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The Camden Coalition Care Management Program Improved Intermediate Care Coordination: A Randomized Controlled Trial

ABSTRACT When a randomized evaluation finds null results, it is important to understand why. We investigated two very different explanations for the finding from a randomized evaluation that the Camden Coalition's influential care management program—which targeted high-use, high-need patients in Camden, New Jersey—did not reduce hospital readmissions. One explanation is that the program's underlying theory of change was not right, meaning that intensive care coordination may have been insufficient to change patient outcomes. Another explanation is a failure of implementation, suggesting that the program may have failed to achieve its goals but could have succeeded if it had been implemented with greater fidelity. To test these two explanations, we linked study participants to Medicaid data, which covered 561 (70 percent) of the original 800 participants, to examine the program's impact on facilitating postdischarge ambulatory care—a key element of care coordination. We found that the program increased ambulatory visits by 15 percentage points after fourteen days postdischarge, driven by an increase in primary care; these effects persisted through 365 days. These results suggest that care coordination alone may be insufficient to reduce readmissions for patients with high rates of hospital admissions and medically and socially complex conditions.

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There is considerable academic and policy interest in programs designed to improve the care of patients with high health care use and complex medical and social needs—so-called super-utilizers of the health care system.[1] Motivated by the premise that the health care system is confusing to navigate and poorly suited to these patients, many of these programs attempt to connect patients to existing services and to manage their care, often in the wake of a transition (such as discharge from the hospital to home).[2] The hope is that such interventions may both improve patients' health and well-being and reduce systemwide costs, as health care costs are heavily concentrated, with 5 percent of the population accounting for 50 percent of spending in a given year.[3]

The Camden Coalition's Camden Core Model (hereafter "the program") is an exemplar of this care coordination approach. It has received national recognition for its innovative and comprehensive approach to care coordination and serves as a model for super-utilizer programs elsewhere.[4–7] It targets people with complex medical and social needs who have frequent hospital admissions; the eligible population is only 0.5 percent of the Camden, New Jersey, popula-

tion but accounts for 11 percent of its hospital expenditures.[8] Many have substance use disorders, mental illnesses, and chronic health conditions and also lack stable housing or other basic supports. The overwhelming majority are Black, Latino/a, or other people of color. The program provides a high-touch, face-to-face model of care designed to engage patients and connect them to appropriate medical care, existing governmental benefits, and community-based services. Its goal is to break the cycle of repeat hospitalizations, improve patients' well-being, and reduce health care costs.

Early observational studies of its impact were promising.[9,10] However, a four-year, prospective, 800-person randomized evaluation of the program found that it failed to reduce hospital readmission rates within 180 days of discharge (the trial's primary outcome) or related outcomes, such as number of readmissions or any readmission over other time horizons.[8] These results attracted considerable attention, spawning debate among researchers and practitioners about their meaning.[11–16]

Two broad explanations were suggested for why the program did not reduce hospital readmissions. One was that the program's theory of change is not right and that coordinating care and connecting patients to existing resources may be insufficient to change outcomes, particularly for complex cases. Jeffrey Brenner, the founder of the Camden Coalition, offered this explanation in response to the results, telling the *New York Times*, "Care coordination is necessary but insufficient to fix the health care of these patients [when patients need housing and other supports]. ...We're coordinating to nowhere, essentially."[17] Others went further, arguing that short-term care coordination could never address decades of trauma, complexity, and deprivation.[15,18]

A second, very different explanation focused on implementation, suggesting that the program may have failed to achieve its intermediate care coordination goals, such as getting follow-up appointments for patients shortly after discharge. In this view, the coordination approach could succeed if it were implemented with greater fidelity. Although randomized trials of this type of care coordination have mixed results,[1,8,19–25] some have found reductions in hospital use in high-need, high-cost populations, albeit ones with lower complexity and hospital use levels than those the Camden program targets.[21,24,25]

Because the original study only measured readmissions, it could not distinguish between these explanations. Both are plausible. As noted in the original trial, two program goals—a home visit from program staff within five days and a provider visit within seven days—were met only 28 percent of the time.[8] At the same time, it may be that for this particularly high-need, complex population, better coordination of existing resources is insufficient.

To shed light on these alternative explanations, we linked trial participants to their Medicaid records on nonhospital care. We also analyzed the effect of the program on emergency department (ED) use, which is an additional measure of potentially avoidable care that was not analyzed in the original trial.

We focused on the program's impact on increasing timely access to ambulatory (outpatient) office-based care. Although ambulatory care was not the only element of the model, the original researchers,[26] the Camden Coalition,[27,28] and outside experts[11,29–31] all recognized its centrality to the theory of change for reducing readmissions in this and other postdischarge care management programs, particularly for the highest-risk patients.[32] The extent to which the program increased patients' use of ambulatory care relative to the control group is an open question because data for both treatment and control groups were not available in the original trial. A priori, there is reason for skepticism, as the program goals of timely postdischarge visits were only partially met and the Camden Coalition simultaneously led a citywide effort to increase timely postdischarge visits for all patients.[8,27]

We leveraged the randomized trial to estimate the effect of the program on measures of care coordination. Evidence showing no meaningful improvement in ambulatory care would raise the possibility that a similar program with improved implementation might be able to reduce readmissions in this population. However, a finding that the program meaningfully increased the use of ambulatory care would suggest that care coordination alone might not be a sufficient tool to reduce hospitalizations in this population.

Study Data And Methods

Analyses were prespecified on ClinicalTrials.gov (NCT02090426) and the American Economic Association registry (AEARCTR-0000329) before the study team received the Medicaid data. The study received Institutional Review Board approval from Rutgers University, Cooper University Hospital (the primary recruiting hospital, to which Massachusetts Institute of Technology ceded review), Rowan University, and the National Bureau of Economic Research. Nonprespecified outcomes are marked in the exhibits, and changes from the planned analysis are

Care coordination alone, even when implemented well, is insufficient to reduce hospitalizations for this complex population of high-need patients.

described in the online appendix.[33] Additional detail on data and methods is in the appendix;[33] details on the implementation of the trial protocol were published with the original trial.[8]

DESIGN AND PARTICIPANTS Eight hundred participants were recruited in the hospital and randomly assigned in equal proportions to receive either the Camden Core Model or usual care (a printed discharge plan) after hospital discharge. Inclusion criteria sought to identify patients with complex health and social needs. These criteria required patients to be adults living in Camden with at least one hospital admission in the prior six months; at least two chronic conditions; and at least two additional measures of complexity, such as having five or more outpatient prescriptions, having difficulty accessing services, lacking social support, or having a mental health comorbidity, substance use disorder, or homelessness. Enrollment ran from June 2, 2014, to September 13, 2017.

INTERVENTION After discharge, patients in the treatment group received care management for an average of approximately ninety days from a multidisciplinary team of Camden Coalition staff, including registered nurses, social workers, licensed practical nurses, and community health workers. The care team met patients in their homes and sought to support them in the self-identification of goals, cultivate trusting relationships, help with disease and medication management, schedule and accompany them to primary and specialty care visits, and connect them with social services and other programs.[8,34]

DATA AND SAMPLE We obtained New Jersey Medicaid enrollment, claims, and encounter data from the period 2013–19 from the Rutgers Center for State Health Policy. These records included inpatient, ED, outpatient, durable medical equipment, and prescription claims for the subset of the trial population enrolled in Medicaid.

We restricted our main analysis to the 561 people (281 in the treatment group and 280 in the control group) enrolled in Medicaid at trial enrollment, which made up 70 percent of the trial population. Appendix exhibit A1 provides a participant flow diagram.[33]

We supplemented these data with three other data sources: a baseline survey (conducted before randomization) that recorded additional demographic information; the original trial hospital discharge data from the four Camden-area hospitals, which provided an alternative source of inpatient data for the full trial sample; and uniform billing data from the New Jersey Department of Health, which provided an alternative source of ED data for the full trial sample.

OUTCOMES The primary outcome was an ambulatory office visit within fourteen days of discharge. We chose this because an office visit shortly after discharge was one of the key ways in which the program tried to prevent readmissions. We chose fourteen rather than seven days to better capture the implementation realities of the program, as the seven-day goal was relatively arbitrary, but overall timeliness was important. Secondary outcomes examined additional time horizons from 7 to 365 days, other measures of ambulatory care (the number of ambulatory visits, as well as measures of primary care and specialty care, which are mutually exclusive and exhaustive subsets of ambulatory care), home health care visits (distinct from home visits conducted by the program), durable medical equipment, and prescription drugs. Although not prespecified, we also examined effects on chronic prescriptions, excluding acute medications that may be less affected.

We also examined ambulatory visits to the ED (visits that did not result in an inpatient admission) and hospital readmissions, using both the Medicaid data and administrative data covering the full trial sample. (Appendix exhibit A5 provides more detail on variable construction.)[33]

STATISTICAL ANALYSIS We used multivariable linear regression to compare outcomes between those randomly assigned to receive the program and those randomly assigned to the control group. To increase precision, we included the same prespecified controls used in the original trial: age (grouped in five-year increments), male sex, Black non-Latino/a, Latino/a, and lags of the dependent variable measured as the number of the given type of visit 0–6 months and 7–12 months before the index admission—the hospital admission where patients were enrolled in the trial.[8] We used heteroskedasticity-robust

standard errors and two-sided tests with $\alpha = 0.05$ and reported per comparison p values. In the appendix,[33] we report p values adjusted for testing multiple comparisons.[35]

LIMITATIONS We acknowledge several limitations. Our measures of implementation success were imperfect. This was a multifaceted intervention, and it is not clear that there was a single most important measure. In addition, we could not measure the quality of ambulatory care received or the quality of the services provided by Camden Coalition staff. The study targeted heterogeneous participants; we were unable to assess an alternative explanation that enrollment criteria were too broad or investigate heterogeneous treatment effects, given the sample size.

Study Results

SAMPLE CHARACTERISTICS Compared with the full trial sample, trial participants matched to Medicaid data were slightly younger and more likely to receive a mental health diagnosis at the index admission. Otherwise, the Medicaid analysis sample appears to have been largely similar to the full trial sample (appendix exhibit A2).[33] Within the Medicaid subsample, prerandomization characteristics—including prior health care use, sex, race, and age—were balanced. Medicaid enrollment remained high for both treatment and control groups after trial enrollment (the mean patient was enrolled for 169 of the 180 days postdischarge), and length of enrollment was not affected by treatment status (appendix exhibits A3 and A4).[33]

HOSPITAL OUTCOMES Exhibit 1 shows results for having any hospital readmissions and ambulatory ED visits 180 days after discharge in both the full trial sample and the Medicaid sample. (Appendix exhibit A6 displays results for number of readmissions and ED visits.)[33] The full sample null effects on readmission were previously reported.[8] The 180-day readmission rate in the control group was 61.7 percent in the full sample and 66.8 percent in the Medicaid analysis sample; we continued to find no effect on 180-day readmission rates in the Medicaid analysis sample (estimated effect, −3.32 percentage points; $p = 0.40$). Results for the Medicaid analysis sample were similar when they were analyzed using other data or measures of inpatient admissions (appendix exhibit A7).[33]

The program also had no effect on the proportion of patients with an ED visit (exhibit 1). These results have not been previously reported; they were prespecified but not included in the original trial because the data were not then available.[8] For the full sample, 61.8 percent of the control group and 62.4 percent of the treatment group had an ED visit in the 180 days after discharge (estimated effect, 2.49 percentage points; $p = 0.48$). For the Medicaid sample, these numbers were 53.6 percent and 54.1 percent, respectively (estimated effect: 1.3 percentage points; $p = 0.75$). Levels of ED use were lower when measured in Medicaid data; however, the null estimates were robust to the choice of data sets, as well as to alternative measures of ED visits (appendix exhibit A8).[33]

AMBULATORY OUTCOMES Exhibit 2 presents results on the amount and timeliness of ambulatory care for the Medicaid sample. We found positive and statistically significant effects on the amount of ambulatory care received immediately after discharge; these effects persisted throughout the 365-day follow-up period. (Appendix exhibit A11 shows similar results from a Cox proportional hazards model, and appendix exhibit A12 shows that results were robust to restricting to ambulatory visits that involved a

EXHIBIT 1

Effect of the Camden Core Model on inpatient readmissions and emergency department (ED) visits, full trial and Medicaid samples, 2014–18

	Control mean (%)	Treatment mean (%)	Treatment effect[a]	95% CI	*p* value
Any inpatient readmissions 180 days after discharge					
Full trial sample ($n = 782$, HDD)	61.70	62.34	0.82	−5.97, 7.61	0.81
Medicaid sample ($n = 561$)	66.79	63.35	−3.32	−11.09, 4.45	0.40
Any ambulatory ED visits 180 days after discharge					
Full trial sample ($n = 726$, UB)	61.81	62.43	2.49	−4.36, 9.34	0.48
Medicaid sample ($n = 561$)	53.57	54.09	1.3	−6.76, 9.36	0.75

SOURCE Authors' analysis of data from New Jersey Medicaid, hospital discharge data (HDD) provided by the Camden Coalition, and New Jersey Department of Health uniform billing data (UB). **NOTES** We regressed indicators for any readmissions and any ambulatory ED visits in the 180 days after discharge from the index admission on an indicator for treatment and prespecified covariates (the number of readmissions or ED visits 0–6 and 7–12 months before the index admission and indicators for age grouped in 5-year increments, male sex, Black non-Latino/a, and Latino/a). Days after discharge were computed on the basis of readmission or ED visit start dates and index admission discharge dates. The 95% confidence intervals and *p* values were calculated with the use of heteroskedasticity-robust standard errors. [a]Percentage points.

EXHIBIT 2

Effect of the Camden Core Model on ambulatory office visits, overall and by primary or specialty care use, Medicaid sample only, 2014–18

	Control mean	Treatment mean	Treatment effect[a]	95% CI	*p* value
All ambulatory office visits					
14 days after discharge[b]					
% with any	27.14	42.35	15.33	7.79, 22.86	<0.001
180 days after discharge					
% with any	73.21	83.63	10.73	4.04, 17.42	0.002
No. of visits	3.56	4.58	0.94	0.32, 1.56	0.003
365 days after discharge[c]					
% with any	82.50	90.04	7.45	1.78, 13.11	0.01
No. of visits	6.72	8.22	1.23	0.12, 2.34	0.03
Primary care visits					
14 days after discharge					
% with any	18.93	33.10	15.21	8.38, 22.03	<0.001
180 days after discharge					
% with any	61.07	71.89	11.73	4.36, 19.11	0.002
No. of visits	1.95	2.48	0.62	0.25, 0.98	0.001
365 days after discharge[c]					
% with any	70.36	79.36	9.13	2.14, 16.12	0.011
No. of visits	3.50	4.20	0.76	0.14, 1.39	0.017
Specialist visits					
14 days after discharge					
% with any	12.14	16.73	3.53	−2.28, 9.35	0.235
180 days after discharge					
% with any	52.5	66.55	13.32	5.38, 21.26	0.001
No. of visits	1.60	2.10	0.34	−0.05, 0.73	0.092
365 days after discharge[c]					
% with any	66.43	77.94	11.47	4.12, 18.83	0.002
No. of visits	3.22	4.02	0.45	−0.29, 1.20	0.232

SOURCE Authors' analysis of data from New Jersey Medicaid. **NOTES** We regressed indicators for any visits or the number of visits occurring within various periods after discharge from the index admission for the 561 study participants enrolled in Medicaid at trial enrollment on an indicator for treatment and prespecified covariates (the number of visits 0–6 and 7–12 months before the index admission and indicators for age grouped in 5-year increments, male sex, Black non-Latino/a, and Latino/a). Days after discharge were computed on the basis of visit start dates and index admission discharge dates. The 95% confidence intervals and *p* values were calculated with the use of heteroskedasticity-robust standard errors. [a]Percentage points for percent rows. [b]Primary outcome. [c]Outcomes that were not prespecified.

physician, rather than a nurse or midlevel provider.)[33]

The first panel of exhibit 2 shows results for all ambulatory visits, which include both primary and specialty care. For our primary outcome, 27.1 percent of the control group had an ambulatory visit within fourteen days of discharge. The program increased this probability by 15.3 percentage points ($p < 0.001$), a 56.5 percent relative increase. At 180 days after discharge, the program increased the probability of having an ambulatory visit by 10.7 percentage points ($p = 0.002$), a 14.7 percent increase relative to the control mean of 73.2 percent. At 365 days after discharge, the program increased the probability of having an ambulatory visit by 7.5 percentage points ($p = 0.01$), a 9 percent increase relative to the control mean of 82.5 percent. The control group had an average of 3.6 visits after 180 days and 6.7 visits after 365 days. The program increased the average number of ambulatory visits by 0.9 visits after 180 days ($p = 0.003$) and 1.2 visits after 365 days ($p = 0.03$).

Exhibit 2 also shows results separately for primary care and specialist visits. The increase in the probability of any ambulatory visit by fourteen days was driven entirely by the increase in the probability of a primary care visit (15.2 percentage points, $p < 0.001$). By 180 days, the program had increased the probability of both any primary care visit (11.7 percentage points, $p = 0.002$) and any specialist visit (13.3 percentage points, $p = 0.001$).

Primary care accounted for about two-thirds of the increase in the amount of care over 180 days. After 180 days, the program had increased the number of primary care visits by 0.62 ($p = 0.001$), or about 32 percent relative to the control group, and the number of specialty care

visits by 0.34 ($p = 0.09$), or about 21 percent relative to the control group.

Exhibit 3 shows ambulatory results graphically, displaying the mean number of visits for primary and specialty care over time for a range of days after discharge (from 7 to 365 days). Visits of both types increased over time for both treatment and control groups. The program impact on the number of visits increased in magnitude over time for both visit types, with the largest differences found at 365 days. For primary care, the statistically significant increase in the number of visits for the treatment group relative to the control group appeared at seven days and persisted through 365 days. The increase in the number of specialty care visits took longer to appear and was not consistently statistically significant at the 5 percent level (only at ninety days).

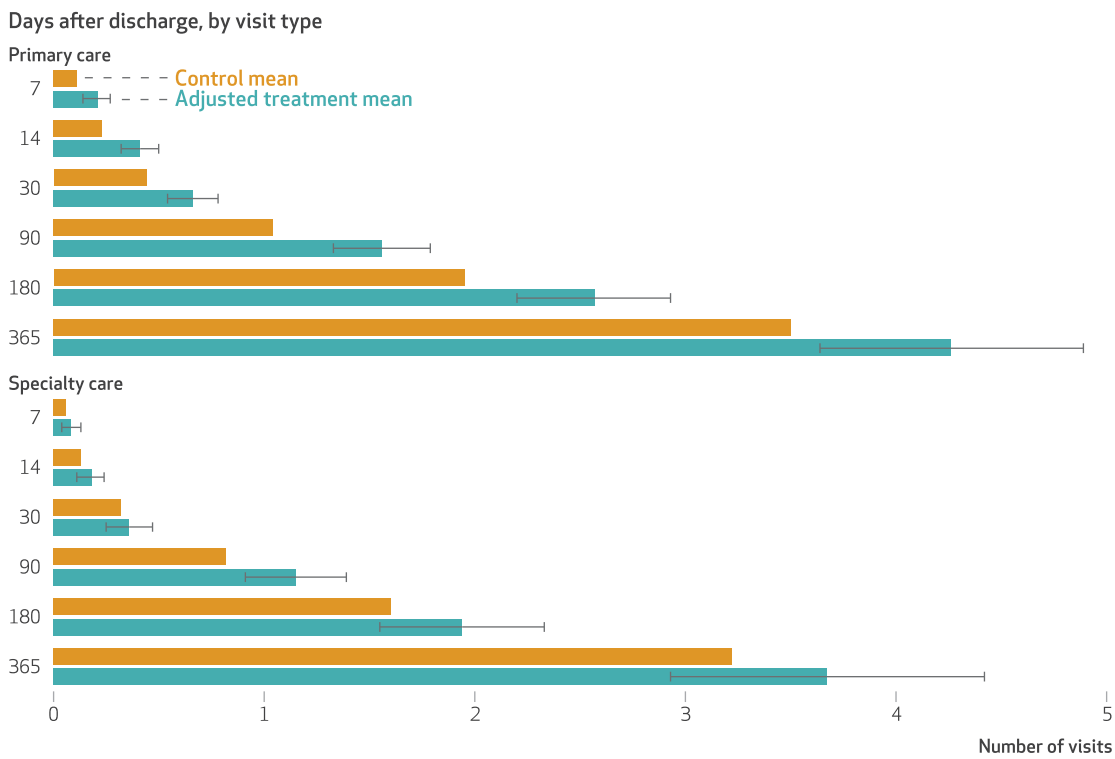
There was no effect on home health care use, which was very low in this population. Only about 2 percent of the control group used any home health care in the 180 days postdischarge. (Appendix exhibits A9 and A10 contain the complete set of ambulatory and home care outcomes.)[33]

DURABLE MEDICAL EQUIPMENT AND PRESCRIPTION DRUG OUTCOMES Exhibit 4 displays results for durable medical equipment and prescription drugs. The program increased the proportion of people who had received any durable medical equipment 180 days after discharge by 12.4 percentage points ($p = 0.001$), a 42 percent increase relative to the control mean. However, the program had no effect on the number of unique items dispensed (estimated effect, 0.01; $p = 0.98$). Appendix exhibit A14 illustrates that no single category of durable medical equipment drove the increase, and appendix exhibit A15 plots the distribution of the number of unique durable medical equipment items.[33]

The program also had no effect on the share of patients receiving any prescriptions or the number of unique prescriptions dispensed 180 days after discharge (exhibit 4). The program increased the number of unique chronic prescriptions by 0.40 from a control mean of 2.24 ($p = 0.04$); however, the result was substantively

EXHIBIT 3

Effect of the Camden Core Model on the number of primary and specialty care visits over time, 2014–18



SOURCE Authors' analysis of data from New Jersey Medicaid. **NOTES** Adjusted treatment means were computed as the control mean plus treatment effect from linear regressions of the outcome on an indicator for treatment and prespecified covariates (the number of visits 0–6 and 7–12 months before the index admission and indicators for age grouped in 5-year increments, male sex, Black non-Latino/a, and Latino/a) for the 561 study participants enrolled in Medicaid at trial enrollment. Days after discharge were computed on the basis of visit start dates and discharge dates for the index admission. We show 95% confidence intervals (whiskers) on the treatment effect calculated from heteroskedasticity-robust standard errors. Seven-, 30, and 365-day outcomes were not prespecified.

EXHIBIT 4

Effect of the Camden Core Model on durable medical equipment and prescriptions, Medicaid sample only, 2014–18

	Control mean	Treatment mean	Treatment effect[a]	95% CI	*p* value
Durable medical equipment, 180 days after discharge					
% with any	29.29	43.06	12.39	4.82, 19.95	0.001
No. of unique durable medical equipment items	1.28	1.44	0.01	−0.48, 0.49	0.976
Prescriptions, 180 days after discharge					
% with any	76.43	78.65	2.22	−4.05, 8.49	0.489
% with any chronic prescriptions[b]	54.74	60.74	6.28	−0.86, 13.43	0.085
No. of unique prescriptions	12.43	13.49	1.03	−0.52, 2.59	0.194
No. of unique chronic prescriptions[b]	2.24	2.63	0.40	0.01, 0.79	0.042

SOURCE Authors' analysis of data from New Jersey Medicaid. **NOTES** We regressed indicators for any durable medical equipment or prescriptions or the number of unique durable medical equipment items or prescriptions dispensed after the index admission for the 561 study participants (except where otherwise noted) enrolled in Medicaid at trial enrollment on an indicator for treatment and prespecified covariates (the number of durable medical equipment items or prescriptions 0–6 and 7–12 months before the index admission and indicators for age grouped in 5-year increments, male sex, Black non-Latino/a, and Latino/a). Days after discharge were computed on the basis of claim start dates and index admission discharge dates. The 95% confidence intervals and *p* values were calculated with the use of heteroskedasticity-robust standard errors. [a]Percentage points for percent rows. [b]Chronic outcomes were not prespecified. Sample size was lower for chronic outcomes (526) because we dropped patients who had pharmacy claims but for whom we were unable to classify any of their prescriptions as either chronic or acute.

small, was not prespecified, and was not robust to the removal of controls or adjusting for multiple hypothesis testing (appendix exhibit A13).[33]

Discussion

The Camden Core Model increased the use of ambulatory care immediately after hospital discharge, and this effect persisted throughout the 365-day follow-up period. The timing of effects followed an intuitive pattern, with an immediate increase in primary care visits followed by a more gradual increase in specialist visits. In the absence of the program, very few patients received timely ambulatory care. Only 27 percent of the control group met with a provider after two weeks, and even after six months, fewer than three-quarters had done so. The program increased the share that met with a provider to 42 percent after two weeks and 84 percent after six months. The program also increased the likelihood of receiving durable medical equipment but did not reduce ED visits or increase the number of prescription medications.

Implementation was far from perfect. More than half of the participants did not receive a postdischarge office visit within fourteen days. However, the increase in ambulatory care was similar to what other care coordination programs have achieved. For example, the Individualized Management for Patient-Centered Targets community health worker intervention, which serves high-cost, high-need patients (although patients with needs that are less costly and complex than those of the Camden population), was designed to connect patients to primary care after discharge and has been cited as a successful counterexample of complex care coordination in light of the null result of the Camden trial.[14] A randomized evaluation found that this intervention increased the proportion of recently discharged patients with a primary care visit within fourteen days by 12 percentage points from a baseline of 48 percent.[22] In comparison, the Camden Core Model increased this proportion by 15 percentage points from a lower baseline of 19 percent. The Individualized Management for Patient-Centered Targets intervention also did not reduce readmissions across three evaluations.[22–24]

Other studies of programs designed to increase ambulatory care in less complex patient populations have found similar-size effects. A randomized trial of discharge planning for older adults with high readmission risk found a 17.5-percentage-point increase in follow-up physician visits within thirty days from a higher baseline.[36] A randomized trial of cash incentives to encourage primary care visits among low-income previously uninsured adults likewise found increases of 9–12 percentage points in having any visit in six months in a setting where 62 percent of the control group achieved a visit.[37]

Although it is of course possible that a program that increased ambulatory care even more might also reduce readmissions, it is noteworthy that the current program was unable to do so despite achieving increases in ambulatory care that have been considered successful in other contexts. We similarly did not observe changes in additional services such as home health, prescriptions, or durable medical equipment that might suggest office visits as a key to increasing other forms of care.

We therefore interpret our findings as consis-

tent with the view that care coordination alone, even when implemented well, is insufficient to reduce hospitalizations for this complex population of high-need patients. Consistent with this interpretation, the Camden Coalition and several large health systems are actively incorporating other supplemental supports into their care management models, such as providing housing and legal services, as part of a greater focus on nonclinical support.[28,38,39] Randomized evaluations of these efforts would be valuable. More broadly, as the science of health care delivery increasingly adopts the rigor of medical trials, it is important to be mindful that null results need not be the end of the road. Instead, they can spark new hypotheses and new avenues for exploration.

Conclusion

Our findings show that the Camden Core Model had important effects on its intermediate care coordination goals. That this was insufficient for the program to reduce hospital readmissions (as reported in the original trial)[8] points to challenges to reducing readmissions in very high use, complex populations. Our study also shows how rigorous evaluations can continue to generate insights even when they initially return null results. ■

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NOTES

1 Chang E, Ali R, Seibert J, Berkman ND. Interventions to improve outcomes for high-need, high-cost patients: a systematic review and meta-analysis. J Gen Intern Med. 2023; 38(1):185–94.

2 Agency for Healthcare Research and Quality. Care coordination [Internet]. Rockville (MD): AHRQ; 2014 Jun [last updated 2018 Aug; cited 2023 Nov 13]. Available from: https://www.ahrq.gov/ncepcr/care/coordination.html

3 Cohen SB. The concentration of health care expenditures and related expenses for costly medical conditions, 2012 [Internet]. Rockville (MD): Agency for Healthcare Research and Quality; 2014 Oct [cited 2023 Dec 8]. (MEPS Statistical Brief No. 455). Available from: https://meps.ahrq.gov/data_files/publications/st455/stat455.pdf

4 Gawande A. The hot spotters. New Yorker [serial on the Internet]. 2011 Jan 16 [cited 2023 Nov 13]. Available from: https://www.newyorker.com/magazine/2011/01/24/the-hot-spotters

5 Gorenstein D. Setting up shop where the sick are. MarketPlace [serial on the Internet]. 2013 Aug 2 [cited 2023 Nov 13]. Available from: https://www.marketplace.org/2013/08/02/health-care/diagnosis-data/setting-shop-where-sick-are

6 Mann C. Targeting Medicaid superutilizers to decrease costs and improve quality [Internet]. Baltimore (MD): Centers for Medicare and Medicaid Services; 2013 Jul 24 [cited 2023 Nov 13]. (CMCS Informational Bulletin). Available from: https://www.medicaid.gov/sites/default/files/federal-policy-guidance/downloads/CIB-07-24-2013.pdf

7 Aligning Forces for Quality. Expanding "hot spotting" to new communities [Internet]. Princeton (NJ): Robert Wood Johnson Foundation; 2012 May 1 [cited 2023 Dec 8]. Available from: http://forces4quality.org/node/5182.html

8 Finkelstein A, Zhou A, Taubman S, Doyle J. Health care hotspotting—a randomized, controlled trial. N Engl J Med. 2020;382(2):152–62.

9 Green SR, Singh V, O'Byrne W. Hope for New Jersey's city hospitals: the Camden initiative. Perspect Health Inf Manag. 2010;7(Spring):1d.

10 Sevak P, Stepanczuk CN, Bradley KWV, Day T, Peterson G, Gilman B, et al. Effects of a community-based care management model for superutilizers. Am J Manag Care. 2018; 24(11):e365–70.

11 Cantor JC. Medicaid and the future of health care hot-spotting [Internet]. New York (NY): Milbank Memorial Fund; 2020 Apr [cited 2023 Nov 13]. Available from: https://www.milbank.org/publications/medicaid-and-the-future-of-health-care-hot-spotting/

12 Coburn K. Approaches to complex care innovation are "naïve and insufficient." We need systems and design thinking. STAT [serial on the Internet]. 2020 Feb 20 [cited 2023 Nov 13]. Available from: https://www.statnews.com/2020/02/20/complex-care-innovation-requires-systems-design-thinking/

13 Frakt A. Disappointing results of major study point to better ways to cut health care waste. New York Times [serial on the Internet]. 2020 Jan 8 [last updated 2020 Jan 10; cited 2023 Nov 13]. Available from: https://www.nytimes.com/2020/01/08/upshot/major-study-health-waste.html

14 Kangovi S, Grande D. Don't throw cold water on health care's hot spotters. Health Affairs Blog [blog

on the Internet]. 2020 Feb 11 [cited 2023 Nov 13]. Available from: https://www.healthaffairs.org/content/forefront/don-t-throw-cold-water-health-care-s-hot-spotters
15 Lantz PM. "Super utilizer" interventions: what they reveal about evaluation research, wishful thinking, and health equity. Milbank Q. 2020; 98(1):31–4.
16 Schneider EC, Shah TB. Cold water or rocket fuel? Lessons from the Camden "hot-spotting" randomized controlled trial. Health Affairs Blog [blog on the Internet]. 2020 Feb 11 [cited 2023 Nov 13]. Available from: https://www.healthaffairs.org/content/forefront/cold-water-rocket-fuel-lessons-camden-hot-spotting-randomized-controlled-trial
17 Abelson R. These patients are hard to treat. New York Times [serial on the Internet]. 2020 Jan 8 [cited 2023 Nov 14]. Available from: https://www.nytimes.com/2020/01/08/health/camden-coalition-chronic-illness.html
18 Martin L. Beyond the Camden Coalition's randomized controlled trial: lessons for the complex care field on addressing patient needs. Better Care Playbook [blog on the Internet]. 2020 Feb 4 [cited 2023 Nov 21]. Available from: https://bettercareplaybook.org/_blog/2020/31/beyond-camden-coalitions-randomized-controlled-trial-lessons-complex-care-field
19 Yoon J, Chang E, Rubenstein LV, Park A, Zulman DM, Stockdale S, et al. Impact of primary care intensive management on high-risk veterans' costs and utilization. Ann Intern Med. 2018;168(12):846–54.
20 Henschen BL, Theodorou ME, Chapman M, Barra M, Toms A, Cameron KA, et al. An intensive intervention to reduce readmissions for frequently hospitalized patients: the CHAMP randomized controlled trial. J Gen Intern Med. 2022;37(8): 1877–84.
21 Sadowski LS, Kee RA, VanderWeele TJ, Buchanan D. Effect of a housing and case management program on emergency department visits and hospitalizations among chronically ill homeless adults: a randomized trial. JAMA. 2009;301(17):1771–8.
22 Kangovi S, Mitra N, Grande D, White ML, McCollum S, Sellman J, et al. Patient-centered community health worker intervention to improve posthospital outcomes: a randomized clinical trial. JAMA Intern Med. 2014;174(4):535–43.
23 Kangovi S, Mitra N, Grande D, Huo H, Smith RA, Long JA. Community health worker support for disadvantaged patients with multiple chronic diseases: a randomized clinical trial. Am J Public Health. 2017;107(10):1660–7.
24 Kangovi S, Mitra N, Norton L, Harte R, Zhao X, Carter T, et al. Effect of community health worker support on clinical outcomes of low-income patients across primary care facilities: a randomized clinical trial. JAMA Intern Med. 2018;178(12): 1635–43.
25 Powers BW, Modarai F, Palakodeti S, Sharma M, Mehta N, Jain SH, et al. Impact of complex care management on spending and utilization for high-need, high-cost Medicaid patients. Am J Manag Care. 2020;26(2): e57–63.
26 Finkelstein A, Brenner J, Doyle J, Taubman S, Zhou RA. Health care hotspotting: a randomized controlled trial analysis plan [Internet]. Bethesda (MD): ClinicalTrials.gov; 2014 Mar 7 [cited 2023 Dec 13]. Available from: https://storage.googleapis.com/ctgov2-large-docs/26/NCT02090426/Prot_SAP_000.pdf
27 Wiest D, Yang Q, Wilson C, Dravid N. Outcomes of a citywide campaign to reduce Medicaid hospital readmissions with connection to primary care within 7 days of hospital discharge. JAMA Netw Open. 2019; 2(1):e187369.
28 Noonan K, Craig K. From siloed systems to ecosystem: the evolution of the Camden Coalition's complex care model [Internet]. Camden (NJ): Camden Coalition; 2019 Jul 30 [cited 2023 Nov 14]. Available for download from: https://camdenhealth.org/resources/from-siloed-systems-to-ecosystem-the-evolution-of-the-camden-coalitions-complex-care-model/
29 Coleman EA, Parry C, Chalmers S, Min S. The Care Transitions Intervention: results of a randomized controlled trial. Arch Intern Med. 2006;166(17):1822–8.
30 Centers for Medicare and Medicaid Services, Office of Minority Health. Guide to reducing disparities in readmissions [Internet]. Baltimore (MD): CMS; 2018 Aug [cited 2023 Nov 14]. Available from: https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/OMH_Readmissions_Guide.pdf
31 DeLia D, Tong J, Gaboda D, Casalino LP. Post-discharge follow-up visits and hospital utilization by Medicare patients, 2007–2010. Medicare Medicaid Res Rev. 2014;4(2): mmrr.004.02.a01.
32 Jackson C, Shahsahebi M, Wedlake T, DuBard CA. Timeliness of outpatient follow-up: an evidence-based approach for planning after hospital discharge. Ann Fam Med. 2015; 13(2):115–22.
33 To access the appendix, click on the Details tab of the article online.
34 Camden Coalition. Camden Core Model [Internet]. Camden (NJ): Camden Coalition; c 2023 [cited 2023 Nov 14]. Available from: https://camdenhealth.org/our-work/camden-core-model/
35 Westfall PH, Young SS. Resampling-based multiple testing: examples and methods for p-value adjustment. Hoboken (NJ): Wiley; 1993 Jan.
36 Altfeld SJ, Shier GE, Rooney M, Johnson TJ, Golden RL, Karavolos K, et al. Effects of an enhanced discharge planning intervention for hospitalized older adults: a randomized trial. Gerontologist. 2013; 53(3):430–40.
37 Bradley CJ, Neumark D, Walker LS. The effect of primary care visits on other health care utilization: a randomized controlled trial of cash incentives offered to low income, uninsured adults in Virginia. J Health Econ. 2018;62:121–33.
38 Morse S. What Montefiore's 300% ROI from social determinants investments means for the future of other hospitals. Healthcare Finance News [serial on the Internet]. 2018 Jul 5 [cited 2023 Nov 14]. Available from: https://www.healthcarefinancenews.com/news/what-montefiores-300-roi-social-determinants-investments-means-future-other-hospitals
39 Tozzi J. America's largest health insurer is giving apartments to homeless people. Bloomberg [serial on the Internet]. 2019 Nov 5 [cited 2023 Nov 14]. Available from: https://www.bloomberg.com/news/features/2019-11-05/unitedhealth-s-myconnections-houses-the-homeless-through-medicaid