. Through these pathways and more, we are building the foundation to create tools to effectively address social determinants of healthcare in our populations.

One intervention we created is the Fresh Food Farmacy® which was developed with the following goals in mind:

- Improve healthy food access for residents in our communities with chronic conditions to improve overall health

- Educate members on the connection between nutrition and health though clinical interactions and evidence-based programs
- Reduce the burden of Type 2 diabetes and related medical complications, optimize prescription use and ultimately lower the cost of total care
- Narrow the meal gap for those who are food insecure by ensuring participants have access to at least 10 fresh and healthy meals per week for them and their household
- Collaborate with community partners to align and enhance the offerings of the Fresh Food Farmacy®

To start, we focused on how food could be used to manage Type 2 diabetes – a problem facing patients and the healthcare industry nationwide. For instance, based on reporting the American Diabetes Association estimated the total cost of diagnosed diabetes in 2017 was $327 billion, including $237 billion in direct medical costs and $90 billion in reduced productivity. Through the Fresh Food Farmacy®, we looked to empower chronic diabetes patients facing food insecurity to manage their medical condition through food-related behavior change, education, and clinical management. As you know, lifestyle change is the cornerstone of treatment for diabetes, which includes weight management, nutrition, physical activity, tobacco cessation and reduction in alcohol use. Additionally, healthy behaviors help to improve blood pressure, cholesterol, blood glucose (blood sugar) and hemoglobin HbA1C, (or HbA1C) a blood test that provides information about a person's average levels of blood glucose over the past three months. And lastly, a nutritious diet is a great way to manage – and prevent – diabetes and other serious health issues. But we know healthy food can be expensive and inaccessible. That's why we created the Fresh Food Farmacy® as a community-based food pantry, so our patients can get fresh food, at no cost, for themselves and their entire household. A prescription to our Fresh Food Farmacy® also gives the participants access to health and wellness classes along with clinical support. At a high-level, this is how the Fresh Food Farmacy® program works:

- Patients are screened in a primary care setting, and if they have A1C level greater than 8.0 and indicate they experience food insecurity, they are given a "prescription" or referral by their primary care physician for the Fresh Food Farmacy®.
- Once enrolled, patients are connected to clinical interventions including care management, diabetes education and consultations with our clinical care team.
- They are also given access to a Geisinger Fresh Food Farmacy® facility which only offers healthy products that meet the American Diabetes Association (ADA) recommendations, which include lean meats, whole grains, fruits and vegetables and limited sodium, saturated fat, and cholesterol. They are able to select from a variety of food options connected to healthy recipes available on site and through the mobile app.
- Each participant has access to our Fresh Food Farmacy® digital app, which maintains over 200 recipes, connection to the clinical care team, and the ability to track health metrics, like blood sugar.

- The program provides enough food to cover 10 meals per week for the patient and their household members.

In addition, we quickly realized that food insecurity was not the only social determinant our patients were facing and continue to develop relationship with community-based organizations to offer support. We also rolled out another solution called Neighborly, a digital platform available to any member of the community that allows them to connect to free and reduced cost local resources such as transportation, housing assistance and other food access options, including but not limited to SNAP benefits.

Today, we have a network with more than 17,000 resources that are available to any member of any community across Pennsylvania. This work has allowed us to partner closely with food banks and other community-based organizations in a more meaningful way and learn from one another. We are focused on identifying the needs and issues of our community members, using data to drive programming, all while getting the care our patients and community members need closer to where they live and work.

Initial Findings

While the Fresh Food Farmacy® is still in its nascent stages, we are encouraged by some of the early findings and successes. The results of the program include:

- Almost 1,600 patients have been enrolled in the Fresh Food Farmacy Program so far, with an average of 3 household members, in both urban and rural locations in Pennsylvania, including Scranton, Shamokin and Lewistown.
- To date, we have screened more than 800,000 patients and members for food insecurity.
- The program has provided over 2 million pounds of food, resulting in almost 1.7 million meals for patients and their families
- Our preliminary internal data suggests the program:
    - Can lower one's A1C on average 2.5 points (for those who begin with a baseline A1C value greater than 9)
    - Can reduce readmissions by 15%; result in 29% fewer ED visits; and improve glucose measures an average of 28%
- One example of the impact this kind of program can have is best expressed with our very first Fresh Food Farmacy® graduate, Rita, a 55-year-old widowed grandmother, caring for her grandchildren, enrolled in this program with the following medical attributes:
    - 13.8 A1C; 181 lbs; 209 LDL and 312 Triglycerides.
- After going through our program, working with a case manager on a healthier diet and exercise management curriculum, she now has the following medical attributes:
    - 5.4 A1C; 135 lbs; 47 LDL and 76 Triglycerides.

Building on our own assessment and monitoring to date, we are working with MIT and have partnered to complete a randomized control trial to continue to collect and analyze data to demonstrate impact, identify opportunities, and refine the program. We have expanded the Fresh Food Farmacy® to test additional disease state populations and engage with existing community-based food pantries on alternative models of delivery.

Again, thank you for the opportunity to present before you today on this critical health care issue. Geisinger stands ready to be a resource for the Committee on this issue and welcomes further discussion. For the benefit of the Committee, the attached provides further information about Geisinger's Fresh Food Farmacy program. I am happy to answer any questions you may have.

Are you ready to live a healthier life? Ask your doctor about our Fresh Food Farmacy or call or visit one of our three locations.

Fresh Food Farmacy Shamokin
4200 Hospital Drive
Coal Township, PA 17866
570-486-2955

Fresh Food Farmacy Scranton
3 W. Olive St., Suite 127
Scranton, PA 18508
570-207-6297

Fresh Food Farmacy Lewistown
106 Derry Heights Blvd.
Lewistown, PA 17044
717-363-9280

Fresh Food Farmacy®

MCH-4488-12/10

A fresh prescription for managing diabetes.

Fresh Food Farmacy®

A nutritious diet is a great way to manage — and prevent — diabetes and other serious health issues. But we know healthy food can be expensive. That's why we created the Fresh Food Farmacy®, so you can get fresh food, free of charge, for yourself and your entire family. We'll also show you how to prepare your food and give you recipes the whole family will enjoy.

Yes, your whole family benefits.

A prescription to our Farmacy also gives you access to health and wellness classes along with clinical support. We'll even help with transportation, housing and food stamp programs.

Imagine how not having to worry about any of that would change your life.

How to be part of the Fresh Food Farmacy.

Your doctor may refer you to see if you qualify for the program, or you can call directly to learn more about the Fresh Food Farmacy. There are a few requirements, including but not limited to:

- You're at least 18 years old
- You've been diagnosed with Type 2 diabetes
- Your HBA1C is 8.0 or higher
- Paying for healthy, nutritious food is a challenge
- You're able to attend onsite classes and work with the care team to manage your diabetes

The program is already changing lives.

These three stories show what's possible with the Fresh Food Farmacy. Each story is different, and each person had their own set of challenges. But thanks to the support of their Fresh Food Farmacy care teams, they're now living healthier, more active lives.

51-year-old truck driver

HBA1C dropped from 10.1 percent to 6.8 percent

When this man's sugars rose, his vision deteriorated, causing him to lose his commercial driver's license (CDL) and his trucking job. Unemployment made food of any kind difficult to afford.

The Fresh Food Farmacy team worked with his caregivers to help him understand his medications by developing and personalizing a medication list that included a color-coding system for sliding-scale insulin dosages.

Today, he's feeling much better, his sugars are within a normal range and his medications have been adjusted. Best of all, he's getting his CDL back and is looking forward to returning to work.

55-year-old caregiver for grandkids and spouse

HBA1C dropped from 13.8 percent to 5.8 percent

This woman is raising three grandchildren and is the primary caretaker for her husband, who has kidney failure and is on dialysis. In the past, she struggled with being underinsured and uninsured, which made it difficult — sometimes impossible — to get the medication she needed.

Thanks to the Fresh Food Farmacy, she's lost 40 pounds, her sugars and weight are within goal and she's achieved a normal BMI of 25. She's even started exercising and is cutting back on smoking with the goal of quitting completely.

55-year-old with fibromyalgia

HBA1C dropped from 8.3 percent to 6.7 percent

Because of her fibromyalgia, this woman needed walking assist devices to get around and was leading an inactive life. She'd had bariatric surgery twice before entering the program, with little improvement in her blood sugars or weight.

Today, she walks without assistance. She's lost 30 pounds since entering the program and has maintained her A1C improvements despite her other health concerns.

Fresh Food Farmacy®

Patient Responsibility:

- Pickup disease appropriate foods on a biweekly basis at assigned FFF location
- Regular clinical care appointment compliance. (Could include a combination of RD, RN, Health Coach, or Community Health Associate services)
- Participate in disease management education opportunities
- Willingness to utilize program to make lifestyle changes to improve health

Patient Eligibility Criteria:

- Age 18 and older
- Type 2 Diabetes Diagnosis
- Currently following with a primary care provider
- **If satellite location***: Patient must see either a Geisinger primary care physician or have Geisinger Health Plan insurance
- HBA1c ≥8.0, drawn within the last year
- Food Insecure

Exclusionary Measures:

- Cannot be on hospice or the current resident of a skilled nursing facility or another facility that manages their dietary needs, such as a rehabilitation center or a shelter that provides meals.
- Cannot be receiving active cancer therapy
- Must have an eGFR ≥30 (Kidney Function)
- Mental health/cognitive concerns that would preclude participation

Food insecurity survey questions:

- Within the past 12 months, I/we worried whether our food would run out before we got money to buy more.
- Within the past 12 months the food, I/we bought just didn't last and we didn't have the money to get more.

How to enroll:

Within Geisinger electronic medical record you can send a **Pool** message by searching 35504 or typing Fresh Food Farmacy; or route a telephone encounter to 35504 or Fresh Food Farmacy. Please include the patient's name, DOB, and MRN.

If you are outside of the Geisinger provider network, you should visit the Fresh Food Farmacy website, linked below, utilizing the Contact us function. Please include the patient's name and contact information.

Testimony Prepared by Kevin Volpp, MD, PhD
Mark V. Pauly President's Distinguished Professor, Perelman School of Medicine and Wharton School, University of Pennsylvania
Member of Advocacy Coordinating Committee, American Heart Association
Leader, Planning Committee, The Rockefeller Foundation and American Heart Association Food is Medicine Research Initiative

Submitted to the Senate Agriculture, Nutrition, and Forestry Committee
Subcommittee on Nutrition, Agricultural Research, and Specialty Crops

December 13, 2022

Chairman Corey Booker, Ranking Member Mike Braun, and members of the Senate Agriculture, Nutrition, and Forestry Subcommittee on Nutrition, Agricultural Research, and Specialty Crops, thank you for the opportunity to testify on behalf of the American Heart Association and its more than 40 million volunteers and supporters. My name is Dr. Kevin Volpp, and I currently serve as the leader of the planning committee for The Rockefeller Foundation and American Heart Association Food is Medicine Research Initiative and as a volunteer member of the American Heart Association's Advocacy Coordinating Committee. I am also the founding Director of the Penn Center for Health Incentives and Behavioral Economics (CHIBE) and the Mark V. Pauly President's Distinguished Professor at the University of Pennsylvania's Perelman School of Medicine and Health Care Management at the Wharton School.

For 20 years, I served as a part-time primary care doctor and hospitalist taking care of patients at the Philadelphia Veterans Affairs Medical Center. Many of my patients struggled with chronic diseases such as diabetes and congestive heart failure, which were exacerbated by their challenges finding affordable healthy food. As a behavioral economist, my work has largely focused on testing innovative ways of applying insights from behavioral economics in improving patient health behavior and clinician performance. Through my work with a variety of health plans, health systems, consumer companies, and individual patients, I have developed a deep understanding about what physicians, individuals, and families need to promote health, prevent disease, cure illness, and manage chronic health conditions. As a member of the American Heart Association's advocacy committee, I have worked to advance the organization's mission to be a relentless force for a world of longer, healthier lives for all. I am also proud to represent the American Heart Association as a major advocate for population health at the federal, state, and local levels, as a supporter of healthy communities, and as a champion for improving heart health for all.

Next to the federal government, the American Heart Association is the largest nonprofit funding source for cardiovascular and cerebrovascular disease research. For decades, the American Heart Association has supported legislative and regulatory proposals at all levels of government that

help improve nutrition and food security. Our focus has always been on ensuring that we use food policies in our nation to improve diet quality and subsequently the heart health of all.

Cardiovascular disease is the leading cause of death in the United States and chronic diseases affected by nutrition including cardiovascular disease, stroke, and diabetes account for most of the nation's $3.8 trillion in annual health care costs.[1] Cardiovascular disease alone accounts for 12 percent of total U.S. health expenditures, considerably more than any other disease.[2] Heart disease and stroke cost the U.S. health care system $216 billion annually and cause $147 billion in lost job productivity.[3] Nutrition insecurity and unhealthy diets—characterized by a high intake of calories, sodium, added sugars, and saturated fat, and low intake of vegetables, fruits, and whole grains—significantly contributes to the development of cardiometabolic disease and chronic diseases more broadly. There are significant equity disparities as well, with higher rates of chronic disease mortality among those with low income, less education, and across different racial/ethnic populations. Black, Latino, and Native populations and low-income households,[4] have higher rates poor diet quality compared with the overall population.[5] The COVID-19 pandemic has only exacerbated these disparities.

The connection between chronic disease and nutrition is undeniable. Our diets not only play a role in our risk of developing chronic diseases, but also can prevent, manage, and treat these diseases. Stable availability, access, affordability, and use of nutritious foods across the lifecycle can help reduce the risk of chronic diseases and help treat and manage chronic diseases. Unfortunately, many individuals in the United States are nutrition and food insecure[6] and do not have access to affordable, nutritious food.

There is a growing body of evidence that the health care system can be utilized to help patients access and consume healthy foods. To help address unhealthy diets and nutrition insecurity, evidence-based, cost-effective nutrition and food programs can be integrated into the health care system. "Food is Medicine" refers to a medical treatment or preventive intervention for patients with a diet-related health risk or condition and/or nutrition and food insecurity, to which they are referred by a health care provider, health care organization, or health insurance plan.[7] Evidence indicates that incorporating Food is Medicine programs into the health care system is associated

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[7] Harvard University Center for Health Law and Policy Innovation. https://chlpi.org/project/food-is-medicine/

with improved health outcomes, reduced health care use and cost, reduced health disparities, and reduced nutrition and food insecurity for patients living with chronic diseases.

For decades, the American Heart Association has advocated for policies that improve heart health across the U.S. population. The Association supports efforts to increase equitable access to nutritious, affordable food in the health care delivery system and to connect under resourced patients with community resources that will enable consumption of healthy eating patterns. While the ultimate desire is to advance nutrition and food programs that improve health and well-being for all in America, we must start by strengthening the existing evidence base for Food is Medicine. To build the case for widespread integration of Food is Medicine programs in the health care delivery system, there needs to be more robust, generalizable research that conclusively demonstrates effectiveness and value of such programs when delivered using scalable platforms. I am pleased to testify today about why Food is Medicine programs are promising and why more evidence is needed.

In the past decade, Food is Medicine approaches have gained interest and momentum, especially as the COVID-19 pandemic raised public consciousness about nutrition security. Expanding availability and use of nutrition services at scale could be a key to supporting better health and health equity and reducing preventable health care expenditures. To unlock the full potential of Food is Medicine, we must build on the existing scientific evidence. Further research is needed to determine and support the best approaches to increase availability, access, affordability, and consumption of nutritious foods via health care integration.[8] The research must be purpose-built to help decision-makers across the country—including private, public, and nonprofit sectors that are currently working in silos—prioritize policies and programs that integrate nutrition incentives into health care delivery, create clinic-community linkages, and develop programs that are sufficiently cost effective to merit benefit coverage and reimbursement for patients. For many populations, especially those with lower incomes and people of color, healthy food is often less accessible. Factors that impact accessibility include cost barriers, geographical location, personal cognitive and physical capacity factors (i.e., dementia, disability, etc.), and inadequate matching with cultural and personal preferences. Households that do not have access to healthy foods are at a higher risk of consuming calorie-dense, nutrient deficient foods, which increases the risk for chronic diseases. New research can help inform the development of more impactful health care policies that improve individual health markers, lower health care costs, and are feasible and scalable from both an implementation and cost perspective.

The interest in Food is Medicine programs and their increasing use within health care has been in part ahead of the research, driven in large part by organizations and advocates who have worked to develop service delivery programs to meet the nutritional needs of people living with chronic diseases. Within the past several years, health care integration of Food is Medicine interventions has become increasingly common. A new wave of interest and investment in exploring the full impact of these programs offers opportunities to sustainably support and scale access to the most effective programs.

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[8] Thorndike AN et.al. Strengthening US Food Policies and Programs to Promote Equity in Nutrition Security: A Policy Statement from the American Heart Association. Circulation. 2022; 145:e1077-e1093

There are distinct approaches that are described broadly as Food is Medicine, including but not limited to:

- **Medically Tailored Meals.** Medically tailored meals (MTM) are utilized to address diet-related diseases and food access among higher-risk individuals. MTM provide home delivery of fully prepared meals designed by a registered dietician to meet the specific dietary needs of an individual living with one or more chronic diseases. This intervention is ideal for patients living with chronic diseases who are unable to shop for or prepare meals for themselves, such as patients following a hospitalization for congestive heart failure who are frail and have difficulty ambulating.

- **Healthy Food Prescription Programs**. Food prescription programs (also called produce prescription programs) incorporate food access directly into the patient-provider relationship which better enables patients to follow their providers' dietary advice. In these programs, providers "prescribe" fruits and vegetables, or other healthy foods, to at-risk patients in the form of coupons or vouchers for local farmers' markets, grocery stores, or mobile markets. These programs are also typically accompanied by nutrition education and/or counseling and can be paired with services provided by registered dieticians or community health workers. Food prescription programs are typically offered to people living with chronic diseases that are exacerbated by unhealthy food and who have nutrition and food insecurity. Some food prescription programs have been funded through the farm bill reauthorization process. The 2018 farm bill provided $250 million of mandatory funding for the Gus Schumacher Nutrition Incentives Program (GusNIP), some of which is allocated for produce prescription pilots.

These programs have commonly been evaluated as part of small-scale studies and pilot projects conducted using local resources that are generally not scalable. Of the studies on Food is Medicine programs, the literature on medically tailored meals is the most well-developed, with a number of rigorous study designs and results that examine clinical outcomes and health care utilization and spending. MTM are associated with improved health outcomes for people living with chronic diseases such as diabetes, heart failure, HIV, and chronic liver disease. Patients on medically tailored meals have reported higher quality of life scores, lower rates of food insecurity, and improved diet quality.[9,10] MTM are also associated with reduced hospital admissions and overall health care costs.[11,19,12]

[9] Ishaq O, Vega RM, Zullig L, Wassung A, Walters D, Du NBL, Ahn J, Leichman CG, Cohen DJ, Gu P, Chachoua A, Leichman LP, Pearl K and Schiff PB. Food as medicine: A randomized controlled trial (RCT) of home delivered, medically tailored meals (HDMTM) on quality of life (QoL) in metastatic lung and non-colorectal GI cancer patients. Journal of Clinical Oncology. 2016;34

[10] Berkowitz SA, Delahanty LM, Terranova J, Steiner B, Ruazol MP, Singh R, Shahid NN and Wexler DJ. Medically Tailored Meal Delivery for Diabetes Patients with Food Insecurity: a Randomized Cross-over Trial. J Gen Intern Med. 2019;34:396-404.

[11] Berkowitz SA, Terranova J, Randall L, Cranston K, Waters DB and Hsu J. Association Between Receipt of a Medically Tailored Meal Program and Health Care Use. JAMA Intern Med. 2019;179:786-793.

[12] Berkowitz SA, Terranova J, Hill C, Ajayi T, Linsky T, Tishler LW and DeWalt DA. Meal Delivery Programs Reduce The Use Of Costly Health Care In Dually Eligible Medicare And Medicaid Beneficiaries. Health Aff (Millwood). 2018;37:535-542.

The research suggests that produce prescription programs are effective at increasing fruit and vegetable consumption[13,14] and reducing household food insecurity.[15] The studies conducted on food prescription programs have found that some of these programs are associated with improved health outcomes and reduced health care burden including decreased hemoglobin A1C levels[16] and lower body mass index.[17] While modeling studies have suggested that food prescription programs may prevent cardiovascular disease and diabetes, these have typically had to make assumptions about the longer term effects of short-term interventions that may or may not end up being confirmed.[18]

In general, many of the Food is Medicine studies that have been conducted using pre-post examination of a group that received an intervention without comparison groups; the measured impact of such interventions may be overstated since they do not account for the general tendency of measured outcomes to regress to the mean. Furthermore, only a small number of randomized controlled trials have been done and those that have been done with few exceptions are small and typically not tested using a scalable infrastructure. More broadly, there are important questions to answer regarding the intensity of Food is Medicine interventions, the duration, delivery, the role of patient preferences and choice, the incorporation of educational or behavioral strategies or coaching in addition to food permission, the testing of comparative effectiveness of ways to change behaviors and habits, and of cost effectiveness. More testing using infrastructure that can be replicated and scaled will be particularly important in determining ways to create solutions that could be deployed widely across the United States.

Growing recognition of the importance of unmet social needs and widespread health inequities is helping to drive further interest in developing and testing Food is Medicine programs. Changes in payment reforms to Medicare and Medicaid has signaled openness to regulatory pathways that can be leveraged to impact provider behavior and patient outcomes. Recently, the Centers for Medicare and Medicaid Services for the first-time required hospitals to screen patients for needs related to food insecurity, housing, transportation, and other social determinants of health. State Medicaid agencies may currently apply for waivers (i.e., Section 1115 demonstration waiver and 1915(b) waiver) to test new Food Medicine approaches, including MTM and produce prescription programs, and states have begun to take advantage of these opportunities for innovation. These policy pathways have created momentum and an environment that allows for more researchers to assess the effectiveness of the implementation of different Food is Medicine approaches.

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[13] Bhat S, Coyle DH, Trieu K, Neal B, Mozaffarian D, Marklund M and Wu JHY. Healthy Food Prescription Programs and their Impact on Dietary Behavior and Cardiometabolic Risk Factors: A Systematic Review and Meta-Analysis. Advances in Nutrition. 2021.

[14] Marcinkevage J, Auvinen A and Nambuthiri S. Washington State's Fruit and VegetablePrescription Program: Improving Affordability of Healthy Foods for Low-Income Patients. Prev Chronic Dis. 2019;16:e91.

[15] Ridberg RA, Bell JF, Merritt KE, Harris DM, Young HM and Tancredi DJ. A Pediatric Fruit and Vegetable Prescription Program Increases Food Security in Low-Income Households. J Nutr Educ Behav. 2019;51:224-230.e1.

[16] Bryce R, Guajardo C, Ilarraza D, Milgrom N, Pike D, Savoie K, Valbuena F and Miller-Matero LR. Participation in a farmers' market fruit and vegetable prescription program at a federally qualified health center improves hemoglobin A1C in low-income uncontrolled diabetics. Prev Med Rep. 2017;7.

[17] Cavanagh M, Jurkowski J, Bozlak C, Hastings J and Klein A. Veggie Rx: an outcome evaluation of a healthy food incentive programme. Public Health Nutr. 2017;20:2636-2641.

[18] Lee Y, Mozaffarian D, Sy S, Huang Y, Liu J, Wilde PE, Abrahams-Gessel S, Jardim TdSV, Gaziano TA and Micha R. Costeffectiveness of financial incentives for improving diet and health through Medicare and Medicaid: A microsimulation study. PLoS Med. 2019;16:e1002761.

Several organizations, including the American Heart Association, have conducted comprehensive analyses of programs and efforts in the Food is Medicine space and have provided recommendations for programs, research, and policy solutions. A common challenge and barrier to system transformation has been that among the wide variety of programmatic interventions at the intersection of food and health, most exist on a small and siloed scale. Different hospitals, payers, and health care providers have approached these programs in various ways, without any clear or standardized set of implementation approaches likely to be capable of scaling nationally. To create more generalizable approaches, there would ideally be coordination between the Department of Health and Human Services (HHS) and the United States Department of Agriculture (USDA) with support for research from the National Institutes of Health (NIH) and involvement of public-private partnerships both to facilitate the testing of scalable ideas and to provide financial support. Current Food is Medicine interventions do not consistently include the perspectives and voice of community beneficiaries, which has further limited engagement by those who are offered the programs and thereby diminished their impact. In all these studies, careful assessment of cost effectiveness, particularly in relation to already covered health care services, should be conducted as this will be important in informing decisions about public or private health insurance coverage.

In conjunction with the White House Conference on Hunger, Nutrition, and Health, which came to fruition thanks to the work of the Chair and Ranking Member of this subcommittee, The Rockefeller Foundation and the American Heart Association have committed to mobilize $250 million to build a national Food is Medicine Research Initiative, which is planned to launch in Spring 2023. This transformative research initiative will generate evidence and tools to help the health sector design and scale programs that increase access to nutritious food, with the goal of generating evidence on what works for whom that can be used to convince public and private sector payors to cover different types of interventions that could vary based on the level of patient need and the likely cost of inaction. Working with patients and partners in government, academia, health care, industry, and community-based organizations, the Food is Medicine Research Initiative will accelerate the rate of innovation as we will build the public-private partnerships necessary to unlock solutions to some of our most complex challenges

As the pandemic has demonstrated, chronic diseases and unhealthy diets are inextricably linked, and health disparities remain all too pervasive. Continued federal support for nutrition research, including Food is Medicine programs, will be necessary to support efforts to prevent and treat chronic diseases, lower health care costs, and improve quality of life. I thank you for the opportunity to offer my perspective today and for your continued leadership to improve cardiovascular health and wellness by increasing access to healthy food. I look forward to your questions.

Written Statement of Dr. Bob Chestnut,

Chief Medical Executive Director, Cummins Inc.

Hearing on Food as Medicine: Current Efforts and Potential Opportunities

U.S. Senate Agriculture Subcommittee on Food and Nutrition,

Specialty Crops, Organics, and Research

December 13, 2022

Chairman Booker, Ranking Member Braun, and members of the Subcommittee, thank you for inviting me here today and for your interest in using nutrition in preventive and curative care to reduce the causes of death, disease, and disability. My name is Dr. Bob Chestnut, and I am Cummins' Chief Medical Officer and the Executive Director of Global Clinical Operations.

Cummins' health and wellness programs are a part of Cummins' demand that everything we do leads to a cleaner, healthier and safer environment. We have long believed we must focus on the whole person to achieve improved health and wellness outcomes. This focus on the whole person includes programs to improve nutrition, increase health literacy, improve access to healthful foods, and reduce the prevalence and morbidity of diet-related chronic diseases. My following testimony will detail the work and reason behind Cummins' preventive health measures and how Congress can help companies like Cummins expand these benefits for their workers, families, and communities.

Cummins Inc.

Cummins Inc. is a 100-year-old company founded and headquartered in Columbus, Indiana. We are a global power leader that brings the right technology solutions to market at the right time. These solutions include advanced diesel, natural gas, hybrid, electric and fuel cell, and other technologies. We're powering the future through innovations that improve people's lives and reduce our environmental footprint. Cummins employs more than 70,000 employees globally and operates in over 190 countries throughout the world. In the United States, we have manufacturing facilities in Indiana, Minnesota, New York, Michigan, North Carolina, South Carolina, Tennessee, Wisconsin, Connecticut, and California. Beyond our manufacturing operations in the United States, we also own our distributor network with locations in almost every state.

Cummins products are in a wide range of applications, including small passenger trucks, tractor-trailers that move goods across the country, pick-up and delivery trucks, as well as transit and school buses. You will also find our products in refuse trucks, mining equipment, oil-and-gas operations, passenger trains, and tugboats. Our products also generate electricity in applications from portable power systems that support our military to critical backup power systems that keep data centers and hospitals up and running 24 hours a day, seven days a week. National Landmarks that many Americans see every day, like Wrigley Field and the Statue of Liberty, also rely on Cummins for their backup power needs.

Current Food as Medicine Interventions

Cummins is mindful that success is only achievable through the work of a talented, determined, and healthy workforce. We demonstrate our commitment to our employees through our health, welfare, well-being programs, and onsite clinical services. We also acknowledge that a person's workplace may positively or negatively impact their health and well-being and strive for Cummins' work environments to be health-promoting.

Cummins is particularly proud of our LiveWell Center located at the very heart of our working population in Columbus, Indiana. More than 10,000 employees and their dependents live within range of this comprehensive Patient-Centered Medical Home. In addition to the typical advance primary care services, we offer many programs and resources specific to nutrition. These include a Teaching Kitchen, medical providers formally trained in Lifestyle Medicine, chronic care management, and wellness coaching.

Our Teaching Kitchen is supported by a professional chef who meets with individuals or groups to provide hands-on experience with healthful food selection, food preparation, and health literacy. We have found that people will often successfully expand or shift their palate after becoming more familiar with healthy foods and having positive experiences through this kitchen. While the Teaching Kitchen is located in Columbus, Indiana, employees and dependents across the United States can connect virtually and benefit from its offerings.

In addition to primary care and occupational health, our medical providers are formally trained and board-certified in Lifestyle Medicine. With this expertise, they can integrate nutrition, physical activity, and other behavior modification therapies in their treatment plans to reduce and frequently reverse disease.

We offer chronic care management for employees and dependents with diabetes or pre-diabetes. A team-based model is used to support these individuals with the physician, ambulatory pharmacist, registered dieticians, Teaching Kitchen chef, and other team members creating multiple layers of support.

Wellness Coaching is available for all employees and dependents throughout the United States. Participants can join in person or virtually at no cost. At our larger sites, we offer our Lifestyle 365 program. This is a ten-session, intensive program focused on healthful foods, physical activity, and building health-promoting behaviors led by our wellness coaches. Participants receive a prepared lunch of healthy food to try in each session. We have found that this hands-on part of the program benefits individuals to be fully engaged and try previously unfamiliar food. Pre- and post-biometric measures support that this program improves overall health and increases positivity toward health-promoting behaviors.

We can offer healthful cafeteria and vending items at many of our larger sites. Our cafeterias help improve food access and are places where employees can gain exposure and positive experiences with healthier options. We have found interventions as simple as reorganizing cafeteria and vending machine offerings so that healthier options are at eye level or seen first to improve choices.

Benefits of a Business Approach

Cummins believes the business community should engage in public health policy discussions because we believe investing in the diverse but interconnected communities we serve improves

our communities. Employees and their families that benefit from accessible health services become community health ambassadors and can positively influence others at their schools, places of worship, and worksites.

It also makes good business sense. The combined healthcare spending and lost productivity from suboptimal eating cost the economy $1.1 trillion yearly.[1] Diet-related health conditions are more likely to lead to absenteeism and less productivity at work. Related emotional and mood disorders can also make employees tired and less satisfied with their work. We know that happier and fulfilled employees are more likely to stay at their company and even recruit other talented individuals to come work there.

Cummins believes we have the ability and reach to support our employees and their families in living productive, active lives. Over 145 million Americans are workers, and most spend at least 50% of their time at the workplace.[2] This means businesses have the access and attention of those that the medical and policy worlds seek to help. Internally and externally, companies have numerous channels and spheres of influence they can use to encourage healthier lifestyles. For example, employee newsletters, social media channels, onsite signage, paid advertising, town hall meetings, and modeling responsible behaviors can all support employee and community health. Businesses may also improve food access and create health-promoting work environments by offering healthful, affordable food in their cafeterias and break rooms.

Congressional Support

Congress can take meaningful steps in helping the business community support public health initiatives such as reducing food-based health conditions.

First, continue to include the business community in health discussions exploring how employers may create health-promoting work environments for their employees. As stated before, employers can play a meaningful role in increasing the accessibility of nutrition-based chronic disease reducing resources. Federal support like tax incentives on corporate food as medicine investments would increase the ability of businesses to offer health products and services. Support for companies providing flexible health solutions would be particularly impactful for companies looking to offer telehealth and medical services across state lines. Employers could increase the value of our health resources and reduce inequities by allowing our employees and dependents greater access to these tools.

Congress can also support programs such as Total Worker Health by the National Institute for Occupational Safety and Health as they include nutrition as a critical component of their programs for employers to adopt a holistic health approach. The Total Worker Health program recognizes that many health problems previously considered unrelated to work, including cardiovascular disease, obesity, depression, and sleep disorders, can also lead to unsafe worksites. Increased

[1] The Rockefeller Foundation. (July 2021). *True Cost of Food: Measuring What Matters to Transform the U.S. Food System*. https://www.rockefellerfoundation.org/wp-content/uploads/2021/07/True-Cost-of-Food-Full-Report-Final.pdf

[2] National Institutes of Health – Office of Disease Prevention. "Total Worker Health—What's Work Got to Do With It?" https://prevention.nih.gov/research-priorities/research-needs-and-gaps/pathways-prevention/total-worker-healthr-whats-work-got-do-it. Accessed December 7, 2022.

resources for the Total Worker Health program could help businesses develop tailored, comprehensive health solutions, including increasing daily access to healthier food and lifestyles.

Conclusion

Thank you, again, for the great honor and privilege of speaking to you all today. If I can provide any information to you on behalf of Cummins Inc. I would be honored to discuss this or any other issue with you or your staff.

DOCUMENTS SUBMITTED FOR THE RECORD

DECEMBER 13, 2022

NEJM Catalyst | Innovations in Care Delivery

ARTICLE

Prescribing Food as a Specialty Drug

Geisinger's program of providing free food as a treatment for diabetes yields improved outcomes for patients while reducing the cost of care.

By Andrea T. Feinberg, MD, Allison Hess, Michelle Passaretti, BSN, RN, CCM, Stacy Coolbaugh, MBA, RDN, LDN & Thomas H. Lee, MD, MSc

April 10, 2018

This article appeared in NEJM Catalyst prior to the launch of the NEJM Catalyst Innovations in Care Delivery journal. Learn more.

"The last time I looked in my textbook, the specific therapy for malnutrition is food." That response was given by Jack Geiger, who helped create the community health center model in rural Mississippi in the 1960s. He had been challenged for buying food for patients and charging it to his center's pharmacy budget. His retort became a rallying cry for social needs activists, who loved Geiger's combination of rebelliousness and common sense.

Nevertheless, in most health care organizations, Geiger's argument for meeting patients' social needs has been more rhetoric than reality — that is, until recently. Despite political uncertainty from Washington, health care is moving away from its focus on fee-for-service and toward value, i.e., meeting patients' needs as efficiently as possible. To do so, many providers are developing systems to detect and meet patients' unmet needs.

Concentrating the Research Focus

It's new work, and it's hard work. It's usually unfunded work. But it works.

> “It’s new work, and it’s hard work. It’s usually unfunded work. But it works. At least it *can* work, when pursued with the same discipline with which researchers might test a new drug.”

At least it *can* work, when pursued with the same discipline with which researchers might test a new drug: focusing on a well-defined population with a good chance of showing benefit if the intervention is effective. At Geisinger Health System, we understood the risks of trying to “boil the ocean,” and instead tried to see what was involved in meeting just one social need in just one population. We decided to concentrate on diabetes, a condition that affects 11.3% of the population in Pennsylvania, which is higher than the national average. We wanted to work out administrative procedures in which we provided healthy food as if it were a drug and started a program in 2016 called Fresh Food Farmacy.

We focused on food because research suggests that food insecurity, or lack of access to nutritionally adequate food, is one of the most important risk factors for developing type 2 diabetes. Food-insecure adults are two to three times more likely to have diabetes than adults who are food secure. And food insecurity is widespread; more than one in eight American adults and one in six children is food insecure. People with severely limited incomes often turn to inexpensive, easily accessible food that is rich in calories and poor in nutrients, which can cause and exacerbate diabetes.

Directly Dealing with Food Insecurity

The key steps in our program: First, we screen for food insecurity. Then, we give away free, nutritious food. Along the way, we teach our patients about their disease and how to manage it.

Geisinger based its program upon two optimistic assumptions: first, that eating healthfully improves health, and second, that people *want* to eat better but may not know how to or have the means to do so.

> “The key steps in our program: First, we screen for food insecurity. Then, we give away free, nutritious food. Along the way, we teach our patients about their disease and how to manage it.”

The target patients eligible for Fresh Food Farmacy are adults whose type 2 diabetes is not well controlled. They must also answer “yes” to at least one of two questions that screen for food insecurity: (1) “Within the past 12 months I/we worried whether our food would run out before we got money to buy more,” and (2) “Within the past 12 months the food I/we bought just didn’t last, and we didn’t have money to get more.” Data were collected via our EMR searching for diagnosis of type 2 diabetes with elevated sugars out of control typified by a blood test measurement of hemoglobin A1c (HbA1c) ≥8. Patients were screened for food insecurity electronically (via the patient portal), by phone, or in person when at a clinic visit. Of 458 patients screened, 128 patients were found eligible for the Fresh Food Farmacy, and 95 patients were enrolled.

Figure 1.

Exploring Program Components

The "Farmacy" for this program is a food pantry built in a Geisinger clinical center in Shamokin, Pennsylvania. It provides enough fresh fruits and vegetables, whole grains, and lean proteins to feed program participants and their entire household two healthy meals 5 days per week each. Patients are also given a weekly menu and recipes to help them learn to use ingredients that may be unfamiliar to them.

Once enrolled, participants are required to attend 15 hours of group classes. They learn basic concepts about their disease, including: What is diabetes? How do you get it? What is blood sugar? And how does my diet affect my blood sugar? The goal is to give patients a better understanding of their diabetes, so they increase their ability to care for themselves.

> “There are ancillary costs to the program, but ancillary benefits as well. Fresh Food Farmacy is feeding entire families because, well, feeding only the participants is impractical when they eat with their families.”

Participants also have access to a care team that includes a nurse, primary care physician, registered dietitian, pharmacist, health coach, community health assistant, and administrative support personnel. The team offers services to help patients sustain their lifestyle improvements, including direct medication-management assistance; nutrition counseling; health coaching; and ongoing case management to address transportation, family care, and other challenges that can make engagement difficult.

Our initial pilot was limited to six patients. Within 9 months, we scaled up to include 50 patients. As of March 2018, we are serving 112 patients/households, feeding an average 336 people per week, which amounts to 3,360 meals per week or 174,720 meals per year. One of our goals is to reduce the meal gap in our community, and extending free food to those in the patient’s household is helping with that.

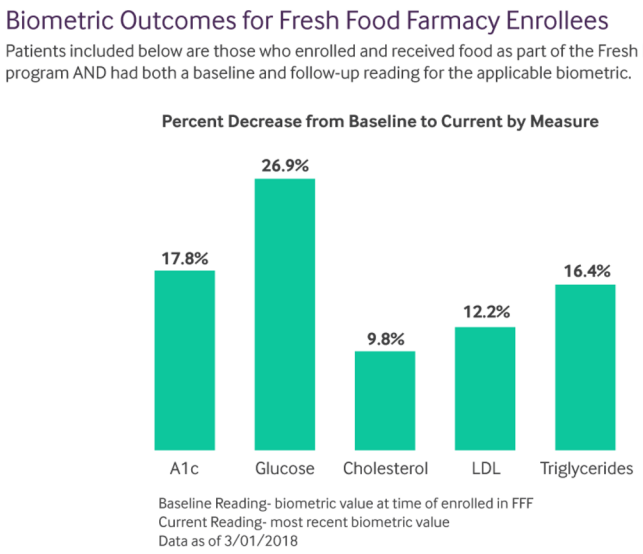
We currently fund the program through grants (40%), in-kind reciprocal contributions with Geisinger Health System (30%), and private donations (30%). Geisinger provides in-kind administrative support and rent-free space for the food pantry and clinical areas, though we anticipate that, as we expand, it’s likely that the program will pay rent.

Delivering Clinical and Financial Results

In 18 months, this approach has led to a drop in HbA1c levels from an average of 9.6% before enrolling in the program to 7.5%. To put this change in perspective, diabetes patients who take two or three medications can expect their HbA1c to drop between 0.5 and 1.2 percentage points. The average 2.1 percentage point drop in HbA1c levels is a better

outcome and corresponds to a more than 40% decrease in their risk of death or serious complications.

Figure 2.



Because many of the participants are insured by Geisinger Health Plan, health care spending data are available for 37 of our patients. Thus far, claims data shows costs for our pilot patients dropped by 80%, from an average of $240,000 per member per year, to $48,000 per member per year. These data come from a small sample of patients, of course, but the enormous baseline annual cost suggests that the combination of factors that defined eligibility (poorly controlled diabetes, screening positive for food insecurity, and willingness to enroll in the program) identifies an extraordinarily sick and costly

population. We assume that Geisinger case managers were most relentless in encouraging their sickest patients to undergo screening for the program, thus further skewing the population toward high costs, so some of the decrease in costs could reflect "regression toward the mean."

"Is free healthy food the driver of this improvement in health and reduction in costs? Or is it the education and case management that come with that food? We don't know, but we suspect that there is synergy and would not want to separate them."

Nevertheless, the large drop suggests considerable potential to improve health via a program with operational costs of about $2,400 per patient per year. Is free healthy food the driver of this improvement in health and reduction in costs? Or is it the education and case management that come with that food? We don't know, but we suspect that there is synergy and would not want to separate them.

From a financial perspective, one could argue that most of the program cost (i.e., the care management team) is consistent with standard of care traditional diabetes disease management, and those costs are consistent with traditional care. The acquisition costs to the program's "specialty drug" — free healthy food — averages about $6 per person per week. (Yes, that's about 60 cents per meal for 10 meals. We purchase about 60% of the food through the local food bank, and about 40% through retail providers for fresh fruits, vegetables, and fish.) If a new diabetes drug became available that could double the effectiveness of glucose control, it would likely be priced considerably higher than $6 per week (and if it wasn't, the pharmaceutical firm's stockholders would be in revolt).

There are ancillary costs to the program, but ancillary benefits as well. Fresh Food Farmacy is feeding entire families because, well, feeding only the participants is impractical when they eat with their families. Patients have had significant improvements in their cholesterol, blood sugar, and triglycerides and many are asking for help in other areas, such as becoming more physically active and quitting smoking. The health benefits to family members have not been part of the evaluation to date, but they will be assessed in the future.

Some might call the Fresh Food Farmacy a nontraditional approach to diabetes, but if one considers fresh healthy food to be the equivalent of a drug covered by insurance and provided by the health care system, then this is essentially a disease management program — just more successful than most. And, without systems for its appropriate, effective, and efficient use, fresh healthy food is no better than any medication. Our experience suggests that by detecting the patients most likely to benefit from the program and meeting their needs, we can reduce hunger in our communities while improving the health of our patients.

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Chief Medical Officer, Press Ganey Associates

Topics

Population Health

Care Management

Health Equity

Social Determinants of Health (SDOH)

December 13, 2022

Testimony submitted to The Committee on Agriculture, Nutrition, and Forestry of the United States Senate Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research

"Food as Medicine: Current Efforts and Potential Opportunities," Tuesday, December 13, 2022

My name is Jennifer Maynard, and I am the CEO and co-founder of Nutrition for Longevity and President of United4Longevity.

I thank you for the opportunity to share my thoughts regarding the criticality of incorporating real, healthy, food into our healthcare system. Evidence-based, cost-effective solutions already exist that can provide significant improvements to health-related outcomes while reducing overall healthcare costs. These solutions also support local farmers who are trying to successfully navigate and thrive in our modern agricultural environment.

The work required to build the next generation of healthcare, with "Food as Medicine" as a major component, has already started. I look forward to sharing my observations of where we are, and my vision of where America can be. America can move into the next generation of agriculture, nutrition, and healthcare policy by embracing the large and robust body of evidence that links food and nutrition insecurity to poor health outcomes, both physical and mental; and expanding existing healthcare solutions and waiver programs.

Nutrition for Longevity is a New Jersey-based company whose overall mission is to provide "Food as Medicine" across New Jersey, Kentucky, and the continental United States. Nutrition for Longevity specializes in providing Medically Tailored Meals, Prescription Produce Packages, Medical Nutrition Therapy, Nutrition Education, Nutrition Related Research, and Behavioral & Lifestyle Modification Coaching. Nutrition for Longevity works closely with Aging & Disability Resource Centers (ADRCs), Ryan White HIV/AIDS Support Providers, Managed Care Organizations (MCOs) providing Managed Long Term Care Services, and Accountable Care Organization (ACOs) supporting Medicare Advantage Patients across New Jersey and the United States to provide such services. We help support appropriate screening by working with our partners to reliably identify at-risk populations who are impacted by food insecurity and have health-related nutritional needs. After screening, we connect those in need with science-backed nutritional interventions. Our data driven approach provides solid metrics that demonstrate measurable benefits of Food as Medicine interventions to the individual and the overall healthcare system.

During the Covid-19 crisis, Nutrition for Longevity donated tens of thousands of meals to doctors, nurses, front line workers, first responders and populations in need. At that time, I observed many gaps in coverage of nutritionally balanced meals for those most in need. To fill those gaps, I started United4Longevity, a 501(C)3 social enterprise to help in areas where service coverage was not possible via the traditional insurance payment channels or cash payments. United4Longevity is focused on addressing food insecurity and providing Medically Tailored Food, including Prescription Produce Packages, to those that are at risk or already battling chronic illness aggravated by Health-Related Social Needs (HRSN). United4Longevity exists to ensure science-backed nutritional interventions are accessible to all populations in need, especially when there are socio-economic resource constraints at an individual level, or where policy and government funding has not yet filled these gaps. At United4Longevity we believe healthy food should be an inherent right, not a privilege!

The US is already in a food and health crisis with the CDC reporting that over 60% of our population is already impacted by at least one preventable chronic illness and the numbers continue to rise[1]. The Institute of Alternative Futures now estimates that Diabetes alone will increase more than 50% by 2030[2]. Moreover, communities of color have an over 70% higher risk of being diagnosed with Diabetes and Hypertension[3,4,5,6].

According to the World Economic Forum, the US spends the least per capita on food of any country in the world and the most per capital on healthcare, yet the US is far from the healthiest country[7,8,9]. But we see that cheap, highly processed foods are costing the US far more per dollar spent due to the chronic illness burden created by these foods[10]. Our current food model originated from the Great Depression Era, which was a rapid response to unprecedented levels of food insecurity. The priority was to build a cheap, accessible food industry, but it fueled our "Junk Food Industry" which is now driving a new health crisis of nutrition insecurity. This course can be corrected by shifting the focus on early risk detection and prevention through "Food as Medicine".

Despite Hippocrates, the "Father of Modern Medicine" acknowledging the link between food and medicine over 2,400 years ago, many of our existing policies do not recognize that healthy food should be our country's first line of defense as the lowest cost, most impactful solution for the prevention and treatment of diet-related chronic illnesses. Studies have clearly demonstrated the health benefits of nutritionally balanced Medically Tailored Meals[11], yet Medically Tailored Meals and Medical Nutrition Therapy are often left out of the Healthcare Toolbox as a viable intervention and prevention.

I applaud the Administration's recently released National Strategy on Hunger, Nutrition, and Health as it is a critical first step to realign our country's food and health outcomes. While many states are making policy progress, there are still major gaps in addressing Nutrition Insecurity for underserved populations in all states. According to the CDC, we still see that only 1 in 10 Americans is eating the recommended servings of fruits and vegetables per day. This number is even worse in senior and minority populations where Type 2 Diabetes, Hypertension and women and infant mortality rates continue to rise[12].

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[1] https://www.cdc.gov/chronicdisease/index.htm#:~:text=National%20Center%20for%20Chronic%20Disease%20Prevention%20and%20Health%20Promotion,-Related%20Pages&text=CDC's%20NCCDPHP%20believes%20that%20all,to%20live%20their%20healthiest%20life.&text=Six%20in%20ten%20Americans%20live,stroke%2C%20cancer%2C%20or%20diabetes.

[2] Rowley WR, Bezold C, Arikan Y, Byrne E, Krohe S. Diabetes 2030: Insights from Yesterday, Today, and Future Trends. Popul Health Manag. 2017 Feb;20(1):6-12. doi: 10.1089/pop.2015.0181. Epub 2016 Apr 28. PMID: 27124621; PMCID: PMC5278808.

[3] Malik VS, Hu FB. Sugar-sweetened beverages and cardiometabolic health: An update of the evidence. Nutrients. 2019;11(8):1840.

[4] Malik VS, Hu FB. Fctose and cardiometabolic health: What the evidence from sugar-sweetened beverages tells us. J Am Coll Cardiol. 2015;66(14):1615-1624.

[5] Bomback A, Derebail V, Shoham D, et al. Sugar-sweetened soda consumption, hyperuricemia, and kidney disease. Kidney International. 2010;77(7):609-616.

[6] Valenzuela MJ, Waterhouse B, Aggarwal VR, Bloor K, Doran T. Effect of sugar-sweetened beverages on oral health: a systematic review and meta-analysis. Eur J Public Health. 2020.

[7] https://www.weforum.org/agenda/2018/04/which-countries-spend-most-on-healthcare-and-do-they-get-value-for-money/

[8] https://publichealth.jhu.edu/2019/us-health-care-spending-highest-among-developed-countries

[9] https://www.weforum.org/agenda/2016/12/this-map-shows-how-much-each-country-spends-on-food/

[10] https://www.weforum.org/agenda/2021/07/cost-of-food-america-united-states-health-environment/

[11] Downer S, Clippinger E, Kummer C. Food is Medicine Research Action Plan. Published Jan. 27, 2022.

[12] https://www.cdc.gov/nccdphp/dnpao/division-information/media-tools/adults-fruits-vegetables.html

I ask the Subcommittee for urgency in making Food as Medicine programs more broadly accessible and consistent across the US. With the Subcommittee's action, Food as Medicine interventions can impact more than just quality of life for chronically ill individuals. With a consistent national framework, food as medicine interventions can address multi-generational trends with at-risk populations and change the trajectory of chronic disease in our country.

As part of the National Strategy, integrating nutrition and health should include incorporating broader evidence-based nutritional interventions to support those battling mental health disorders, aging related illnesses such as Dementia, renal failure and diet-related chronic diseases. Integrating nutrition and health should also include pre & post-natal and interconceptive care. In all these instances special protocols may warrant more acute nutritional interventions, followed by Medically Tailored Meals and Medical Nutrition Therapy.

As discussed, science-backed solutions already exist to solve many of these challenges in a cost-effective way to address health related outcomes, for all populations, while reducing overall healthcare costs. These programs also support local farmers who have been hit hard with increased operating costs and labor shortages resulting from the COVID-19 pandemic. As a specialty crop farmer in both New Jersey and Kentucky, I feel these pains firsthand and know that such programs could help bolster local farmers and increase access to healthy fruits and vegetables.

These are the solutions that I recommend expanding and researching further:

1. **Broaden Access to and Awareness of Medically Tailored Meal Programs and Expand Pilot Programs:**

The Centers for Medicaid and Medicare (CMS) 1115 Demonstration Waiver Program is an important program which includes setting funds aside to support pilots and provide more flexible spending to alternative non-traditional services that could help bring new innovation into our healthcare system. These funds have increased in many states as a result of increased bid requests by those states. As a result of this funding, Medically Tailored Meals have already helped with addressing Nutrition Insecurity for millions of people. However, there is still a lack of awareness that such nutrition services exist. Many doctors, nurses, case managers, social workers, hospital administrators, and other health system workers are still unaware that Medically Tailored Meals exist as an available covered benefit for their high need patients. So, in addition to increasing access, awareness and education are essential for those who are best equipped to refer high need patients for such services.

Medically Tailored Meals go beyond basic food access to address food insecurity, in many cases, they are to support chronic disease management. For example, Medically Tailored Meals Programs with supporting Medical Nutrition Therapy have demonstrated increased access to fruits and vegetables, are linked to reduced risks of some cancers, obesity, heart disease and Type 2 diabetes. Such programs have demonstrated the adoption of healthier eating habits not just for the parents receiving the benefits

[13] Berkowitz SA, Terranova J, Hill C, et al. Meal delivery programs reduce the use of costly health care in dually eligible Medicare and Medicaid beneficiaries. Health Aff (Millwood). 2018;37(4):535-542. doi:10.1377/hlthaff.2017.0999

[14] Berkowitz SA, Terranova J, Randall L, Cranston K, Waters DB, Hsu J. Association between receipt of a medically tailored meal program and health care use. JAMA Intern Med. 2019;179(6):786-793. doi:10.1001/jamainternmed.2019.0198

but also their children. In addition to improving individuals' quality of life and health outcomes, similar studies have also demonstrated healthcare cost savings of over $2,500 per year, per patient[13,14].

A recent meta study on the Global Burden on Disease has shown that a Longevity Focused diet based on whole-food plant-forward macro-balanced meals, has been shown to increase healthspan by 8 years for those starting such a diet at age 60, and 11 years for those starting at 20 years of age[15].

A Longevity diet is low in highly refined and processed foods and has low levels of refined sugars. This is significant as the average American is consuming an estimated 100lbs of sugar per year[16,17,18]. Tailored meals that are longevity-focused and inspired by Longevity regions like Ikaria, Greece and Sardinia, Italy where the average population healthspan is much longer than in the US, can start to level the playing fields for Americans when it comes to healthspan and chronic disease management.

New breakthrough research is demonstrating that full interventions, not just individual meals, are needed, and these types of protocols should be considered for 1115 demonstration pilots. These protocols should be considered Nutritional Interventions and should go beyond single meal provisions, allowing for carefully controlled meals and snacks tailored for a full day of support.

A body of research and recent study by Dr. Bredesen[19], a leader in Dementia, is demonstrating that with early screening and detection of Dementia and then full-day Medically Tailored Meal protocols can markedly improve outcomes. This solution has been brought to the market for paying clients, but it is not yet considered for coverage by Demonstration Waiver funding or MCO coverage. This protocol has demonstrated a superior treatment for Dementia even beyond conventional pharmaceutical treatments. This demonstrates a cost-effective and science backed solution using "Food as Medicine" in a much-needed area of support.

Table 1: Dementia ReCODE Nutrition Intervention Trial compared to baseline treatment regiments:

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[15] Fadnes, L.T., Økland, J.-M., Haaland, Ø.A., and Johansson, K.A. (2022). Estimating impact of food choices on life expectancy: a modeling study. PLoS Med. 19, e1003889. https://doi.org/10.1371/journal.pmed.1003889.

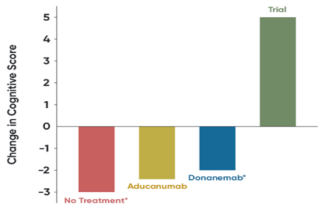
[16] US National Institutes of Health, National Cancer Institute: "Table 5a. Mean Intake of Added Sugars & Percentage Contribution of Various Foods Among US Population, by Age, NHANES 2005–06"

[17] US Department of Agriculture: "Food Consumption and Nutrient Intakes"

US National Institutes of Health, National Cancer Institute: "Sources of Calories from Added Sugars among the US Population, 2005–06"

[18] https://www.healthsystemtracker.org/chart-collection/u-s-life-expectancy-compare-countries/#Life%20expectancy%20at%20birth%20in%20years,%201980-2021

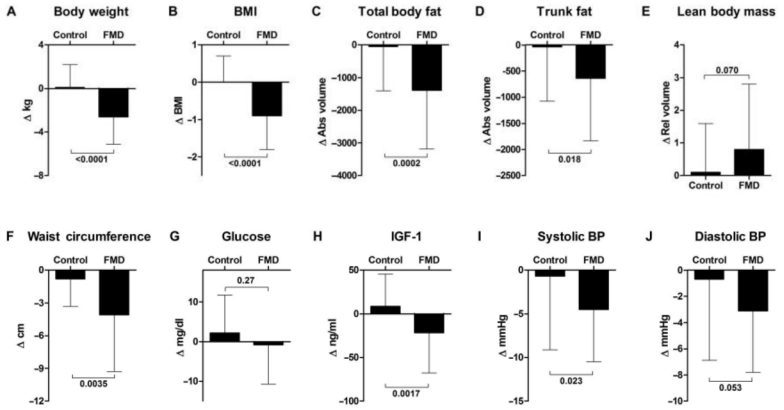
[19] Rao, R.V.; Kumar, S.; Gregory, J.; Coward, C.; Okada, S.; Lipa, W.; Kelly, L.; Bredesen, D.E. ReCODE: A Personalized, Targeted, Multi-Factorial Therapeutic Program for Reversal of Cognitive Decline. Biomedicines 2021, 9, 1348. https://doi.org/10.3390/biomedicines9101348



This trial demonstrates that our Medically Tailored Meal Protocol (green) had a significant improvement in cognitive score versus no treatment, or standard pharmaceutical treatments known to delay onset of Dementia. This research shows that further pilots should be run to further demonstrate the benefits of a protocol approach, where patients are tightly managed for their entire consumption of food throughout the day.

Another intervention focused on Cardiometabolic Improvements, includes Periodic Fasting support in combination with healthy Cardiometabolic Medically Tailored Meals. This program has demonstrated incredible improvements in cardiometabolic biomarkers. These types of interventions combine the best of modern-day nutrition research, Medical Nutrition Therapy and Medically Tailored Meals for optimal health outcomes. Most of this research was funded by the National Institute of Health with clear profound outcomes, but these solutions are still mainly only accessible to cash paying clients, and not accessible to those populations most in need.

These pilot studies demonstrated improvements in multiple cardiometabolic biomarkers as well as core weight, and BMI results against control groups[20].



These types of interventions combine the best of modern-day nutrition research, Medical Nutrition Therapy and Medically Tailored Meals for optimal health outcomes. Unfortunately, these solutions are mainly only accessible to cash paying clients, and not necessarily to those underserved, low-income populations most in need.

[20] Wei M, Brandhorst S, Shelehchi M, Mirzaei H, Cheng CW, Budniak J, Groshen S, Mack WJ, Guen E, Di Biase S, Cohen P, Morgan TE, Dorff T, Hong K, Michalsen A, Laviano A, Longo VD. Fasting-mimicking diet and markers/risk factors for aging, diabetes, cancer, and cardiovascular disease. Sci Transl Med. 2017 Feb 15;9(377):eaai8700. doi: 10.1126/scitranslmed.aai8700. PMID: 28202779; PMCID: PMC6816332.

Despite compelling results, nutrition related interventions are still mainly available only for cash paying clients, as they are outside of the traditional home-delivery meal model. Moreover, the number of covered (funded) meals and at what value varies from state to state. Allowing for more flexibility to non-traditional services and fully integrated interventions could Enhance Nutrition and Food Security Research and further demonstrate its value in the overall Healthcare Toolkit.

These interventions have demonstrated a fresh look at "Food as Medicine". Such research should be prioritized and funded, and then full intervention solutions should be made available for patient populations most in need. While N4L provides Heart Health, Diabetes Support, Dementia compliant meals in addition to supporting 33 other medical indications, full protocols of interventions like the Dementia and Cardiometabolic Program shown are currently only available for cash paying clients, making access to underserved populations challenging.

Similar breakthrough studies are planned in 2023 with researchers and Nutrition Service providers to demonstrate direct benefits of such studies, including:

- A pilot program in Texas in collaboration with a Specialty Mental Health Rehabilitation Center will investigate the effects of the longevity diet on mental health.
- A pilot program in Florida pilot in collaboration with the Mayo Clinic will investigate the effects of a Whole Food Plant-Forward Diet on Chemo Cytotoxicity and Tumor Morphology.
- Pilot programs planned in Michigan, Florida, Ohio with Aging and Disability Resource Centers will investigate the effects of Dementia Medically Tailored Meals on Dementia patients for reduced Cognitive Decline.
- An Arizona pilot program in collaboration with a Tribal Nation will investigate the effects of a longevity diet on the renal health of a Native American Population.
- A New Jersey program in collaboration with GusNip funding will investigate the benefits of Prescription Food Packages in combination with education and counseling.

2. Broaden and link services with Medical Nutrition Therapy and Nutrition Education

I had a key insight that education had to accompany Nutrition Programs during the early days of Nutrition for Longevity. An older woman came to our Senior Farmers Market farm stand in rural New Jersey and asked me what one of our crops was. In response I told her it was a bell pepper, she looked at it and tilted her head, "I've never seen a bell pepper like that, I wouldn't even know what to do with it". I was surprised, as it was just a red bell pepper. She said she had only seen green bell peppers up until that point. We let her taste it; she then grabbed two and left excited. She suggested we label them "rainbow bell peppers" moving forward so everyone knew what to do with them. This made me realize that as people experience new foods, nutrition education is paramount, and their preferences and input into their care need to be included in order to enact lasting, healthy change. I can't overstate the importance of respecting cultural and social eating preferences to ensure people will actually eat what they are provided and as well as education and coaching to ensure adoption of new behaviors.

For this reason, I urge that health coaching and Medical Nutrition Therapy also become a key part of the solution, but many plans have these services buried in different areas and plans, making them hard to bring together in cohesive ways. In a cardiometabolic study, obese patients with type 2 diabetes were provided with Medically Tailored Meals and Medical Nutrition Therapy and Education. One of the first questions of nearly all patients Nutrition for Longevity coached was "What is diabetes?". So even a baseline understanding of disease and the impact of nutrition on such a disease is still very much

lacking. There is also pervasive confusion due to food marketing and the diet industry on what "healthy food" really is. Just providing food doesn't necessarily create lifelong and multi-generational behavior change. But for most of the study population, understanding their disease state and understanding they were empowered to change it was the biggest breakthrough for them.

I offer the following testimonials from real pilot participants to illustrate the positive, qualitative impact Medically Tailored Meals combined with nutrition education can provide.

Participant A: "I viewed this program as a last resort for my health. Had feelings of defeat and frustration going into the program and felt that if this program didn't change my habits, the idea of meeting future grandchildren was out of the question. 8 weeks in, 14 pounds down, and my blood pressure medication is cut in half."

Participant B: "Had cut out all starchy carbs, as my doctor informed me this was never allowed for someone with diabetes. My journey with diabetes had been plagued with a feeling of constant deprivation. Initially the N4L meal kits were a hurdle with the presence of things like white rice and potatoes. Now not only am I comfortable consuming the N4L meals but mimicking them on the weekend for my family. I had had other family members that were prediabetic. At our family primary care visit, my doctor was blown away by the change in weight loss, and my children's blood sugar levels."

Participant C: "Enjoyed the modules, but did not want to speak to a dietitian, as my experience with medical professionals has always revolved around weight loss. Was adamant about wanting to maintain weight, with simple need of assistance with blood sugar management. After lots of persistence, we have formed a relationship and focused our sessions on eating and our food. N4L meals do not feel like a diet, but feel like 'nourishing, homemade food my momma would've made – if she was a little bit better in the kitchen, and a wee bit cultured'."

Participant D: "I wanted the team to know that my A1c prior to the program was 8.4. I went to the dr. last week and it was..... Drum roll.....6.3!"

3. Extend Services for Woman and Infant Health

While many health metrics see some levels of improvement, one area in which the US continues to backslide is woman and infant mortality. While Nutrition for Longevity commends some states efforts to increase Postpartum coverage, this is just a start. Multiple studies have demonstrated that improving maternal nutrition can directly correlate to better pregnancy outcomes[21].

Nutrition plays a vital role in reducing some of the health risks associated with pregnancy such as the risk of fetal and infant mortality, intra-uterine growth retardation, low birth weight and premature births, decreased birth defects, cretinism, poor brain development and risk of infection. Adequate nutrition is essential for a woman throughout her life cycle to ensure proper development and prepare a high risk mothers reproductive system for a healthy pregnancy.

[21] Ramakrishnan U, Imhoff-Kunsch B, Martorell R. Maternal nutrition interventions to improve maternal, newborn, and child health outcomes. Nestle Nutr Inst Workshop Ser. 2014;78:71-80. doi: 10.1159/000354942. Epub 2014 Jan 27. PMID: 24504208.

Based on the demonstrated benefits by many studies, Nutrition for Longevity recommends further pilots extending the support to full pregnancy coverage, at least 6-month post-partum or for the duration of breast feeding, and as well interconceptive care for high-risk pregnancy populations. We also recommend extending this to other risk factors beyond gestational diabetes to include obesity, hypertension, and other risk factors for pre-eclampsia.

Doing so can dramatically decrease healthcare costs and material and child mortality. This should include device monitoring, coaching, digital education, and nutrition support.

4. Allow for the provision of nutrition services at the household-level.

Similar to the innovative approach taken by MassHealth in their approved Demonstration Waiver, I recommend extending nutrition benefits to the household-level for multi-generational behavioral change and sustainability of results. Food resources provided to one target patient through Community-Based Services will likely be shared with the entire household. This pattern can undermine the effectiveness of nutrition services for the target patient and skew the results of important demonstration pilots. However, studies have demonstrated that when entire families receive meals and behavioral change support and education, improvements are seen by the entire family and targeted personal, behavioral, and environmental factors important for healthful changes in the home food environment and children's dietary intake. Such interventions have demonstrated improvements in two nutrition-related behaviors, increased fruit and vegetable consumption and decreased sugary beverage consumption, and this warrants further pilots validating these family meal interventions[22].

Further pilot studies that provide nutrition, nutrition education, and nutrition therapy at the household-level are needed. I am concerned that existing policy at the Centers for Medicare and Medicaid Services have historically made advancing research on this issue challenging. However, given the importance of demonstrating that multi-generational behaviors can be adopted, I urge this Sub-committee to continue to pursue greater flexibility to allow for more pilot studies. These studies should look at how household-level nutritional therapy reduces risk and overall cost for high risk and at-risk populations where multi-generational poor nutritional habits persist over time. Similar to scaling SNAP benefits for household size, scaling nutritional benefits for households could create earlier and earlier health improvements for our younger generations.

Thank you again for the opportunity to provide our feedback and inputs into this important hearing. Nutrition for Longevity and United4Longevity look forward to deepening our support in these areas and being a key contributor to advancing the research and support for the "Food as Medicine" movement.

Sincerely,

[22] Fulkerson JA, Friend S, Horning M, Flattum C, Draxten M, Neumark-Sztainer D, Gurvich O, Garwick A, Story M, Kubik MY. Family Home Food Environment and Nutrition-Related Parent and Child Personal and Behavioral Outcomes of the Healthy Home Offerings via the Mealtime Environment (HOME) Plus Program: A Randomized Controlled Trial. J Acad Nutr Diet. 2018 Feb;118(2):240-251. doi: 10.1016/j.jand.2017.04.006. Epub 2017 Jun 1. PMID: 28578900; PMCID: PMC5711643.

Jennifer Maynard, CEO Nutrition for Longevity

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December 8, 2022

United States Senate Committee on Agriculture, Nutrition, and Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research
Attention: Senator Booker
328 A Russell Senate Office Building
Washington, DC 20510

My name is Jasmine Moreano, I am the Director of Community Engagement for City Green.

City Green is an urban farming and gardening nonprofit based in Clifton, NJ in Passaic County, and since 2004 we have been working to connect people to food and nature. We support over 70 community gardens in Passaic County, 125 school gardens across New Jersey, and grow over 75 varieties of organic vegetables to sell at our Veggie Mobile farm stand that visits senior centers, libraries, and WIC offices in north Jersey.

One of our biggest priorities at City Green is making healthy, local food affordable and accessible. We accomplish this through our statewide Good Food Bucks nutrition incentive program, which provides matching dollars to people who use their SNAP benefits for fresh fruits and vegetables at participating farmers markets and grocery stores.

Recently, the NJ EDA reported that there are over 1.5 million individuals living in 50 food desert communities in New Jersey. Further, an average of 810,000 New Jersey residents are food insecure and receive SNAP benefits each month. More than half of SNAP recipients are in families with children (67%) or the elderly (36%). Research reports that food insecurity is associated with some of the most common and costly health problems and health behaviors, resulting in high incidences of diabetes, heart disease, and obesity. Research reports that food insecurity is associated with some of the most common and costly health problems and health behaviors, resulting in high incidences of diabetes, heart disease, and obesity.

Nutrition incentives are an effective tool for increasing fruit and vegetable consumption and decreasing food insecurity. National evaluation data indicates that nutrition incentive participants consume more fruits and vegetables than the average American, an especially significant accomplishment for low-income families for whom healthy options are often financially out of reach. These results are considered clinically significant based on prior research which demonstrates that every increase in fruit and vegetable intake has a protective impact on health. The Fair Food Network, based in Michigan, reports that their “Double Up Food Bucks” program, a SNAP incentive program similar to the Good Food Bucks program, resulted in 93% of SNAP shoppers at farmers markets reporting increased fruit and vegetable consumption.

Because programs like the GFB program greatly improve health outcomes, they have the potential to save billions of dollars in health care costs. The Food Trust’s “The Power of Produce”

report (2018) shows that the use of incentive programs could help to reduce the percentage of Americans who are overweight from 68% to 13%, which would ultimately reduce health care costs by the billions. A Food-PRICE study from Tufts and the Harvard T.H. Chan School of Public Health predicted that improving food choices in SNAP through incentive (or disincentive) programs could prevent 940,000 instances of cardiovascular events, 146,600 cases of diabetes and they could save up to $42 billion in health care costs over the model cohort's lifetime.

In 2021, City Green received $500,000 through the USDA Gus Schumacher Nutrition Incentive Program (GusNIP) to expand the Good Food Bucks program and its impact over the next 3 years to more farmers markets and grocery stores across 13 New Jersey counties.

Significantly increasing federal funding through GusNIP should be a top priority in the 2023 farm bill. Additionally, state funding for the Good Food Bucks program could scale the program and provide a match for an even larger GusNIP project. This could include setting annual GusNIP funding to a specified portion of SNAP funding (such as 1%) or increasing it to a minimum of $200 million annually. Reducing non-federal match requirements for nutrition incentives will greatly enhance GusNIP's geographic reach and scale impacts across the country.

Nutrition incentive practitioners are ready to scale GusNIP's impacts throughout communities, states, and regions. While local farmer markets remain a cornerstone of GusNIP, many programs are working to expand nutrition incentives into "brick and mortar" retail locations, including direct farm markets, corner, and grocery stores. These retailers often operate seven days a week and as a result require higher levels of incentive funding. GusNIP practitioners that work with even just one new retailer report issuing exponentially higher incentive dollars, severely straining program budgets. Having consistent incentive programs operating at grocery stores is not only important to SNAP recipients who benefit from broader access, but also to retailers who invest in their customers through nutrition incentives.

In addition to improving the health of consumers by making fresh produce more accessible, incentive programs like Good Food Bucks improve the local economy and sales for local farmers.

Economic modeling indicates that expanding nutrition incentive programs in all states will return as much as $3 for every $1 invested, with the highest returns in states with programs that prioritize locally grown produce. Specifically, the study forecasts that an additional $680 million in families' pockets to spend on healthy food annually would result in a $1.6 billion boost to America's economy. GusNIP's current funding provided adequate "seed capital" to initiate and test nutrition incentives and produce prescription projects nationwide.

One program reported in "The Power of Produce" showed a sales increase of 48% for farmers and grocers since the start of an incentive program started for those retailers. Incentive programs attract and retain thousands of customers at farmers markets each year, providing an important revenue stream and consistent customer base for our local food producers As the "Garden State" where, according to the NJ Department of Agriculture, over 9,000 farms and 720,000 acres of productive farmland are located and food and agriculture serves as the state's third largest industry, support of and investment in local growers through programs such as this should be an important priority for New Jersey.

Good Food Bucks and nutrition incentive programs help people, farmers, and communities, and should be an important priority nationally, and for New Jersey. Greatly expanded funding is required to significantly increase program impacts and access.

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KENTUCKY
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United States Senate Committee on Agriculture, Nutrition and Forestry

Subcommittee on Food and Nutrition, Specialty Crops, Organics and Research

"Food as Medicine: Current Efforts and Potential Opportunities"

December 13, 2022

Written Testimony Submitted by:

Dr. Ryan F. Quarles, Commissioner, Kentucky Department of Agriculture

Thank you for the opportunity to submit written testimony for the Subcommittee Hearing, *Food as Medicine: Current Efforts and Potential Opportunities*.

As the Commissioner of Agriculture for the Commonwealth of Kentucky, I have the unique honor of representing and supporting Kentucky's more than 75,000 farm families. I also have an opportunity to promote my home state's fresh, local, and healthy agricultural products. Through the Kentucky Department of Agriculture, I have created and supported many pathways to alleviate hunger in Kentucky.

One in eight Kentuckians, which includes one in six Kentucky children, face hunger each day. Breaking the cycle of food insecurity is something I believed my administration had to take on. So, seven years ago, at the beginning of my administration, I created the Kentucky Hunger Initiative (KHI). This first-of-its-kind program built and expanded collaborative partnerships between the public and private sectors to minimize hunger and food insecurity in the state. To date, the KHI has raised more than $36 million for hunger relief programs. The KHI and its members also have increased public awareness of hunger in the state. I'm proud that through the KHI, organizations such as Feeding America, Feeding Kentucky, Humana, the Kentucky Farm Bureau, Farm Credit Mid-America and so many more have joined together in ways they might not have before.

For many Kentuckians, access to food is critical. For many more, access to the right food is key. KDA supports many initiatives that promote nutritious diets and healthy lifestyles. We believe that diets concentrated on nutrient-rich food lead to enhanced health outcomes. And, we also recognize that state agencies are increasingly serving a critical role in access to nutritious foods.

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KENTUCKY
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We are blessed that Kentucky's agricultural producers provide our state and world with an abundant, affordable, nutritious, and wholesome food supply. They feed us so it makes sense to bring them to the table — as together we develop nutrition and Food as Medicine programs.

Today you will hear testimony from Martin Richards of the Community Farm Alliance. Martin's organization and the Kentucky Agricultural Development Fund, a program administer by the Kentucky Department of Agriculture have partnered since 2017 on the Kentucky Double Dollars program. Double Dollars provides individuals who participate in SNAP, WIC Farmers' Market Nutrition Program, or the Senior Farmers' Market Nutrition Program additional funds to buy local products at farmers' markets. When combined, the four programs bring healthy, local food to a family's dinner table and provide economic opportunities to Kentucky's producers. As an example, when added to the SFMNP, an eligible senior received almost $100 in purchasing power during the 2022 market season—$48 from SFMNP and $48 from Double Dollars. This makes an impact in a person's health.

The Kentucky Department of Agriculture is thankful for its relationship with the United States Senate Committee on Agriculture, Nutrition and Forestry and the United States Department of Agriculture. Through the work we have accomplished together we have advanced several initiatives, including Kentucky's Farm to School program, which has generated more than $8 million in funding to local producers and allows Kentucky students to receive fresh locally grown products for their summer feeding programs and the National School Lunch Program.

Additionally, we used $1.3 million in Summer Feeding Funds for USDA Foods to school districts across the state.

I also supported Kentucky Senate Bill 151 to remove the "barrier to breakfast" by clarifying the current law regarding breakfast at school. The simple change leaves no ambiguity as to what is allowed: Under the new law, Kentucky school districts are permitted to serve breakfast during the first 15 minutes of instructional time. A child who starts the school day hungry has a more difficult time concentrating on learning.

Supporting healthy food for healthy outcomes in our schools is imperative because it's linked to positive academic performance. During the COVID-19 pandemic, school food service personnel in Kentucky and across the nation worked long, hard hours to feed students even though schools were closed. I went to schools to help hand out food at school drive-throughs, made possible by nationwide waivers. Our schools, summer feeding programs and more benefited from the nationwide waivers established in 2020.

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KENTUCKY
DEPARTMENT OF
AGRICULTURE
Dr. Ryan F. Quarles, Commissioner

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My office was one of the first to request these waivers. I understand that not all of them can or need to be continued. However, when I have conversations with school food service personnel, the one thing I hear more than anything else is that allowing the non-congregate feeding waiver to continue permanently will be a great help toward supporting child nutrition in the long run. Allowing children to eat off-site and take food home — especially during the summer — is critical. Making this waiver permanent takes a legislative change at the federal level and I ask for the Subcommittee's help to make this happen.

Looking ahead, we have more and exciting work to do. During 2022, the KDA received important grant funding through the TEFAP Reach and Resiliency, Local Food Purchase Assistance and Local Food for Schools programs. This represents about $10.4 million in funding to expand and cultivate programs that will bring healthy food to more Kentuckians, leading to better health outcomes for all.

Thank you again for your consideration of this testimony.

Sincerely,
Dr. Ryan F. Quarles
Kentucky Commissioner of Agriculture

JAMA Internal Medicine | Original Investigation

Association Between Receipt of a Medically Tailored Meal Program and Health Care Use

Seth A. Berkowitz, MD, MPH; Jean Terranova, JD; Liisa Randall, PhD; Kevin Cranston, MDiv; David B. Waters, MA; John Hsu, MD, MBA, MSCE

IMPORTANCE Whether interventions to improve food access can reduce health care use is unknown.

OBJECTIVE To determine whether participation in a medically tailored meal intervention is associated with fewer subsequent hospitalizations.

DESIGN, SETTING, AND PARTICIPANTS A retrospective cohort study was conducted using near/far matching instrumental variable analysis. Data from the 2011-2015 Massachusetts All-Payer Claims database and Community Servings, a not-for-profit organization delivering medically tailored meals (MTMs), were linked. The study was conducted from December 15, 2016, to January 16, 2019. Recipients of MTMs who had at least 360 days of preintervention claims data were matched to nonrecipients on the basis of demographic, clinical, and neighborhood characteristics.

INTERVENTIONS Weekly delivery of 10 ready-to-consume meals tailored to the specific medical needs of the individual under the supervision of a registered dietitian nutritionist.

MAIN OUTCOMES AND MEASURES Inpatient admissions were the primary outcome. Secondary outcomes were admission to a skilled nursing facility and health care costs (from medical and pharmaceutical claims).

RESULTS There were 807 eligible MTM recipients. After matching, there were 499 MTM recipients, matched to 521 nonrecipients for a total of 1020 study participants (mean [SD] age, 52.7 [14.5] years; 568 [55.7%] female). Prior to matching and compared with nonrecipients in the same area, health care use, health care cost, and comorbidity were all significantly higher in recipients. For example, preintervention mean (SD) inpatient admissions were 1.6 (6.5) in MTM recipients vs 0.2 (0.8) in nonrecipients ($P < .001$), and mean health care costs were $80 617 ($312 337) vs $16 138 ($68 738) ($P < .001$). Recipients compared with nonrecipients were also significantly more likely to have HIV (21.9% vs 0.7%, $P < .001$), cancer (37.9% vs 11.3%, $P < .001$), and diabetes (33.7% vs 7.0%, $P < .001$). In instrumental variable analyses, MTM receipt was associated with significantly fewer inpatient admissions (incidence rate ratio [IRR], 0.51; 95% CI, 0.22-0.80; risk difference, −519; 95% CI, −360 to −678 per 1000 person-years). Similarly, MTM receipt was associated with fewer skilled nursing facility admissions (IRR, 0.28; 95% CI, 0.01-0.60; risk difference, −913; 95% CI, −689 to −1457 per 1000 person-years). The models estimated that, had everyone in the matched cohort received treatment owing to the instrument (and including the cost of program participation), mean monthly costs would have been $3838 vs $4591 if no one had received treatment owing to the instrument (difference, −$753; 95% CI, −$1225 to −$280).

CONCLUSIONS AND RELEVANCE Participation in a medically tailored meals program appears to be associated with fewer hospital and skilled nursing admissions and less overall medical spending.

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Supplemental content

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Following an appropriate diet is a cornerstone of maintaining health and managing illness. However, dietary adherence is difficult for those with complex medical conditions. These difficulties are compounded for socioeconomically vulnerable individuals. This population often faces food insecurity, that is, lack of or uncertainty about access to nutritious food owing to cost,[1] and other barriers to dietary adherence that include physical disability that impedes food shopping, areas with low retail food access (food deserts), and lack of time to prepare appropriate meals. Although the association between these factors and poor health is clear,[2-7] how best to intervene is not apparent.

One emerging strategy to address both food insecurity and these additional barriers in medically complex individuals is medically tailored meal (MTM) delivery. The MTM program involves the home delivery of meals prepared under the supervision of registered dietitian nutritionists to meet the specific nutritional needs of the individual. By helping to improve nutrition, MTMs may improve health and thus lower health care use and cost. Alternatively, it is conceivable that MTM delivery provides limited measurable value given the challenging circumstances of potential recipients. These issues often include poverty and attendant health-related social needs, such as lack of adequate housing and transportation,[8,9] which MTM delivery may not address. In a prior study of individuals dually eligible for Medicare and Medicaid, a research group found that MTM delivery participation was associated with lower health care use.[9] However, because of the restricted study sample, questions about generalizability remained unanswered, along with questions about the sensitivity of the results to possible unmeasured confounding.

In this study, we sought to understand the association between MTM delivery participation and subsequent health care use and cost in a broader population—the state of Massachusetts as reflected in the Massachusetts All-Payer Claims Database (MA-APCD). We further sought to minimize the potential limitation of unmeasured confounding by using an instrumental variable strategy combined with careful matching. Based on prior work,[9] we hypothesized that MTM delivery participation would be associated with lower use of particularly expensive health care, such as inpatient admissions, and thus also be associated with lower health care expenditures.

Key Points

Question Is participating in a medically tailored meal delivery program for medically and socially complex adults associated with fewer inpatient admissions?

Findings In this cohort study of 1020 adults that used a combined instrumental variable analysis and matching approach, participation in a medically tailored meal delivery program was associated with approximately half the number of inpatient admissions.

Meaning For medically and socially complex adults, participating in a medically tailored meal delivery program may reduce inpatient admissions, although cautious interpretation is warranted because intervention receipt was not randomized.

Methods

Study Design

This study used an incident-user matched cohort design in which individuals who did and did not receive MTMs were matched on the basis of preintervention period demographic, health care use, and area-level (eg, neighborhood poverty) data. Our analytic strategy used a type of instrumental variable analysis termed near/far matching, which combines matching with traditional instrumental variable analysis to filter a larger cohort down to its most informative pairs—those who are as similar as possible on demographic and clinical factors but differ in the amount of encouragement to participate in the intervention that they received.[10-14] The instrumental variable that metaphorically encouraged participation was the distance an individual lived from Community Servings, a not-for-profit food and nutrition organization that delivers MTMs to individuals with serious medical illness.

Study Setting and Participants

We linked data at the individual level from the 2011-2015 MA-APCD and the service delivery records of Community Servings. To preserve participant privacy, the Massachusetts Center for Health Information and Analysis, which oversees the MA-APCD, conducted a deterministic link, using name, date of birth, sex, and address to determine MTM receipt. Then, a deidentified analytic data set was created. Community Servings was the only MTM delivery program operating in Massachusetts during the study period.

Institutional review board approval was obtained from the Massachusetts Department of Public Health, the Human Subjects Research Committee at Partners Health Care, and the Office of Human Research Ethics at the University of North Carolina at Chapel Hill, with waiver of informed consent.

To be eligible for the study, individuals had to be 18 years or older, have a home address within 100 km of Community Servings (approximately the delivery radius for the program), and be captured in the MA-APCD at least 360 days before the index date. The index date was the date of enrollment in the MTM delivery program for intervention recipients and a randomly assigned date for nonrecipients. The study was conducted from December 15, 2016, to January 16, 2019.

MTM Program

Each week, the MTM program delivered 10 meals tailored to a recipient's specific medical needs. A registered dietitian nutritionist could choose up to 3 among 17 dietary tracks (eg, appropriate for diabetes and end-stage renal disease). No outreach was made to recruit participants as part of the intervention. Instead, individuals were referred for MTM delivery by a clinician (eg, a primary care physician or social worker) on the basis of both nutritional and social risk. This procedure means that a clinician certified that the individual both had a clinical condition that required medically tailored meals and faced substantial social barriers, such as poverty or food

insecurity, to following an appropriate diet, and that the individual was at substantial risk of clinical deterioration. The clinician and potential recipient then completed an enrollment packet (eAppendix in the Supplement), which was sent to intervention program staff for review. Any person living in the delivery area could apply, so applications came from numerous clinics and health care systems. Key considerations for enrollment were clinical need and the inability of the individual to meet their nutritional needs and follow a medically appropriate diet in the absence of program participation (eg, owing to an income level that prevented purchase of health foods, or mobility limitations secondary to clinical conditions that prevented cooking for oneself). Meals were provided at no cost to the recipients.

Community Servings received funding to support the MTM program from philanthropy supplemented by the Ryan White Act funds for persons living with HIV. Meal receipt continued until the individual chose to withdraw or no longer needed MTMs (eg, owing to an improvement in social circumstances). Meals are delivered in person, but there is not a home-visiting or meal-sharing component to the intervention, unlike some other nutritional assistance programs, such as Meals on Wheels.

Outcomes

In our conceptual framework,[15] receipt of MTMs was most likely to affect health over the short term by providing necessary nutrition (concurrently reducing the consumption of medically inadvisable foods) and by freeing resources that could be used for medications or other expenses that may have associations with improved health, such as rent or transportation. For example, a previous study of this intervention demonstrated a large increase in diet quality when individuals were receiving the meals.[16] We hypothesized that these benefits would help to prevent acute exacerbations of chronic conditions and allow for more consistent adherence to outpatient management plans. Therefore, the primary outcome of this study was inpatient admissions, which we hypothesized would be reduced with receipt of the intervention. Secondary outcomes were admission to a skilled nursing facility (because these largely reflect post-acute care after an inpatient admission, lower inpatient admissions should also lead to lower skilled nursing facility admissions), and total health care costs (the sum of combined medical and pharmaceutical claims), expressed on a per-person per-month basis.

Our original protocol included a separate examination of emergency department visit rates, but the deidentified analytic data set limited our ability to identify unique emergency department visits, so we could not conduct these analyses. We used the consumer price index to inflation-adjust all spending to 2017.[17] To account for intervention costs, we added $350 per month for each MTM recipient, which is the approximate per-person cost of program operation (including dietary tailoring, food, and delivery). For all outcomes, we winsorized the upper percentiles to reduce the influence of outliers.[18] We conducted sensitivity analyses without winsorization.

Covariates

We examined data on a number of covariates that could confound the association between MTM receipt and health care use (eMethods, eTable 1, eFigure 1 in the Supplement). All covariate data came from the preindex period. These covariates included age (years), sex, and insurance type (commercial, Medicare, Medicaid, or other, including uninsured), which were consistently available from the MA-APCD. Furthermore, data on race/ethnicity (categorized as non-Hispanic white, non-Hispanic black, Hispanic, Asian, other, or multiracial), and disability status were provided for some records and used when available; otherwise, we created a category indicating that data were not provided. For comorbidities, we used the Gagne index.[19] In addition, we created indicators for specific comorbidities that frequently prompt MTM receipt (HIV infection, cancer, end-stage renal disease, diabetes, and congestive heart failure).[19] For patterns of health care use, we created counts of inpatient admissions, skilled nursing facility admissions, home health visits, and total medical and pharmaceutical costs. To account for the possibility that a triggering event may have led to MTM receipt, we developed an indicator of inpatient admission within 6 months of the index date. To account for area-level socioeconomic status, we used data from the American Community Survey[20] to calculate the percentage of individuals living in poverty within the zip code tabulation area of the study participant. Finally, to summarize the large number of *International Classification of Diseases, Ninth Revision* diagnosis codes and medications associated with medical, procedural, and pharmaceutical claims, we used the high-dimensional propensity score approach of Schneeweiss et al[21] and used the high-dimensional propensity score as an additional matching variable.

Statistical Analysis

Our major concern was to address the potential for confounding introduced by nonrandom assignment to the intervention. To do this we used near/far matching[12,14] and constructed to a matched cohort that was as similar as possible on relevant sociodemographic and clinical characteristics, but differed in whether an individual was encouraged or discouraged to receive the intervention based on an instrumental variable. In this study, the instrumental variable was the geographic distance between Community Servings' single location and the centroid of an individual's zip code tabulation area (owing to privacy concerns, data on smaller geographic areas were not available). Those living closer are subtly encouraged to enroll. Further details of this instrumental variable approach, and instrument testing, are provided in the eMethods, eTable 2, and eTable 3 in the Supplement.

For matching, after preprocessing we conducted an optimal nonparametric match using Mahalanobis distance and a simulated annealing optimization algorithm.[14] This technique enabled us to achieve the best balance on the potential confounders while maximizing the difference in distance from Community Servings. We used standardized mean difference (SMD) as a metric of balance.

Once the matched cohort was identified, we conducted analyses using the 2-stage residual inclusion approach to in-

strumental variable analyses.[22] We fit a first-stage logistic model that predicts receipt of MTM using distance and the above-mentioned covariates. Next, the residuals, defined as the difference between the observed and predicted values from the first-stage model, were calculated. Third, the second-stage model was fit by regressing the outcome on receipt of the intervention, along with the residuals from the first-stage model and the other covariates. For event outcomes (inpatient and skilled nursing facility admissions), we fit Poisson regression models. For the spending outcome, we fit log-link γ regression models, selecting γ regression after conducting modified Park tests.[23] All models were adjusted for covariates to account for residual imbalance after matching and for the index date to account for secular trends. Our analyses followed the intention-to-treat approach whereby individuals who enrolled in the intervention continued to be analyzed as part of the intervention even if they stopped participating.

To express the results of these models on the absolute (risk difference) and relative (risk ratio) scale, we used recycled predictions,[24] which standardizes the estimates over the observed distribution of covariates. To obtain 95% CIs, we used a nonparametric bootstrap of the entire process (both the first- and second-stage models), with 1000 replications.[22] We also conducted sensitivity analyses using the *E*-value approach. This approach quantifies the strength of association that an unmeasured confounder would need to have with both the treatment and outcome in order to render the observed treatment-outcome association null.[25,26]

For descriptive analyses, the *P* value was determined using unpaired *t* tests for continuous variables or χ^2 tests for categorical variables. A 2-tailed *P* value <.05 was taken to indicate statistical significance. All statistical analyses were conducted in SAS, version 9.4 (SAS Institute Inc), and R, version 3.4.2 (R Foundation for Statistical Computing).

Results

Participants

There were 1706 MTM program recipients in the MA-APCD, of whom 991 were incident recipients (58.1%). Among incident recipients, 807 individuals (81.4%) had the requisite 360 days of preindex follow-up to permit matching. Before matching, intervention recipients and nonrecipients differed substantially even when restricted to the age- and sex-matched subset residing in the same areas (**Table 1**). For example, mean (SD) preindex costs were $80 617 ($312 337) in MTM recipients vs $16 138 ($68 738) in nonrecipients (*P* < .001), mean (SD) inpatient admissions were 1.6 (6.5) vs 0.2 (0.8) in nonrecipients (*P* < .001), and mean comorbidity index was 5.2 (4.2) vs 0.9 (2.1) in nonrecipients (*P* < .001) (possible range from −1 to 26, with higher numbers indicating greater burden of comorbidity). Recipients were also significantly more likely to have cancer (306 [37.9%] vs 5860 [11.3%], *P* < .001) and diabetes (272 [33.7%] vs 3609 [7.0%], *P* < .001), compared with nonrecipients.

Following matching, there were 509 encouraged individuals (those living closer to Community Servings, regardless of whether they received the intervention) and 511 discouraged individuals. The matched cohort was more balanced, with SMD less than 0.2 for all covariates (**Table 2**). Postindex follow-up was similar for both groups, with a mean (SD) of 21.4 (12.8) months in recipients vs 22.1 (12.5) months in nonrecipients (*P* = .41). Among recipients, the mean (SD) duration of receipt was 12.4 (10.6) months and the median duration was 9.0 (interquartile range, 6.0-18.0) months.

Health Care Use

In the matched cohort, there were 1242 inpatient admissions and 1213 skilled nursing admissions over 1822.1 person-years of follow-up. In instrumental variable analysis combined with matching and intervention, receipt was associated with significantly fewer inpatient admissions (incidence rate ratio [IRR], 0.51; 95% CI, 0.22-0.80). In absolute terms, this translates to fewer estimated admissions per 1000 person-years (−519; 95% CI, −360 to −678) had everyone in the matched cohort been encouraged into treatment by the instrument compared with no one being encouraged into treatment. Similarly, intervention receipt was associated with fewer skilled nursing facility admissions (IRR, 0.28; 95% CI, 0.01-0.60; absolute reduction, −913; 95% CI, −689 to −1457 per 1000 person-years). Most skilled nursing admissions (880 [72.5%] of 1213) came from individuals with an inpatient admission.

Sensitivity analyses using nonwinsorized outcomes were similarly in favor of intervention participation, without any qualitative differences compared with the main analyses (eTable 4 in the Supplement). Sensitivity analyses also revealed that it would require strong unobserved confounding to render the treatment-outcome association null (eFigure 2 and eTable 5 in the Supplement).

Health Care Costs

In instrumental variable analysis combined with matching, participation in the intervention was associated with lower health care costs. The models estimated that, had everyone in the matched cohort been encouraged into treatment (and including the cost of program participation), mean monthly costs would have been $3838 vs $4591 if no one had been encouraged into treatment (relative risk of mean per person per month expenditures difference, 0.84; 95% CI, 0.67-0.998; risk difference, −$753; 95% CI, −$1225 to −$280). This difference represents approximately 16% lower health care costs. Sensitivity analyses using nonwinsorized outcomes were more strongly in favor of intervention participation (eTable 4 in the Supplement). The point estimate for the reduction in medical costs related to inpatient and skilled nursing facility visits was $712 (95% CI, $1930 lower to $505 higher) per month, which is consistent with lower use of these services as the main source of the estimated reduction in total expenditures.

Discussion

In this study using MA-APCD data, we found that participation in an MTM delivery program was associated with fewer inpatient admissions, and with fewer skilled nursing facility

Table 1. Demographic and Clinical Characteristics of the Unmatched Sample

Characteristic	Overall (N = 52 533)	Community Servings Participation Status			
		Did Not Participate (n = 51 726)	Participated (n = 807)	*P* Value[a]	SMD
Distance from Community Servings, mean (SD), km[b]	24.0 (14.1)	24.1 (13.9)	16.7 (19.4)	<.001	0.44
Age, mean (SD), y	52.3 (14.5)	52.3 (14.5)	51.1 (14.8)	.02	0.08
Female, No. (%)	32 230 (61.4)	31 800 (61.5)	430 (53.3)	<.001	0.17
Race/ethnicity, No. (%)					0.80
Non-Hispanic white	5280 (10.1)	5103 (9.9)	177 (21.9)	<.001	
Non-Hispanic black	1110 (2.1)	982 (1.9)	128 (15.9)		
Hispanic	498 (0.9)	453 (0.9)	45 (5.6)		
Multiracial or other	173 (0.3)	158 (0.3)	15 (1.9)		
Information not provided	45 472 (86.6)	45 030 (87.1)	442 (54.8)		
Insurance, No. (%)					0.89
Other	13 994 (26.6)	13 893 (26.9)	101 (12.5)	<.001	
Private	18 940 (36.1)	18 842 (36.4)	98 (12.1)		
Medicare	8142 (15.5)	7980 (15.4)	162 (20.1)		
Medicaid	11 457 (21.8)	11 011 (21.3)	446 (55.3)		
Disability status indicator, No. (%)	1791 (3.4)	1656 (3.2)	135 (16.7)	<.001	0.67
Experienced triggering event, No. (%)[c]	2943 (5.6)	2637 (5.1)	306 (38.0)	<.001	0.87
No. of visits in past 12 mo, mean (SD)					
Inpatient	0.2 (1.1)	0.2 (0.8)	1.6 (6.5)	<.001	0.31
Skilled nursing facility	0.3 (3.6)	0.3 (3.6)	0.5 (3.0)	.12	0.06
Home health	1.6 (19.4)	1.4 (18.0)	16.7 (61.0)	<.001	0.34
Total health care costs in past 12 mo, mean (SD), $	17 129 (78 816)	16 138 (68 738)	80 617 (312 337)	<.001	0.29
Comorbidity index, mean (SD)[d]	1.0 (2.2)	0.9 (2.1)	5.2 (4.2)	<.001	1.28
HIV-positive, No. (%)	541 (1.0)	364 (0.7)	177 (21.9)	<.001	0.71
History, No. (%)					
Cancer	6166 (11.7)	5860 (11.3)	306 (37.9)	<.001	0.65
End-stage renal disease	3547 (6.8)	3244 (6.3)	303 (37.5)	<.001	0.82
Diabetes	3881 (7.4)	3609 (7.0)	272 (33.7)	<.001	0.70
Congestive heart failure	3706 (7.1)	3426 (6.6)	280 (34.7)	<.001	0.74
% Living in poverty in zip code tabulation area, mean (SD)	10.2 (7.7)	10.0 (7.5)	19.9 (8.8)	<.001	1.21

Abbreviation: SMD, standardized mean difference.

[a] *P* value determined using *t* tests for continuous variables or χ^2 test for categorical variables.

[b] Community Servings, a not-for-profit organization delivering medically tailored meals.

[c] An inpatient visit in the 6 months immediately before the index date.

[d] Range, −1 to 26, with higher numbers indicating greater burden of comorbidity.

admissions. Individuals who received MTMs were substantially more ill than the overall population: 37.9% had cancer diagnoses and 33.7% had diabetes. It is unlikely that similar results would be seen were the intervention applied to a healthier population, as the risk of admission or high health care costs, even in the absence of intervention, would be substantially lower. Furthermore, intervention recipients were those with clinical, nutritional, and social risk factors that interacted to produce a high short-term risk of clinical deterioration if they did not receive nutritional intervention. Although these risk factors are a common combination, we caution against overgeneralizing the results of this study to other contexts. For example, programs to reduce hospital readmissions or reduce health care costs among individuals with high past-year costs often include those with heterogeneous reasons for use of health care services. Because health care use in many of these cases may not be driven by the combination of clinical, nutritional, and social risk factors that MTM programs address, we would not expect to see the results observed in this study when applied to a more heterogeneous population. When considering how best to improve health care use, we think it is necessary to understand the drivers of that use and develop specific interventions to address those specific drivers.

This study is consistent with prior literature and expands our knowledge regarding the associations between MTM and health care use. A previous study found associations with reduced use and cost that were similar in magnitude, but that study was restricted to Medicare-Medicaid dual eligibles.[9] The present study adds information on a broader segment of the population and, to the extent that the instrumental variable assumptions are met, adds robustness against unmeasured confounding. Other studies of meal delivery programs have found associations with reduced nursing home admissions,[27] reduced 30-day readmission rates,[28] and improved heart failure symptoms.[29] Furthermore, studies of the Supplemental Nutrition Assistance Program have shown associations with lower health care use and cost, supporting the idea of food insecurity as a modifiable risk factor for adverse health care use.[10,30,31] Following the success of an earlier pilot program,[32]

Table 2. Demographic and Clinical Characteristics of the Matched Sample

Characteristic	Overall (N = 1020)	Encouragement Status[a]		P Value[b]	SMD
		Discouraged (n = 511)	Encouraged (n = 509)		
Participated in Community Servings, No. (%)[c]	499 (48.9)	227 (44.4)	272 (53.4)	.01	0.18
Distance from Community Servings, mean (SD), km	17.2 (16.5)	23.7 (18.0)	10.7 (11.7)	<.001	0.86
Age, mean (SD), y	52.7 (14.5)	52.6 (15.0)	52.8 (14.0)	.82	0.01
Female, No. (%)	568 (55.7)	285 (55.8)	283 (55.6)	.90	0.02
Race/ethnicity, No. (%)				.42	0.12
Non-Hispanic white	243 (23.8)	121 (23.7)	122 (24.0)		
Non-Hispanic black	138 (13.5)	77 (15.1)	61 (12.0)		
Hispanic	46 (4.5)	23 (4.5)	23 (4.5)		
Multiracial or other	17 (1.7)	11 (2.2)	6 (1.2)		
Information not provided	576 (56.5)	279 (54.6)	297 (58.3)		
Insurance, No. (%)				.37	0.11
Other	119 (11.7)	54 (10.6)	65 (12.8)		
Private	114 (11.2)	51 (10.0)	63 (12.4)		
Medicare	213 (20.9)	108 (21.1)	105 (20.6)		
Medicaid	574 (56.3)	298 (58.3)	276 (54.2)		
Disability status indicator, No. (%)	180 (17.6)	93 (18.2)	87 (17.1)	.53	0.07
Experienced triggering event, No. (%)[d]	272 (26.7)	135 (26.4)	137 (26.9)	.91	0.01
No. of visits in past 12 mo, mean (SD)					
Inpatient	1.0 (1.9)	1.0 (2.0)	0.91 (1.7)	.43	0.05
Skilled nursing facility	0.5 (3.7)	0.3 (1.5)	0.7 (5.1)	.11	0.10
Home health	15.4 (64.3)	17.0 (66.3)	13.8 (62.2)	.42	0.05
Total health care costs in past 12 mo, mean (SD), $	54 470 (73 081)	54 280 (75 590)	54 661 (70 546)	.93	0.01
Comorbidity index, mean (SD)[e]	4.23 (4.1)	4.17 (4.3)	4.29 (4.0)	.64	0.02
HIV-positive, No. (%)	165 (16.2)	88 (17.2)	77 (15.1)	.41	0.06
History, No. (%)					
Cancer	382 (37.5)	183 (35.8)	199 (39.1)	.31	0.07
End-stage renal disease	286 (28.0)	139 (27.2)	147 (28.9)	.60	0.04
Diabetes	278 (27.3)	132 (25.8)	146 (28.7)	.34	0.06
Congestive heart failure	293 (28.7)	143 (28.0)	150 (29.5)	.65	0.03
% Living in poverty in zip code tabulation area, mean (SD)	19.0 (9.7)	19.2 (10.2)	18.7 (9.3)	.37	0.06

Abbreviation: SMD, standardized mean difference.

[a] Encouraged indicates individuals who lived closer to Community Servings; discouraged indicates individuals who lived farther away.

[b] P value from *t* tests for continuous variables or χ^2 test for categorical variables.

[c] Community Servings, a not-for-profit organization delivering medically tailored meals.

[d] An inpatient visit in the 6 months immediately prior to the index date.

[e] Range −1 to 26, with higher numbers indicating greater burden of comorbidity.

California recently announced a large-scale food-is-medicine demonstration project that will examine the health effects of medically tailored meals, and results are expected in 2020.

Our study has several implications for health policy. Medicaid programs in several states have piloted MTM delivery in various settings, and Medicare Advantage recently made changes that could allow coverage for some meal delivery programs.[33] For wide-scale implementation of MTM delivery to be successful, however, further research is needed. First, benefits of MTM participation should be established in large-scale randomized clinical trials. Second, because MTM delivery is a relatively expensive intervention, it will be necessary to target the intervention to those most likely to benefit. Individuals whose needs can be met with less-intensive activities (eg, navigation into the Supplemental Nutrition Assistance Program or community resources such as food pantries) may not require MTMs. Conversely, individuals with high health care expenditures that are not driven by nutrition are unlikely to benefit. A rigorous evidence base that elucidates when MTM programs are needed will be necessary for efficient use of health care resources. Ultimately, a range of options that vary in cost and level of service provided may be needed.

Limitations

The results of this study should be interpreted in light of several limitations. All instrumental variables rely on certain untestable assumptions. In this case, we assume that living closer to Community Servings does not affect health except via increasing the chance of program participation. Next, the association estimates of this study, which apply to a particular cohort of those at substantial clinical and nutritional risk, likely do not apply to the general population of high health care users, who may have other, potentially nonmodifiable, drivers for their health care use and costs. Furthermore, as in all instrumental variable analyses, the results are relevant for the marginal patient who might be encouraged to use the MTM program by the instrument (the local average treatment effect),

and should not be interpreted as the effect for all patients (the average treatment effect). The former is typically larger than the latter.

Next, although we know that individuals in the control group did not receive MTMs, we were unable to determine whether they received other nutrition interventions, such as Meals on Wheels or the Supplemental Nutrition Assistance Program. Furthermore, they may have received other enabling or supportive services that may not generate health care claims (eg, case management), which could bias the observed association to the null. In addition, because this study relied on claims data, measurement error regarding matching factors could have influenced the results, although we do not expect this association to be differential. Next, this study was able to examine only the association between intervention receipt as a whole and the study outcomes, rather than examining the individual components. Thus, even if there is a causal association between the intervention and the outcomes, we do not know what specific components (eg, the provision of food, the medically tailored preparation of the food, or any social connection provided by home delivery) of the intervention are responsible for the findings. In addition, we did not have data on individuals who were offered referral to the intervention but declined, which is another reason to be cautious when generalizing the results observed in this study and not to regard the results as an estimate of the average treatment effect (the effect that would be seen were the program applied to the entire eligible population). In addition, the study used data only from Massachusetts; thus, it is unclear whether the results would generalize to other states with different levels of insurance and services.

Conclusions

Receipt of MTMs appeared to be associated with meaningfully lower downstream medical events compared with nonreceipt. As the focus of health care in the United States turns to population health, the ability to intervene on health-related social needs will become increasingly important for improving both health and the value of health care. Medically tailored meal programs represent promising interventions and deserve further study as we seek to improve health for all Americans, particularly the most vulnerable.

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Invited Commentary

Food Is Medicine—The Promise and Challenges of Integrating Food and Nutrition Into Health Care

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Diet-related diseases produce crushing health and economic burdens. The estimated US costs of diabetes, cardiovascular diseases, obesity-related cancers, and other obesity-related conditions are approximately $1.72 trillion per year,[1] or 9.3% of the gross domestic product. This burden creates tremendous stress on government budgets, private businesses, and families. Marginalized groups often suffer most, with significant disparities in both diet and health leading to illness, suboptimal school and work performance, increased health costs, and lower productivity and wages.

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Although the important role of food in health is increasingly recognized, nutrition has not traditionally been well integrated into health care systems. One obstacle has been demonstrating the efficacy and cost implications of specific nutritional interventions. In this issue of *JAMA Internal Medicine*, Berkowitz and colleagues[2] evaluate one nutrition-focused intervention—free provision of medically tailored meals (MTMs) at home—and subsequent health care use. Using the Massachusetts All-Payer Claims database, the investigators matched individuals receiving MTMs with nonrecipients and assessed hospitalizations, skilled nursing facility admissions, and total health care expenditures. Outpatients were eligible for MTMs if they had a complex medical condition (eg, HIV, cancer, diabetes, end-stage renal disease, congestive heart failure) and were certified by a social worker or clinical health care professional as having substantial social barriers to healthy eating (eg, poverty, food insecurity).

Medically tailored meals were provided by a local not-for-profit organization, Community Servings, as 10 weekly ready-to-eat meals personalized by a registered dietician to each pa-