American Heart Association.

Health Care Food™

Accelerating the Integration of **Food Is Medicine in Health Care**

ADVANCES IN THE FOOD IS MEDICINE FIELD

Supplemental Materials

Annual Report 2025

Table 1: Summary of Studies using Produce Prescriptions

Publication	Population	Sample Size	Intervention
Caraballo et al.(2024)	Caregivers of young children (0–5 years old) living in food-insecure households and at risk for diet-related chronic diseases	Enrolled (n) = 25 families Completed (n) = 18 families Post-intervention interviews (n) = 15	Home-delivered produce (8 lbs. biweekly for 12 months; ~192 lbs./year) + 24 hours of nutrition education (live cooking classes, pre-recorded videos, recipe cards)

Study Design
Qualitative

Comparison
N/A

Length of Follow-up
N/A

Outcomes

Based on thematic analysis of qualitative interviews:
Financial relief: Produce delivery alleviated financial stress and allowed families to better manage federal nutrition benefits (e.g., SNAP, WIC)
Behavioral changes: Improved nutrition and cooking behaviors, increased produce consumption, reduced processed food intake
Family engagement: Encouraged family quality time around meal preparation
Barriers: Identified time constraints, limited customization of produce boxes, and accessibility issues for virtual education
Suggestions: Participants desired more flexibility, cultural tailoring, allergy accommodations, and improved timing of classes

Conclusion

A 12-month home-delivered produce prescription intervention showed promise in improving food and nutrition security, dietary behaviors, and reducing stress among food-insecure families with young children. Participant feedback highlighted areas for improvement. Future studies should assess long-term impacts and cost-effectiveness to inform policy and healthcare integration.

Publication	Population	Sample Size	Intervention
Shanks et al.(2025)	Evaluators and staff involved in GusNIP PRx/NI programs (not patients) in Tulsa, Oklahoma	Interviewee (n) = 18(GusNIP PPR and NI data collectors) Evaluators (n) = 35 (24 external evaluators and 11 GusNIP staff)	Food prescription program offering biweekly produce distributions for 6 months

Study Design
Qualitative

Comparison
N/A

Length of Follow-up
N/A

Outcomes

- Importance of staff relationships and communication
- Flexibility and customization needed in data collection
- Cultural competency and language accessibility issues
- Emphasis on staff training and technical assistance

Conclusion

Reliable public health data collection in food prescription programs requires clear procedures, strong communication, and cultural tailoring. Challenges in collecting consistent biometric and follow-up data highlight the need for ongoing staff support and systems improvements to inform health outcomes and policy.

Table 1: Summary of Studies using Produce Prescriptions (Continued)

Publication	Population	Sample Size	Intervention
Chao et al.(2025) **Study Design** Pilot Randomized Control Trial **Comparison** Wait-list control (WLC) group (received no intervention during the initial 12-week period) **Length of Follow-up** N/A	Adults (≥18 years) with obesity (BMI ≥30 kg/m^2) and food insecurity	Intervention (n) = 16 Control (n) = 16	12 weeks PRx program (Weekly $20 produce vouchers) +Weekly individual behavioral weight loss (BWL) counseling +Tailored to address barriers related to food insecurity (e.g., low-cost food strategies)

Outcomes

Weight change: −2.4% ± 0.7% of initial weight (PRx) vs +0.4% ± 0.7% (WLC) (P = .01)
Eating self-efficacy: +9.5 ± 14.4 (PRx) vs. −4.0 ± 14.1 (WLC), P = .04

No significant between-group differences in: Fruit/vegetable intake, Calorie intake, Cognitive restraint, disinhibition, hunger, Food security, depressive symptoms, stress, Blood pressure

Conclusion

The PRx program was feasible and showed preliminary efficacy in promoting weight loss and enhancing self-efficacy in adults with food insecurity and obesity. Although dietary quality improvements were not statistically significant, the combination of produce prescriptions and behavioral counseling appears promising and warrants further study with a larger sample and longer duration.

Publication	Population	Sample Size	Intervention
Fruin et al.(2025) **Study Design** Observational (retrospective cohort study with propensity score-weighted design) **Comparison** Propensity score–weighted control group of patients from the same health center who did not receive VeggieRx prescriptions (6. 12. 18 months) **Length of Follow-up** N/A	Adults (≥18 years) with food insecurity, a diet-related disease, and referred by a healthcare provider	N=1658; 680 intervention, 978 weighted control	Weekly produce boxes (6-7 types of produces) for 18 months + nutrition counseling + cooking classes at urban farm

Outcomes

Between group difference (VeggieRx - Control)
At 6 months: -2.71 lbs. ($p<0.05$)
At 12 months: -5.79 lbs. ($p<0.001$)
At 18 months: -6.71 lbs. ($p<0.001$)
Control: -4.15%

No significant differences in HbA1c reduction.

Table 1: Summary of Studies using Produce Prescriptions (Continued)

Conclusion

The prescription program led to statistically significant weight loss and a higher proportion of individuals achieving clinically meaningful weight reduction compared to matched controls. Results support the effectiveness of multicomponent produce prescription interventions for weight management in underserved populations.

Publication
Segura-Perez et al.(2025)

Study Design
Qualitative & Feasibility study

Comparison
N/A

Length of Follow-up
N/A

Population
Latina pregnant women with food insecurity

Sample Size
N=21 women for co-design program
N=20 pregnant women

Intervention
Monthly $100 value of electronic benefit transfer (EBT), voucher, online ordering, or produce box for 10 month
+ Nutrition education

Outcomes

- All participants chose EBT card.
- High interest in nutrition classes.
- Delivery may help those with transportation barriers.
- 70% redemption rate of benefits.
- Reported increased produce consumption for participants and their families.
- High satisfaction with the program.

Conclusion

The community-engaged codesign program demonstrated strong feasibility and high acceptability among pregnant Latina women. Community-engaged codesign helped ensure cultural relevance, which enhanced engagement. Results support future scaled evaluations of its impact on maternal nutrition and health outcomes.

Publication
Law et al.(2024)

Study Design
Qualitative & Formative study

Comparison
N/A

Length of Follow-up
N/A

Population
Stakeholders of PRx program for individuals with type 2 diabetes (government, healthcare service, clinician, food retailer, consumer, non-government organization)

Sample Size
40 participants

Intervention
Qualitative interviews with healthcare and social sector stakeholders to inform PRx program design; no intervention implemented yet

Outcomes

Stakeholders expressed strong support for PRx as a strategy to improve both food security and diabetes management. They emphasized the importance of culturally appropriate produce, patient-centered program delivery, and integration with both healthcare systems and community services as critical design priorities. However, they also identified significant barriers, including limited funding, challenges within the healthcare system, and concerns about program sustainability. Facilitators of successful implementation included trusted relationships between providers and patients, alignment with existing chronic disease care models, and strong community partnerships.

Table 1: Summary of Studies using Produce Prescriptions (Continued)

Conclusion

Stakeholders viewed produce prescriptions as highly acceptable and potentially impactful for people with type 2 diabetes. Successful implementation would require careful program design, integration into existing healthcare systems, and sustainable funding mechanisms.

Publication
Saxe-Custack et al.(2024)

Population
Pediatric patients aged 2–18 years

Sample Size
680 caregiver-child dyads
Exposed (n) = 510
Unexposed (n) = 170

Intervention
Fruit and vegetable prescription programs (FVPP) ($15 per pediatric visit)

Study Design
Observational
(repeated cross-sectional study)

Comparison
Exposed vs Unexposed to FVPP
High Exposure (≥24 months) vs Low Exposure (<24 months)

Length of Follow-up
N/A

Outcomes

- Exposed vs Unexposed to FVPP (mean difference = Exposed - Unexposed)
- Body Mass Index percentile = -1.836 ($p > 0.05$)
- Systolic Blood Pressure percentile = -11.787 ($p < 0.05$)
- Diastolic Blood Pressure percentile = -6.076 ($p < 0.05$)

- High Exposure (≥24 months) vs Low Exposure (<24 months) (mean difference = High - Low exposed)
- Body Mass Index percentile = -0.709 ($p > 0.05$)
- Systolic Blood Pressure percentile = -14.815 ($p < 0.05$)
- Diastolic Blood Pressure percentile = -6.620 ($p < 0.05$)

Conclusion

Pediatric patients in the produce prescription program was associated with significantly lower systolic blood pressure in youth, with greater exposure linked to greater benefit. These findings support the potential of produce prescription programs as a scalable, food-as-medicine intervention to promote cardiovascular health in children and adolescents.

Publication
Duh-Leong et al.(2025)

Population
Latino pregnant women

Sample Size
n-176

Intervention
Monthly PRx voucher ($0.50/day/household member) for up to 6 months

Study Design
Observational
(cross-sectional study)

Comparison
Baseline
(within subject comparison)

Length of Follow-up
N/A

Outcomes

Redemption rate = 84.2%
Daily fruit and vegetable intake frequency = 1.28 ($p<0.05$)
Maternal stress = -1.89 ($p<0.05$)

Table 1: Summary of Studies using Produce Prescriptions (Continued)

Conclusion

Integrating fruit and vegetable vouchers into primary care visits was feasible and well-received. Participants reported increased produce consumption and reduced maternal stress.

Publication

Stroud et al.(2025)

Study Design

Observational
(pre/post comparison)

Comparison

Baseline
(within subject comparison)

Length of Follow-up

N/A

Population

Rural, uninsured patients with type-2 diabetes.

Sample Size

Enrolled (n) = 150
Completed (n) = 64

Intervention

PRx for 20 weeks
+ telephone-based health coaching
+ 9 bi-weakly food-centered education

Outcomes

Food literacy: +11.8 ($P < .001$) and was positively predicted by group class attendance
Diet quality improved (whole grains, $P < .001$, fruits, $P = .03$, and vegetables, $P < .001$)

Conclusion

PRx program with integrated culinary medicine and food literacy education improved diet quality, food literacy. Results highlight the added value of educational components alongside produce prescriptions in FIM programs.

Publication

Thompson-Lastad et al. (2025)

Study Design

Mixed Methods
(pre/post comparison + Qualitative)

Comparison

Baseline
(within subject comparison)

Length of Follow-up

N/A

Population

Adults with food insecurity and/or nutrition-sensitive chronic conditions

Sample Size

Food Farmacy-only (n)=188
Food Farmacy + Group Medical Visit (GMV) (n)= 284

Qualitative participants:
Patient (n) = 14
Staff (n) = 26

Intervention

Weekly home delivered PRx for 16 weeks
+ optional weekly GMVs (medical care, peer support, health coaching, nutrition education, movement, and relaxation practices)

Outcomes

Food Farmacy-only

Depression (PHQ-9):
Without baseline depression/anxiety= -0.1 (p=0.87)
With baseline depression/anxiety= -1.7 (p=0.002)

Anxiety (GAD-7):
Without baseline depression/anxiety= -1.8 (p<0.001)
With baseline depression/anxiety= -0.2 (p=0.81)

Food security (% of secure and marginal secure):
Without baseline depression/anxiety= -1% (p>0.05)
With baseline depression/anxiety= +22.9 % (p<0.001

Table 1: Summary of Studies using Produce Prescriptions (Continued)

Fruit & Vegetable intake:
Without baseline depression/anxiety= 0.4 (p=0.18)
With baseline depression/anxiety= 0.63 (p=0.06)

Food Farmacy + GMV

Depression (PHQ-9):
Without baseline depression/anxiety= -2.2 (p<0.001)
With baseline depression/anxiety= -2.4 (p<0.001)

Anxiety (GAD-7):
Without baseline depression/anxiety= –2.2 (p < 0.001)
With baseline depression/anxiety= –0.9 (p = 0.08)

Food security (% of secure and marginal secure):
Without baseline depression/anxiety= +19.8% (p<0.001)
With baseline depression/anxiety= +13.4 % (p<0.001)

Fruit & Vegetable intake:
Without baseline depression/anxiety= 0.94 (p<0.001)
With baseline depression/anxiety= 0.54 (p=0.01)

Conclusion

PRx with or without group medical visits, may improve short-term mental health symptoms, food security, and health-related behaviors. Group medical visits may offer additional benefits through social support. Programs should consider including mental health conditions in eligibility criteria for food as medicine interventions.

Publication
Radtke et al.(2025) (1)

Study Design
Secondary analysis of quasi-experimental study

Population
Patients with nutrition-related chronic conditions and/or food insecurity

Sample Size
n=199
Low (n) = 72
Moderate (n) = 60
High (n)=67

Intervention
Sixteen weekly delivered PRx +behavioral intervention sessions

Comparison
Between Groups: low(< 50%) vs moderate(50% - 75%) vs high(≥ 75%)

Length of Follow-up
6 month & 12 month for clinical outcomes

Outcomes

Low vs High attendance
Vegetable & Fruit Intake: +0.26 cups/day (p<0.03)
Physical Activity: + 24.43 min/week (p=0.003)
Depression Symptoms (PHQ-9): -1.08 (p=0.002)
Clinical outcomes (BMI, HgA1c, BP etc.): NS

Low vs Moderate
NS difference

Moderate vs High
NS difference

Table 1: Summary of Studies using Produce Prescriptions (Continued)

Conclusion

Greater participation in behavioral education components of a PRx program was associated with stronger improvements in fruit and vegetable intake and food-related confidence. These findings suggest that engagement intensity matters for maximizing impact in multicomponent FIM interventions.

Publication	Population	Sample Size	Intervention
Radtke et al. (2025) (2) **Study Design** Observational (pre/post comparison) **Comparison** Food insecure vs Food secure **Length of Follow-up** N/A	Adults referred to FIM program with FI and/or at least 1 chronic condition (mean age 48.3 yo)	Enrolled (n)=336 Intervention (n)=207 Control (n)= 129	Weekly produce delivery (~16 servings of fresh fruit & vegetables per week) for 16 weeks

Outcomes

Diet and Physical Activity: NS
Mental Health: Generalized Anxiety Disorder: Int -1 vs Con -2.24, p=0.03

Conclusion

Patients with and without FI benefits from PRx intervention with slightly greater improvements within the FI group.

Abbreviations:
FI - Food Insecurity
PRx - Produce Prescription
FIM - Food Is Medicine
NS - No Significance
Int - Intervention
Con - Control
BMI - Body Mass Index
HGA1c - Hemoglobin A1c
BP - Blood Pressure
GAD-7 - Generalized Anxiety Disorder 7-Item
PHQ-9 - Patient Health Questionnaire 9-Item
GMV - Group Medical Visit
EBT - Electronic Benefit Transfer
WLC - Wait List Control
SNAP - Supplemental Nutrition Assistance Program
WIC - Special Supplemental Nutrition Program For Women, Infants, And Children
NI - Nutrition Incentive

Table 2: Summary of Studies using Medically Tailored Groceries

Publication	Population	Sample Size	Intervention
Bilello et al.(2024) **Study Design** OBS **Comparison** Within-participant comparison **Length of Follow-up** End of intervention period	Adult individuals with diabetes and/or hypertension, and food insecure (11.3% 65 or older)	Baseline: n = 266 at 6 month: n = 121 at 12-month: n = 68	Biweekly access to free healthy foods tailored to chronic disease needs up to 12 months, nutrition counseling by a dietitian, & Optional monthly health education classes
Outcomes			
Body Weight change (lbs.) at 6 months: - 4.47 (p = 0.0009) at 12 months: - 5.78 (p = 0.0006) DBP change (mmHg) at 12 months: -3.42 mmHg (p = 0.0076) (DBP at 6 mo., SBP, & HbA1c were NS)			
Conclusion			
Although HbA1c and SBP changes were not statistically significant, the program exceeded all pre-set clinical targets, suggesting positive impact on health outcomes for food-insecure patients with chronic disease.			
Publication	**Population**	**Sample Size**	**Intervention**
Lim 2024 **Study Design** OBS (quasi-experimental) **Comparison** not-yet-treated **Length of Follow-up** 4.5 years (18 quarters x 600 people = 10, 800 person-quarters)	Individuals with diabetes enrolled in Medicaid (mean age 51.3 years)	n=600	Used Hospital-based food pantry at least once between Jul 2015 and Dec 2019 (mean 13.4 food pantry visits per person)
Outcomes			
Probability of ED visit = 7.3 PP decrease per quarter (95% CI, -13.8, -0.8, P=0.03)			
Conclusion			
Addressing food insecurity through hospital-based food pantries can reduce ED use among low-income individuals with diabetes			
Publication	**Population**	**Sample Size**	**Intervention**
Taniguchi 2024 **Study Design** Pilot RCT **Comparison** Activity tracker, culturally-tailored smartphone physical activity app, and Tribal Wellness Center Membership	Native American adults from Chickasaw Nation with uncontrolled hypertension (mean age 50.5 years)	n=176 (Int= 120; Con = 56)	Monthly heart-healthy food boxes (25 lbs. of food items consistent with DASH), educational material & $40 grocery vouchers for 6 months; Activity tracker, culturally-tailored smartphone physical activity app, and Tribal Wellness Center Membership

Table 2: Summary of Studies using Medically Tailored Groceries (Continued)

Length of Follow-up
End of intervention period

Outcomes

SBP/DBP, BMI, Food Security score (Int vs Con) NS

Conclusion

Demonstrated the feasibility and acceptability of using food boxes to address hypertension and food insecurity in Native American communities.

Publication

Lapay 2025

Study Design
Pilot RCT

Comparison
3 in-person data collection sessions (baseline, 6- and 12-weeks), received $25 grocery gift card, MTG equivalent to intervention at end of each session.

Length of Follow-up
End of intervention period

Population
Black/African-American and Hispanic/Latin adults with hypertension and food insecurity (median age: Int = 55, Con = 57, NS)

Sample Size
n=50 (Int=25; Con=25)

Intervention
Weekly home-delivered MTG adhering to DASH (8-10 types of fruits & vegetables, and shelf stable items), every-other-week in-person nutrition education

Outcomes

median SBP change (mmHg)
Int: -14.2 (95% CI -27.5,-4.5)
Con: -9.5 (95% CI -17.6, -1.8)

median DBP change (mmHg)
Int: -3.5 (95% CI -11.7, -5.9)
Con: 1.6 (95% CI -3.9, 7.5)

BMI: NS for either group

Average program satisfaction = 9.2/10 + 0.9

Conclusion

Highlights MTG and nutrition education potential to improve health outcomes in underserved communities. Demonstrated the feasibility and acceptability of home-delivered and MTG and nutrition education.

Publication

Hudak 2025

Study Design
OBS

Comparison
Within-participant comparison

Length of Follow-up
End of intervention period

Population
Adults with food insecurity at FQHC and a nutrition-related health condition (mean age 52.6 yo)

Sample Size
n=134

Intervention
Every other week RD designed grocery box using participant choice model (25-30 lbs. <3 in household; 50-60 lbs. >3 in household) - 20 boxes total

Table 2: Summary of Studies using Medically Tailored Groceries (Continued)

Outcomes

HbA1c: mean 0.4 PP decrease (p=0.001); 8 PP increase in individuals <7.0%

BMI: mean 0.9 kg/m2 decrease (p=0.009)

FVC: mean 4.6 increase in times consumed/week (p<0.001)

FI: 53.5 PP decrease (p<0.001)

Conclusion

Suggests that FIM interventions can effectively improve health outcomes and food security among vulnerable populations.

Publication

Ronis 2025

Study Design

OBS (quasi-experimental)

Comparison

Received referral to MTG, but did not utilize the MTG program

Length of Follow-up

First referral date to closest clinical encounter before data extraction date

Population

Adults referred to MTG program by HCP with a positive Hunger Vital Sign screening.

Sample Size

n=2259 (Int=1397; Con=862)

Intervention

Referral = 1 week's worth of RD-individualized MTG (up to family of 4) 1 time/mo. per 6 mo. Not limit on number of referrals. At least 1 visit to MTG program.

Outcomes

Change in DBP: Int -0.54 vs Con -0.51 mmHg, p=0.044

Change in BMI: Int 0.20 vs 0.23 kg/m2, p=0.016

SBP, HbA1c, weight: NS

Conclusion

Highlighted the importance of co-locating MTG sites with clinical settings to enhance program uptake and effectiveness.

Publication

Foudjo et al.(2025

Study Design

OBS

Comparison

Within-participant comparison

Length of Follow-up

End of intervention period

Population

Moderately wasting children aged 6–59 months

Sample Size

Enrolled: 474
at 2 weeks: 425
at 12 weeks: 371

Intervention

Bi-weekly food voucher to meet daily nutrition requirements for 3 months

Outcomes

Children 6-23 mo.: mean MDD increased 32.6 PP (baseline to 3 mo.; p<0.001)

Children 24 - 53 months: mean DDS increased 1.53 points (baseline to 3 mo.; p<0.001)

Table 2: Summary of Studies using Medically Tailored Groceries (Continued)

Conclusion			
The program effectively enhanced the quality and variety of children's diets in a low-resource, food-insecure setting.			
Publication Crusan 2025 **Study Design** OBS **Comparison** Within-participant comparison **Length of Follow-up** End of intervention period	**Population** Immigrant Hispanic/Latine individuals with overweight/ obesity and hypertension (mean age 49.8 yo)	**Sample Size** n=21	**Intervention** 28 day culturally-appropriate, DASH-compliant food boxes (1 box per 7 days) with 8-10 servings/day of fruits & vegetables for the participant & supportive fruit & vegetables for household
Outcomes			
SBP: -4.1 mmHg (p=0.03) DBP: -3.8 mmHg (p=0.01) WC: -0.8 in (p<0.01)			
Conclusion			
The study suggests that culturally-tailored interventions can effectively manage hypertension and improve cardiometabolic health in Hispanic/Latine populations.			
Publication Oluwadero 2025 **Study Design** OBS **Comparison** Within-participant comparison **Length of Follow-up** Midpoint and End of intervention period	**Population** Adults with uncontrolled diabetes, hypertension, or obesity (mean age 58.7 yo)	**Sample Size** n=43	**Intervention** 12 months of Weekly home-delivery of nutrient-dense foods (farm-to-door produce delivery, supplemented with whole grains and lean proteins) for household; nutrition counseling and chronic disease management education & behavior change
Outcomes			
BMI: Midpoint -0.16 & End -0.81 kg/m2 (p<0.05) HbA1c and FVC: NS			
Conclusion			
The program led to non-significant reduction in HbA1c and modest enhancements in food security, demonstrating the potential of integrating tailored nutrition and healthcare services to manage chronic conditions.			

Table 2: Summary of Studies using Medically Tailored Groceries (Continued)

Publication	Population	Sample Size	Intervention
Rodriguez Espinosa 2025 **Study Design** OBS **Comparison** Within-participant comparison **Length of Follow-up** End of intervention period	Latina females at risk for diet-related chronic disease and have FI (mean age 52 yo)	n=25	8 weekly MTG box deliveries (~12 lbs./box, including 50% produce, 25% protein, 25% whole-grain items)
Outcomes			
FI: 33 PP decrease, p=0.016 FVC: NS			
Conclusion			
Concluded that MTG are feasible and acceptable for this population.			

Abbreviations:
OBS - observational study
RCT - randomized control trial
HBA1c - hemoglobin A1c
ED - emergency department
PP - percentage point
N/A - not applicable
NS - no significance
MTG - medically tailored groceries
BMI - body mass index
Int - intervention
Con - control
SBP - systolic blood pressure
DBP - diastolic blood pressure
FIM - food is medicine
MDD - minimum dietary diversity
DDS - dietary diversity score
FQHC - federally qualified healthcare center
RD - registered dietician
FVC - fruit and vegetable consumption
FI - food insecurity
WC - waist circumference

Table 3: Summary of Studies using Medically Tailored Meals

Publication	Population	Sample Size	Intervention
Clark 2024 **Study Design** Pilot RCT **Comparison** Usual care **Length of Follow-up** End of MTM intervention (3 mo.) and End of MNT intervention (6 mo.)	Adult Medicaid enrollees with type 2 diabetes (mean age 48 yo)	n=67 (Int=30, Con=27)	12 frozen MTMs (60% carbohydrates/ meal) and a fresh produce bag (5 additional servings of fruits & vegetables) delivered weekly for 3 months. MNT was monthly phone call with RD for 6 months. Usual care

Outcomes

HbA1c, SBP/DBP, Weight, BMI, QoL, Diabetes self-management
Diet quality: NS between groups at 3 & 6 mo.

FI: Int-Con difference-in-difference
3mo -32.9 (95% CI -33.3,-32.6; $p<0.05$)
6mo -15.9 (95% CI -16.3, -15.6; $p<0.05$)

Conclusion

Highlighted the feasibility of recruiting and retaining participants, but suggested that more comprehensive interventions are needed to achieve significant clinical benefits.

Publication	Population	Sample Size	Intervention
Richards 2024 **Study Design** OBS (quasi-experimental) **Comparison** Did not receive MTM delivery **Length of Follow-up** End of intervention	Medicare Advantage members referred to meals benefit after discharge from the hospital (mean age 79 yo)	n=2254 (Int=1400, Con=854)	Received at least 1 MTM delivery. Weekly delivery of 2-3 meals/day for up to 4 weeks post-discharge (maximum 56(base)-84(buy-up) meals)

Outcomes

No health outcomes or meal satisfaction (Int only) reported

Conclusion

Suggests that supplemental benefits like home-delivered meals are particularly utilized by and helpful to patients with greater financial strain and/or food insecurity.

Publication	Population	Sample Size	Intervention
Sautter 2024 **Study Design** OBS **Comparison** Within-participant comparison **Length of Follow-up** End of enrollment prescription (2/3 at 6 mo.; 1/3 at 3 mo.)	First-time clients of MTM programs who completed at least 2 mo. referred by HCP indicating presence of nutritional risk in context of serious illness (50.7% 65 or older)	n=1959	21 meals/week (3 or 6 mo.) average 1900 kcal/day (20% protein, 30% fat, 50% carbohydrate, average 2 g/day sodium) with up to 3 modifications based on individual health and cultural needs.

Table 3: Summary of Studies using Medically Tailored Meals (Continued)

Outcomes

PROMIS®: 38.1% of group significantly decreased (W=-1.99, p=0.046)

MST: 30.5% of group significantly improved (W=-10.08, p<0.001)

BMI & SBP: NS

High risk participants had significant improvements in all measures

Conclusion

The findings suggest that MTM programs can improve specific health outcomes for individuals with serious illnesses.

Publication	Population	Sample Size	Intervention
Haddad 2025 **Study Design** OBS **Comparison** Within-participant comparison 6 mo. prior to program enrollment **Length of Follow-up** 6 mo. after program enrollment	Those living in food desert, positive for FI, >50 years-old, with CHF, uncontrolled diabetes, or uncontrolled hypertension, at least 2 ED visits in previous 6 mo., and eligible for Medicare/Medicaid or uninsured (median age 63.5 yo)	n=60	3 mo. of weekly meal boxes containing 14 frozen meals & 7 servings of milk/milk substitute, fruit, and bread. Each meal at least 450 kcal, 20g protein, 60g carbohydrate, <10% saturated fat, <700mg sodium.

Outcomes

average ED visits 180d before MTM vs 180d after MTM: 1.70 vs 1.15, p=0.005

average Inpatient days 180d before MTM vs 180d after MTM: 5.067 vs 3.200, p=0.02

Conclusion

MTM significantly reduced emergency department visits and inpatient days, leading to an average healthcare cost saving of $12,046 per participant. There were no significant improvements in global mental or physical health scores.

Publication	Population	Sample Size	Intervention
Struszczak 2025 **Study Design** RCT **Comparison** 12-weeks without MTM intervention (cross-over design) **Length of Follow-up** 3mo and 6mo of study period	Community-dwelling older adults (>70 yo) with no severe cognitive impairment and assessed to be malnourished or at risk for malnutrition (average age 82 yo)	n=56	12 weeks with MTM intervention. 1 high protein (avg 47g), high energy (avg 772 kcal) per day. If participant was >70kg dessert was offered (6g protein and 328 kcal)

Outcomes

Effect of meal provision:
MNA score +2.6 points (D=1.14, 95% CI 0.78, 1.50; p<0.001)
Handgrip Strength +1.5 kg (D=0.36, 95% CI 0.06,0.66; p=0.02)

Table 3: Summary of Studies using Medically Tailored Meals (Continued)

Conclusion

Over 12 weeks, participants showed significant improvements in nutritional status, handgrip strength, and negative mood scores. However, these benefits were not retained after the intervention ended, indicating the need for sustained meal provision.

Publication	Population	Sample Size	Intervention
Compher 2025	Patients with CHF (NYHA class I-III) identified having malnutrition during hospital admission (average age 67.8)	n=46	4 weeks of 7 meals/week. 7 MTM dinner meals delivered to home.*

Study Design
RCT

Comparison
4 weeks of 21 meals/ week (cross-over design). 7 each breakfast, lunch, and dinner meals delivered to home

*All meals provided in intervention and comparison groups included food group servings consistent with the Association's Diet Goals in 1900 kcal diet with sodium restriction to 2g/day of sodium and 95g of protein.

Length of Follow-up
At the end of each 4-week (1 month) intervention

Outcomes

Reduced malnutrition risk compared to baseline (1 mo. OR 0,18, 95%CI 0.04, 0.74; 2 mo. OR 0.21, 95% CI 0.05, 0.99)

Sarcopenia Risk decreased 0.43 units at 1 mo. and 0.59 units at 2 mo. (p=0.01 for time effect).

30-day readmission rate: NS

Conclusion

Significant improvements observed during 7 and 21 meals/week. Providing at least 7 MTM per week post-hospital discharge is a promising strategy to improve nutritional status and reduce readmissions.

Publication	Population	Sample Size	Intervention
Aziz-Bose 2025	Parents/guardians of children <18 yo <1 year from completion of cancer-directed therapy and either experiencing low income (<200% FPL) or FI (average child's (patient) age 9.1 yo)	n=10 (families)	12 weeks, delivered weekly. Meal kits with pre-measured ingredients for 3 meals/week for the household and pictorial/written recipes. Kits could be modified for dietary preferences or cultural tradition.

Study Design
OBS

Comparison
N/A

Length of Follow-up
Monthly after enrollment for 4 months

Outcomes

100% reported they would participate again;

80% would recommend to other families;

70% cooked all meals;

80% reported program freed money for other household needs

Conclusion

Participants reported positive impacts on family cooking engagement and financial relief. However, challenges included non-recyclable packaging and limited meal options. The study identified the need for broader language accessibility and formalized benefits counseling.

Table 3: Summary of Studies using Medically Tailored Meals (Continued)

Publication	Population	Sample Size	Intervention
Juckett 2025 **Study Design** Pilot RCT (feasibility) **Comparison** ARM3: MTM+OT services (phone-based screening related to fall risk & home safety needs, in-home evaluation, fall prevention plan, in-home or phone follow-up session) ARM4: MTM+RD+OT **Length of Follow-up** 3 mo.	Adults 60 years or older, with >1 fall risk factors and CVD or diabetes (25% 65-69 yo)	n=56	ARM1: 14 frozen meals delivered weekly for 3 mo. Each meal met at least 1/3 of the recommended dietary intake for older adults. Participants could choose from 40 meal options each week ARM2: MTM + RD services (telephone-based nutrition assessment, assistance with meal selection, follow-up phone-based encounter)

Outcomes

78.6% retention rate (across 4 arms)

84.5% RD encounters completed (arms 2 & 4)

90.2% OT encounters completed (arms 3&4)

Conclusion

Participants expressed satisfaction with meal convenience and staff interactions but highlighted issues with meal taste and delivery consistency. The study identified barriers such as restrictive eligibility criteria and recruitment challenges, suggesting protocol modifications for broader eligibility and increased flexibility in meal selection.

Publication	Population	Sample Size	Intervention
Chapman 2025 **Study Design** QUAL **Comparison** N/A **Length of Follow-up** N/A	Caregivers and pediatricians of children aged 6–11 years with obesity, ≥95th percentile BMI, and household food insecurity	Caregiver (n) = 29 (13 interviewed) Pediatricians (n) = 12 (7 interviewed)	A 6-week healthy meal kit delivery program; Weekly meal kit includes 10 servings for a week.

Outcomes

Caregivers found the meal kit delivery program helpful for improving food security, nutrition knowledge, and exposing children to healthier foods. They also appreciated hands-on learning opportunities but identified barriers such as time constraints, cultural food preferences, and ingredient quantity. Pediatricians recognized the program as beneficial for addressing both social and clinical needs, reducing caregiver stress, and engaging the whole family. However, they noted challenges like competing demands in clinic workflows and the need for program financial sustainability and scalability.

Conclusion

The meal kit delivery intervention was perceived as feasible and beneficial for families facing food insecurity and childhood obesity, but modifications are needed for broader and sustained implementation. Suggestions included expanding program reach, increasing meal variety and cultural tailoring, embedding referrals in clinical workflows, and ensuring long-term funding or insurance coverage

Table 3: Summary of Studies using Medically Tailored Meals (Continued)

Abbreviations:
OBS - observational study
RCT - randomized control trial
QUAL - Qualitative Study
HBA1c - hemoglobin A1c
ED - emergency department
PP - percentage point
N/A - not applicable
NS - no significance
MTM - medically tailored meals
MNT - medical nutrition therapy
BMI - body mass index
Int - intervention
Con - control
SBP - systolic blood pressure
DBP - diastolic blood pressure
QoL - quality of life
NYHA - New York Heart Association
FPL - federal poverty level
RD - registered dietician
FVC - fruit and vegetable consumption
FI - food insecurity
MST - Malnutrition Screening Tool
PROMIS - Patient-Reported Outcome Measurement Information System
MNA - mini nutritional assessment
CHF - congestive heart failure
CVD - cardiovascular disease
OT - occupational therapist,

Table 4: Summary of Studies using Mixed FIM Models

Publication	Population	Sample Size	Intervention
Hager et al.(2025) **Study Design** Observational (Retrospective cohort study) **Comparison** Eligible but not participated **Length of Follow-up** N/A	Medicaid recipients (age from 2-64 years old) with food insecurity and chronic conditions	N=22,511 Treatment group (n) = 20,403 Comparison group (n)=2,108	Flexible Services Program (MTM, Home-delivered meals, food boxes/ groceries, PRx, food vouchers, nutrition education, kitchen supplies and food pantry assistance) for at least 3 months

Outcomes

Hospitalizations: -23% (adjusted incidence rate ratio [IRR] 0.77, p<0.01)
Emergency Department (ED) visits: -13% (adjusted IRR 0.87, p<0.01)
Health Care Cost:
Full study period (2020-2023): -$712 (P>0.05) (p>0.05)
Post-COVID (2022-2023): Health Care Cost:- $1,721 (p<0.05)
Post-COVID + enrolled (>90 days): -$2,502 (p<0.05)

Conclusion

FIM programs through Medicaid were associated with significant reduction in hospitalization and ED visits, particularly after the COVID-19 pandemic and among adults with longer program enrollment.

Publication	Population	Sample Size	Intervention
Kim et al.(2025) **Study Design** Qualitative study **Comparison** N/A **Length of Follow-up** N/A	FIM program staff	n=11	Produce Prescriptions Medically Tailored Groceries Medically Tailored Meals Food pharmacy Food banks Farmer's market

Outcomes

Theme 1 Importance of leadership and collaborative culture: Strong leadership and a collaborative culture were identified as critical for the successful design and implementation of the program.

Theme 2 Role of community partnerships and health education:
Community partnerships (between the clinic, university, and local organizations) were essential for resource sharing, outreach, and program sustainability. Health education was integrated into food distribution, helping patients understand nutrition and the importance of healthy eating, and empowering them to make lasting dietary changes.

Theme 3 Challenges with logistics, funding, and sustainability:
Staffs cited logistical hurdles (such as meal preparation, delivery, and distribution) and the need for sustainable funding as major challenges. The program's reliance on emergency funds and volunteer labor raised concerns about its long-term viability and scalability beyond the acute phase of the pandemic.

Theme 4 Need for ongoing assessment and evaluation:
There was consensus on the importance of continuous assessment and evaluation to measure program impact, improve processes, and justify ongoing support. Staffs noted the need for better data collection and outcome tracking to demonstrate effectiveness and inform future program development

Table 4: Summary of Studies using Mixed FIM Models (Continued)

Conclusion

The study highlights the importance of collaboration, sustainable funding, and evaluation in FIM programs, and provides a contextual understanding of program implementation beyond clinical outcomes.

Publication

Berkowitz et al.(2025)

Study Design

Observational (Quasi-experimental)

Comparison

Eligible for Medicaid but not participated

Length of Follow-up

Up to 12 months before and after the enrolled month

Population

North Carolina Medicaid beneficiaries who enrolled FIM program with health-related social needs

Sample Size

n=86,696
Intervention (n) = 13,227
Control (n) = 73,469

Intervention

Mixed FIM intervention up to 12 months
Delivered services ((% of total services delivered): Food box (74%), PRx (7.2%), MTM (0.3%), healthy meal (3.7%), nutrition education (0.2%), food and nutrition access case management services (0.05%)

Outcomes

Total Medicaid spending (medical + HOP services) : - $85 ($p<0.001$) per beneficiary per month

Emergency Department visits:-6 visit /per 1000 person per month ($p<0.05$)

Inpatient admissions: - 1 /per 1000 person per month ($p>0.05$)

Outpatient visits: 1 /per 1000 person per month ($p>0.05$)

Conclusion

Participating in the FIM program was associated with improved trends in health care spending and utilization, suggesting potential benefits for both Medicaid budgets and patient health outcomes.

Abbreviations:
FIM - Food is Medicine
MTM - Medically Tailored Meals
PRx - Produce Prescriptions
HOP - Healthy Opportunities Pilots
ED - Emergency Department
IRR - Incidence Rate Ratio

American Heart Association.

Health Care Food™

Accelerating the Integration of **Food Is Medicine in Health Care**

Health Care by Food™ is the American Heart Association's initiative conducting scientific research, public policy advocacy and stakeholder education to advance food is medicine interventions that incorporate healthy food into health care. The initiative's goal is to identify and promote ways for health professionals to prescribe nutritious foods to treat, manage and prevent diet-related disease among patients with or at high risk for chronic disease.

Health Care by Food integrates rigorous research and guidance from experts in the field to address the complex relationship between food and health outcomes. The Association is funding robust studies to demonstrate the efficacy and cost-effectiveness of food is medicine interventions that will then be used to advocate for public and private insurance coverage.

Health Care by Food is guided by a mission to create a future where millions of patients can receive a more holistic approach to diet and health through their health coverage.

Visit us:
healthcarexfood.org