



Medically Tailored Meals & Healthcare Utilization



How Medically Tailored Meals Can Improve Healthcare Outcomes and Lower Cost

Seth Berkowitz, MD MPH, University of North Carolina School of Medicine

Kevin Cranston, Assistant Commissioner, Massachusetts Department of Public Health

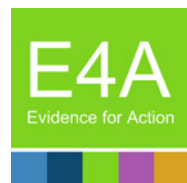
John Hsu, MD MBA MSCE, Mongan Institute, Massachusetts General Hospital

Lisa Randall, Director of Health Care Planning, Massachusetts Department of Public Health

David B. Waters, CEO, Community Servings



The study, *Receipt of a Medically Tailored Meal Program and Healthcare Utilization: An Instrumental Matching Analysis*, was published in JAMA—Internal Medicine on April 22, 2019. Funded by Robert Wood Johnson Foundation Evidence for Action Program, other key partners included The Mongan Institute Health Policy Center and the MA Department of Health. Evidence for Action is a program of the Robert Wood Johnson Foundation administered by the University of California, San Francisco.



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Introduction

Medically tailored meals, or MTM, refer to an evidence-based nutritional intervention that is tailored to an individual’s specific medical condition(s), and delivered to an individual’s home. MTM are prepared under the supervision of a registered dietitian nutritionist to meet the nutritional needs of individuals living with HIV, diabetes mellitus, end-stage renal disease, cancer, or other chronic diseases.

WHO RECEIVES MEDICALLY TAILORED MEALS?

MTM recipients, who typically experience multiple chronic conditions, can be some of the highest need, highest cost patients to treat. Registered dietitian nutritionists customize MTMs to address the primary condition, co-occurring illnesses, and medication considerations – for example, an individual could receive a meal to address diabetes, cardiovascular disease, and the need for a consistent level of vitamin K while on warfarin anticoagulation. The vulnerable individuals who stand to gain the most from MTM are those with one or more complex chronic conditions who are socioeconomically disadvantaged, and who typically face food insecurity and other challenges managing complex diets, which include limited neighborhood healthy food retail options or difficulty shopping and preparing food because of disability.

RESEARCH ON MEDICALLY TAILORED MEALS

Three clinical research studies on the health and economic benefits of MTM led by Community Servings, in partnership with Dr. Seth Berkowitz, formerly of Massachusetts General Hospital and now at the University of North Carolina Medical School, have evaluated the impact of MTM on health outcomes, healthcare utilization, and costs. The three studies find that MTM improves diet quality and reduces healthcare utilization and costs—for individuals with complex chronic illnesses and poverty.



Individuals who stand to gain the most from medically tailored meals:

- Have one or more complex, chronic illnesses
- Are socioeconomically disadvantaged
- Face food insecurity and other challenges gaining access to healthy food
- Experience complex dietary requirements



Currently the lion's share of Medically Tailored Meals funding for diseases other than HIV/AIDS comes from private philanthropy. However, with recent studies showing positive impact of MTM on healthcare cost, utilization, and outcomes, healthcare payers serving low-income, vulnerable populations have an incentive to embed MTM into their payment and delivery models.

In particular, this white paper will summarize the most recent study, *Receipt of a Medically Tailored Meal Program and Healthcare Utilization: An Instrumental Matching Analysis*. This research was supported by the Robert Wood Johnson Foundation's Evidence for Action Program. The study sought to determine whether participation in an MTM intervention is associated with fewer subsequent hospitalizations and nursing home admissions—major components of the nation's healthcare budget. The results from this study are consistent with prior research on Community Servings' MTM model and reflected a 16% reduction in monthly healthcare costs, compared with a control group. The results of these three studies support proposed major policy change in public and private health insurance, including the transformation of the Massachusetts Medicaid Program that will include funds for nutrition services beginning in 2020, and changes to Medicare Advantage supplemental benefits, which will allow for reimbursement of home-delivered meals for individuals with complex illnesses in 2020.

CURRENT FUNDING OF MEDICALLY TAILORED MEALS

There is currently one source of federal funding supporting nutrition services for individuals coping with illness: the Ryan White HIV/AIDS Program (RWHAP) authorized by the Ryan White CARE Act of 1990.

RWHAP has been responsible for providing 30 years of medical care and essential support services for vulnerable individuals living with HIV/AIDS. In essence, the Ryan White CARE Act pioneered federal funding for MTM. The RWHAP regards "Medical Nutrition" as a core service that it provides through community-based meal organizations. RWHAP has also sponsored innovative research into the challenges—illness, poverty, difficulty gaining access to and preparing nutritious meals—that debilitated, economically disadvantaged individuals experience, and the resulting detrimental impact on their health.¹

Currently the lion's share of MTM funding for diseases other than HIV/AIDS comes from private philanthropy. However, with recent studies showing positive impact of MTM on healthcare cost, utilization, and outcomes, healthcare payers serving low-income, vulnerable populations have an incentive to embed MTM into their payment and delivery models. In light of the positive health outcomes and healthcare cost savings documented by recent research, healthcare payers should expand coverage of MTM for individuals suffering from complex chronic illness and poverty, through screening, systematic referrals to MTM services, and investment in additional research.

What FIMC research tells us about MTM

The Food is Medicine Coalition (FIMC) is an association of MTM providers that advocates for the integration of MTM into healthcare payment and delivery models, and leads the field in developing research to support this advocacy agenda.

STUDIES CONDUCTED BY FIMC MEMBERS (2013–2018)²

PROJECT ANGEL HEART *of DENVER*

Using the Colorado All Payers Claim Database, Project Angel Heart of Denver partnered with researchers to study the impact of MTM on health care utilization. The study found that all-cause 30-day hospital readmissions were reduced by 13% when individuals received MTM, and costs for individuals living with a variety of chronic conditions were reduced by an average of 24% compared to a control group.

PROJECT OPEN HAND *of the BAY AREA AND UC SAN FRANCISCO*

In 2014, the Bay Area's Project Open Hand partnered with the University of California San Francisco in a pilot program to study nutritional intervention in Type 2 diabetes, HIV, and co-morbidly diagnosed populations. The result was a 63% reduction in hospitalizations, 50% increase in medication adherence, and 58% decrease in emergency department visits.

METROPOLITAN AREA NEIGHBORHOOD NUTRITION ALLIANCE *of PHILADELPHIA*

The Metropolitan Area Neighborhood Nutrition Alliance (MANNA) of Philadelphia examined health claims data for 65 MANNA clients in comparison with a matched set of Medicaid patients who did not receive MANNA services. Over the course of a year, the MANNA clients had \$12,000 less in medical expenses per month than those in the control group. They were also hospitalized 50% less often and, if hospitalized, their stay was 37% shorter.

For individuals who received Medically Tailored Meals

(from the Project Open Hand Study)



hospitalizations

63%



medication adherence

50%



ER visits

58%



healthcare costs

16%



\$220

monthly savings on healthcare costs per patient

(vs. comparison group)

Published Studies on Community Servings' Medically Tailored Meals

MTM as an innovative model for reducing healthcare costs and improving dietary quality for diabetic patients

“Meal Delivery Programs Reduce The Use Of Costly Health Care In Dually Eligible Medicare And Medicaid Beneficiaries”

Published in *Health Affairs* | April 2018

A study published in April 2018 in the leading health policy journal *Health Affairs* examined the impact of home-delivered meals on 133 adults who were dually eligible for Medicaid and Medicare versus 1,002 matched controls; the meals were reimbursed by a local community-based health plan (Commonwealth Care Alliance). The study, supported by a grant from the AARP Foundation, focused on two meal programs: MTM provided by Community Servings, the Massachusetts-based nonprofit provider of MTM; and a non-tailored food program (NTF) provided by a Meals on Wheels vendor. The study also included comparator groups that did not receive meals from either program.

The study demonstrated an average monthly net reduction (factoring in the cost of the meals) of 16% in medical costs for individuals receiving MTM vs. a matched control group. It showed that the average monthly medical cost for MTM patients was \$843 versus \$1,463 for the comparator group, a gross savings of \$540 per month. MTM participants also experienced statistically significant reductions in Emergency Department (ED visits), inpatient admissions, and emergency transportation services. Average monthly cost for the NTF subjects was \$1,007 versus \$1,163 for the comparator group. NTF subjects also saw fewer ED and emergency transportation services, but not fewer inpatient admissions.³



“Medically Tailored Meal Delivery for Diabetes Patients with Food Insecurity: a Randomized Cross-over Trial”

Published in *Journal of General Internal Medicine* | November 2018

The second study, published in the *Journal of General Internal Medicine* in November 2018, tested whether the receipt of MTM improved dietary quality for food-insecure diabetic patients. MTM were provided by Community Servings of Massachusetts. The study, supported by grants from the Blue Cross Blue Shield Foundation of Massachusetts and BNY Mellon, was designed as a crossover trial in which 43 participants were randomly assigned the order of “on meals” (home delivery of 10 meals per week for 12 weeks) and “off meals” (12 weeks of usual care). After 12 weeks the “on meal” and “off meal” groups cross over.

The study utilized the Healthy Eating Index (HEI) as a measure to assess whether individuals experienced improvements in dietary quality, an essential factor in diabetes management. A clinically meaningful difference in the HEI is 5 points. The average “on meal” HEI score was 71.3 while the average “off meal” HEI score was 39.9, a difference of 31.4 points. Study subjects showed improvements in nearly all subcategories of the HEI score. The “on meal” group also reported lower food insecurity, less hypoglycemia and fewer days where mental health was an issue in daily life than the “off meal” group. ⁴



31.4

**point increase
on healthy
eating index**

(vs. comparison group)



807

medically tailored
meals recipients
studied

the largest study of
its kind to date



Strong New Evidence Linking Medically Tailored Meals and Improved Health Outcomes

Detailing the Impact of MTM on Healthcare Utilization and Cost

“Receipt of a Medically Tailored Meal Program and Healthcare Utilization: An Instrumental Matching Analysis”

Published in *JAMA—Internal Medicine* | April 2019

Receipt of a Medically Tailored Meal Program and Healthcare Utilization: An Instrumental Matching Analysis is the third groundbreaking study on the health and economic benefits of MTM completed by Community Servings and Dr. Berkowitz. It is the largest study to date, studying 807 medically tailored meals recipients across multiple insurance payers, and strongly validates Community Servings’ two prior studies as well as the research of the Food is Medicine Coalition. This study was supported by the Robert Wood Johnson Foundation Evidence for Action Program and was conducted by the same lead investigator, Dr. Berkowitz, who oversaw the two studies described earlier, with Massachusetts Department of Public Health as a co-investigator.

In particular, this study confirmed the key findings of the MTM/NTF study done with those dually eligible for Medicare and Medicaid. Importantly, because the study looked at a broader population (statewide healthcare claims from 2011–2015 as reflected in the Massachusetts All-Payer Claims Database or MA-APCD), it provided a more accurate picture of the association between MTM participation and healthcare utilization and cost.

STUDY DESIGN, PARTICIPANTS, AND OUTCOMES MEASURES ⁵

The study used a unique design that combined matching with instrumental variable analysis. This analytic method, called “near/far matching,” aims to reduce a larger cohort down to its most informative pairs—those who are as similar as possible (near to each other) on relevant demographic, socioeconomic, and clinical characteristics, but as dissimilar as possible (far from each other) on the values of an instrumental variable. An instrumental variable is a factor, not under the control of those who assign the treatment (in this case, receiving MTM) that subtly “encourages” or “discourages” individuals to receive the treatment, but is not otherwise associated with the outcome (in this case, healthcare utilization and cost). For this study, the instrumental variable was the distance an individual lived from Community Servings. Living closer subtly “encouraged” individuals to enroll in the program as they were more likely to come into contact with people who were aware of the program. However, since Community Servings is not associated with any particular healthcare provider or hospital, the distance one lives from Community Servings should not be, in and of itself, associated with healthcare utilization once demographic, socioeconomic, and clinical characteristics are accounted for.

The study team linked data at the individual level from the 2011–2015 MA-APCD and the MTM delivery records of Community Servings. Each week, under the supervision of a registered dietitian nutritionist, Community Servings delivered 10 meals tailored to the recipient’s medical condition(s). Privacy safeguards were built in, and a de-identified dataset was created. Institutional Review Board (IRB) approval was granted by the Massachusetts Department of Public Health, Partners HealthCare, and the University of North Carolina School of Medicine.

A clinician certified that each study subject had both a clinical condition requiring MTM and also faced substantial challenges in acquiring nutritionally appropriate meals, including poverty and/or food insecurity.

The primary outcome of the study was the association of MTM with inpatient admissions. Secondary outcomes were the association of MTM with admissions to a skilled nursing facility and with total healthcare costs (combined medical and pharmaceutical claims).

Rigorous statistical analyses were used to address the potential for confounding. ⁶





\$753

**monthly savings
for people
receiving MTM**

(vs. comparison group)

**healthcare
costs**

16%



**significantly
fewer inpatient
admissions**



RESULTS: HEALTHCARE UTILIZATION AND COSTS⁷

Receipt of MTM was associated with significantly fewer inpatient admissions and skilled nursing facility admissions.

The study team estimated that had everyone in the matched cohort been enrolled into MTM services, average individual monthly healthcare costs would have been \$3,838 versus \$4,591 if no one had been enrolled in MTM services, a difference of \$753 per person per month, or 16% less, a similar estimate of healthcare cost savings to the earlier study published in Health Affairs.

The researchers note that, based on MA-APCD data, participation in an MTM program was associated with fewer inpatient admissions and fewer nursing facility admissions. Individuals who received MTM were substantially more ill than the overall population. The study results are consistent with the prior literature and expand current knowledge regarding the associations between MTM and healthcare utilization.

Conclusion and Recommendations

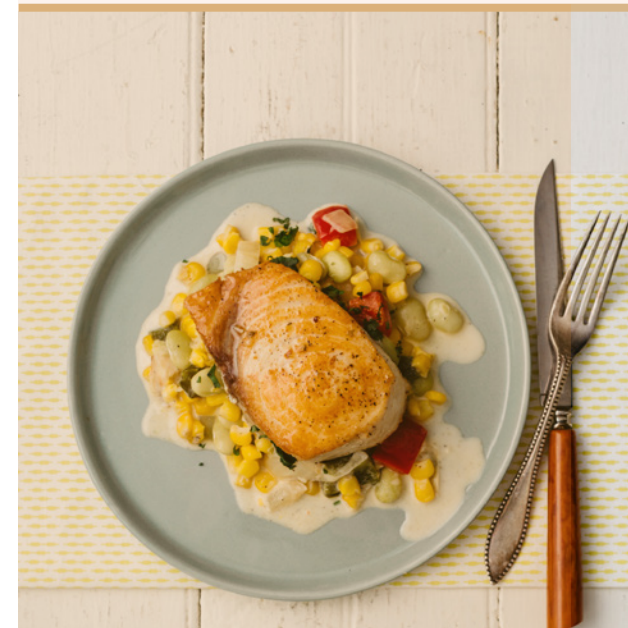
The three studies described in this paper, and other ongoing studies, support insurer coverage of MTM as a component of healthcare. In particular, *Receipt of a Medically Tailored Meal Program and Healthcare Utilization: An Instrumental Matching Analysis*, which showed a 16% net reduction in healthcare costs in the MTM cohort, should galvanize the attention of funders and policy makers. Further, it validates the approach taken by the Ryan White program of paying for medically tailored, home-delivered meals.

LOOKING AHEAD, THE INTEGRATION OF MTM IN THE HEALTHCARE PARADIGM WILL DEPEND ON PROGRESS IN SEVERAL KEY AREAS:

- Better understanding of the range and type of **effects of MTM programs on health** and healthcare utilization
- Further research that seeks to learn **for whom MTM programs are most useful** and what length of service is required
- **Healthcare finance models that allow for MTM programs as covered benefits** in circumstances where they have been shown to be of value

Further research into the healthcare cost and utilization implications of MTM such as this most recent study are critical to attracting further funding and beneficial policies supporting home-delivered meals for socioeconomically disadvantaged individuals living with serious chronic diseases.

Large, randomized controlled studies focused on the health outcomes of subjects receiving MTM will be the next era of MTM research. In May 2018, the state of California announced a large-scale “Food is Medicine” demonstration project that, while not a randomized trial, will examine the health effects of MTM. The state funded six nonprofit nutrition service organizations located in California to provide free, home-delivered meals to low-income individuals insured by Medicaid who require a steady supply of MTM to help them manage their chronic condition. Results are expected in 2020.⁸





CONCLUSION, CONT.

Furthermore, federal health agencies such as the National Institutes of Health, the Centers for Disease Control and Prevention, and the Health Resources Services Administration should develop larger-scale research projects to advance knowledge about MTM interventions. Given the promising results from observational studies, randomized trials are a clear next step for growing the evidence base about MTM.

As noted above, more funding and policy support is needed from public and private sources to support research and MTM service operations. Medicaid programs in several states have piloted MTM in various settings, and Medicare Advantage recently allowed coverage for some meal delivery programs.⁹ Also, in October 2018, CMS approved the MassHealth (Massachusetts Medicaid) Flexible Services Program, which may pay for health-related nutrition, including MTM, and housing support for certain ACO¹⁰ members. The data from these three studies support expanded opportunities throughout Medicare and Medicaid where evidence shows that these interventions improve health outcomes and reduce costs for individuals living with severe illnesses.

U.S. Health and Human Services Secretary Alex M. Azar II expressed support for piloting public health plan reimbursement of social determinants of health, including meal delivery, in a speech he gave on November 14, 2018.¹¹

Finally, pilot programs should be developed through the Center for Medicare and Medicaid Innovation (CMMI) and through Farm Bill initiatives. Early in 2018, the House Hunger Caucus launched a small bipartisan group, the Food Is Medicine Working Group. Part of its mission will be to explore the potential for supportive policies around MTM. This sort of alignment of health policy and agriculture will be critical to the future of MTM.¹²

To advance Food is Medicine as healthcare policy requires sustained attention to addressing the knowledge gaps we have identified. Given that the evidence supports the utility and feasibility of MTM, and the current policy environment at the state and federal levels is receptive, further investment in research into the potential of MTM to improve health, reduce healthcare costs, and enhance well-being is timely and warranted.

ENDNOTES

- 1 <https://hab.hrsa.gov/about-ryan-white-hiv-aids-program/about-ryan-white-hiv-aids-program>
- 2 <http://www.fimcoalition.org/>
- 3 Dr. Seth Berkowitz, lead investigator, et al. Medically Tailored Home-Delivered Meals Reduce Costs and Improve Health for Patients with Complex Medical and Social Needs. *Health Affairs*, April 2018
- 4 Dr. Seth Berkowitz, lead investigator, et al. Medically Tailored Meal Delivery for Diabetes Patients with Food Insecurity: A Randomized, Cross-Over Trial. *J Gen Intern Med*, November 2018 (e-pub)
- 5 Much of the information in this section comes from the research study led by Dr. Seth Berkowitz et al. Receipt of a Medically-Tailored Meal Program and Healthcare Utilization: An Instrumental Matching Analysis
- 6 A confounding factor in a clinical study is one that might distort the true association between the intervention under study and its outcome in a treatment group. In this study, confounding factors might include, for instance, non-random assignment to the intervention and potential inaccuracies in event outcomes and spending outcomes.
- 7 Dr. Seth Berkowitz, et al. Receipt of a Medically-Tailored Meal Program and Healthcare Utilization: An Instrumental Matching Analysis
- 8 Anna Almendrala, California Becomes the First State to Prescribe Food as Medicine, *HuffPost*, May 8, 2018
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- 10 <https://www.mass.gov/info-details/massachusetts-delivery-system-reform-incentive-payment-program#flexible-services->
- 11 <https://www.hhs.gov/about/leadership/secretary/speeches/2018-speeches/the-root-of-the-problem-americas-social-determinants-of-health.html>
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Community Servings

18 Marbury Terrace
Boston, MA 02130
servings.org