# Enhanced Primary Care for People With Serious Mental Illness: A Propensity Weighted Cohort Study

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## ABSTRACT

***Objective:*** People with serious mental illness (SMI) have high rates of cardiometabolic illness, receive low quality care, and experience poor outcomes. Nevertheless, studies of existing integrated care models have not consistently shown improvements in cardiometabolic health for people with SMI. This study assessed the effect of a novel model of enhanced primary care for people with SMI on cardiometabolic outcomes. Enhanced primary care is a model of integrated care wherein comprehensive primary care delivery is adapted to the needs of people with SMI in coordination with behavioral care.

***Methods:*** We conducted a propensity-weighted cohort study comparing 234 patients with SMI receiving enhanced primary care to 4,934 patients with SMI receiving usual primary care using electronic health data from a large academic medical system covering the years 2014–2018. The propensity-weighted models controlled for baseline differences in outcome measures and patient characteristics between groups.

***Results:*** Compared to usual primary care, enhanced primary care increased hemoglobin $A_{1c}$ ($HbA_{1c}$) screening by 18 percentage points (95% confidence interval [CI], 10 to 25), low-density lipoprotein (LDL) screening by 16 percentage points (CI, 8.8 to 24), and blood pressure screening by 7.8 percentage points (CI, 5.8 to 9.9). Enhanced primary care reduced $HbA_{1c}$ by 0.27 percentage points (CI, −0.47 to −0.060) and systolic blood pressure by 3.9 mm Hg (CI, −5.2 to −2.5) compared to usual primary care. We did not find evidence that enhanced primary care consistently affected glucose screening, LDL values, or diastolic blood pressure.

***Conclusions:*** Enhanced primary care can achieve clinically meaningful improvements in cardiometabolic health compared to usual primary care.

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Effectively caring for the chronic physical health needs of the 14.2 million adults living with serious mental illness (SMI) is one of the major challenges facing the US health care system.[1] SMI is defined as any mental illness that results in serious functional impairment.[2] Adults with SMI have a higher prevalence of cardiometabolic health conditions than the general population,[3–5] receive lower quality care for these conditions,[6–9] and experience worse cardiometabolic outcomes that drive high-cost health care use.[10–13] Integrated care models that address physical and mental health have been shown to increase cardiometabolic screening, but these models have yielded mixed results on improving the cardiometabolic health of people with SMI.[14–17]

We previously reported that a novel model of "enhanced primary care" for people with SMI reduced non-psychiatric hospital stays compared to usual primary care.[18] The enhanced primary care model delivers comprehensive primary care, care coordination, peer support, and self-management programs that are adapted for people with SMI. The model's development and implementation are described elsewhere by Perrin and colleagues.[19] Briefly, enhanced primary care may be understood as a specialized patient-centered medical home adapted to the needs of people with SMI. These adaptations include smaller patient panels that allow providers to spend more time with patients; provider training on working with people with SMI; and regular communication between primary care providers (PCPs) and patients' behavioral health providers to enable proactive planning. On average, a PCP has a patient panel of 750 patients, who are seen 6 times a year for 30–40 minutes at a time. Additional staff include a registered nurse, an office manager, a master's of social work primary care behaviorist with addiction training, a master's of social work case manager, and two peer support specialists. Psychiatric providers are not necessarily colocated with enhanced primary care. Rather, primary care staff cultivate close working

**Clinical Points**

- Integrated care models that address physical and mental health have yielded mixed results in improving the cardiometabolic health of people with serious mental illness (SMI).
- A novel model of comprehensive primary care adapted to the needs of people with SMI improved hemoglobin $A_{1c}$ and systolic blood pressure when compared to usual primary care.

relationships with patients' behavioral care teams with multiple open avenues of communication in addition to a formal monthly meeting to discuss patients' needs.

In this study, we tested whether enhanced primary care led to improved cardiometabolic screening and health compared to usual care. Whereas our previous study of the effect of enhanced primary care used claims data to comprehensively capture health care use,[18] the current study makes use of electronic heath records (EHR) data to capture clinical measures. These studies make two novel contributions to the literature on integrated care for people with SMI.[14] First, they evaluate an innovative model of integrated care wherein primary care services are specifically adapted to the needs of people with SMI. Second, these studies compare people with SMI receiving enhanced primary care to people with SMI receiving usual primary care, whereas many prior evaluations of integrated care used comparison groups that received no primary care or only referrals to primary care. The use of usual primary care as a comparison group represents a higher bar for assessing an integrated care model.

## METHODS

### Setting and Sample

The enhanced primary care evaluated in this study was delivered at WakeBrook Primary Care ("WakeBrook"), a clinic in the University of North Carolina (UNC) Health system that is colocated with an inpatient behavioral health facility in Wake County, North Carolina. WakeBrook receives referrals of people with SMI who are receiving outpatient behavioral health care from community providers but are not engaged in primary care. Though WakeBrook is colocated with an inpatient behavioral health facility, it does not routinely provide outpatient behavioral health services. Rather, WakeBrook Primary Care coordinates integrated care delivery with community behavioral providers.

We performed a retrospective cohort analysis comparing cardiometabolic screening and outcomes for people with SMI receiving enhanced primary care compared to usual primary care. For this study, we used 2014–2018 EHR data from UNC Health provided through the Carolina Data Warehouse for Health.[20] UNC Health is a network of a dozen hospitals and over a hundred outpatient clinics across North Carolina. The data contained service use and clinical outcomes, including vital signs and laboratory results, for patients seen at UNC Health. The data did not contain information on health service use or clinical outcomes from outside of UNC Health.

We included in our sample individuals with at least 2 diagnosis codes during the study period for schizophrenia, schizoaffective disorder, or bipolar disorder—3 of the most prevalent forms of SMI. We identified a treatment group of individuals treated at WakeBrook Primary Care and a comparison group of individuals treated at other UNC Health primary care clinics. We defined usual primary care as an outpatient encounter with a primary care clinician as determined by clinicians' specialty taxonomy listed in the National Plan and Provider Enumeration System.[21]

To define our treatment group, we first identified individuals with the diagnoses above who received enhanced primary care at WakeBrook between April 2015 and March 2017 (n = 255). The date of April 2015 was selected as the time when WakeBrook had fully implemented its enhanced primary care model. The first primary care visit in this period was selected as the index primary care visit for the purposes of our analysis. To define our comparison group, we first identified individuals with the same psychiatric diagnosis codes who received usual primary care during the same period (n = 8,353). We excluded potential comparison group members living in Wake County (n = 2,263), where the WakeBrook clinic is located, because we were concerned about unobservable differences between WakeBrook primary care patients and individuals in the WakeBrook catchment area who received primary care elsewhere. We also restricted our sample to individuals who had Medicaid coverage at some point during the study period to increase the likelihood that treatment and comparison group members were comparable in terms of unobservable characteristics that could affect health care use and clinical outcomes, like socioeconomic status. This restriction led to a final sample of 234 in the treatment group and 4,934 in the comparison group.

### Analysis and Outcomes

Study outcomes included receipt of screening for and mean values of blood glucose, hemoglobin $A_{1c}$ ($HbA_{1c}$), low-density lipoprotein (LDL), and blood pressure in an 18-month follow-up period. The follow-up period was selected as the longest length of time for which an adequate analytic sample could be obtained from the data. We used inverse probability of treatment weighting with regression adjustment (IPWRA) to account for non-random selection into receipt of enhanced primary care at Wakebrook.[22,23] IPWRA is superior to a simple inverse probability weighting approach since it is a doubly robust estimator, meaning only one of the two models estimating treatment probabilities or outcomes must be correctly specified to consistently estimate treatment effects.[23] We balanced the treatment and comparison groups on demographic characteristics (ie, age, gender, race/ethnicity), additional payer type other than Medicaid, comorbid conditions (defined using the Healthcare Cost and Utilization Project[24]), and values of each outcome measure in a 12-month baseline period. Primary analyses were planned

**Table 1. Unweighted Baseline Sample Characteristics by Treatment Status**

| Characteristic | Treatment group mean (n = 234)[a,b] | Comparison group mean (n = 4,934)[a] | *P* value[c] |
|---|---|---|---|
| Age, y | 44 ± 13 | 48 ± 15 | **<.001** |
| Male | 60% | 35% | **<.001** |
| Race | | | **<.001** |
| White | 34% | 67% | |
| Black | 59% | 26% | |
| Asian | – | 0.5% | |
| Other | – | 3.4% | |
| Race unknown | – | 2.7% | |
| Ethnicity | | | **<.001** |
| Not Hispanic | 88% | 94% | |
| Hispanic | 6.4% | 2.2% | |
| Ethnicity unknown | 5.1% | 3.3% | |
| Other payer type[d] | | | |
| Agency insurance | 6.4% | 6.8% | .821 |
| Commercial insurance | 12% | 18% | **.037** |
| Liability insurance | – | 3.3% | .174 |
| Medicare | 47% | 50% | .433 |
| Tricare | – | 0.6% | **.049** |
| Chronic conditions | | | |
| Diabetes | 46% | 39% | **.035** |
| Hypertension | 50% | 55% | .118 |
| Chronic obstructive pulmonary disease | 23% | 32% | **.006** |
| Asthma | 22% | 25% | .293 |
| Hyperlipidemia | 50% | 39% | **.001** |
| Alcohol-related disorder | 30% | 17% | **<.001** |
| Substance-related disorder | 73% | 61% | **<.001** |
| Acute myocardial infarction | – | 3.8% | **.007** |
| Coronary artery disease | 10% | 18% | **.003** |
| Congestive heart failure | 6.0% | 12% | **.006** |
| HIV | – | 2.1% | .368 |
| Hepatitis | 6.4% | 8.0% | .367 |
| Schizophrenia | 80% | 38% | **<.001** |
| Bipolar disorder | 37% | 73% | **<.001** |
| Screening prevalence in 12-month baseline period[e] | | | |
| Glucose screening | 71% | 49% | **<.001** |
| Hemoglobin $A_{1c}$ screening | 48% | 20% | **<.001** |
| LDL screening | 45% | 17% | **<.001** |
| Blood pressure screening | 100% | 82% | **<.001** |
| Clinical values in 12-month baseline period[e,f] | | | |
| Glucose, mg/dL (n = 2,132) | 115 ± 51 | 118 ± 50 | .61 |
| Hemoglobin $A_{1c}$, % (n = 672) | 6.3 ± 2.0 | 6.6 ± 1.9 | .16 |
| LDL, mg/dL (n = 472) | 98 ± 41 | 98 ± 35 | .99 |
| Systolic blood pressure, mm Hg (n = 4,013) | 125 ± 15 | 127 ± 15 | .052 |
| Diastolic blood pressure, mm Hg (n = 4,013) | 77 ± 10 | 77 ± 10 | .85 |

[a]Means and standard deviations for continuous variables and percentages for categorical variables are presented.
[b]Minus sign (–) indicates value suppressed due to small cell size.
[c]*P* values are from *t* test of means for continuous variables and $\chi^2$ tests of proportions for categorical variables. Boldface indicates $P < .05$.
[d]All study members were covered by Medicaid during at least some portion of the study period but could also have coverage from other payer sources during the study period.
[e]The 12-month baseline period was defined based on the index primary care visit and included the index visit itself.
[f]For clinical value measures, we restricted the sample to individuals with at least 1 clinical value measure from the 12-month baseline and 18-month follow-up period. Ns for each clinical measurement are reported.
Abbreviations: HIV = human immunodeficiency virus, LDL = low-density lipoprotein.

prior to project implementation, while sensitivity analyses were performed post hoc to check the robustness of findings.

Each model included the baseline value for its outcome. For instance, the model estimating the effect of enhanced primary care on $HbA_{1c}$ screening balanced on whether individuals had $HbA_{1c}$ screening in the 12 months prior to their index visit, while the model estimating the effect of enhanced primary care on $HbA_{1c}$ value balanced on individuals' baseline $HbA_{1c}$ value. For this reason, each model produced its own set of propensity scores best suited to balance the groups for each outcome. For some models, we dropped a small number of individuals from our comparison group because of poor propensity score overlap with the treatment group (number dropped varied by model but was never more than 0.8% of the full comparison group sample). The clinical outcomes analyses were restricted to individuals who had received a screening for the outcome in both the baseline and follow-up periods so that we could observe values before and after treatment. For this reason, the sample size of analyses for clinical outcomes varied based on the number of individuals who received screening. We used linear IPWRA models for all outcomes. We present average marginal effects with 95% confidence intervals (CIs) from delta-method standard errors.

**Table 2. Mean Standardized Difference in Model Covariates After Inverse Probability of Treatment Weighting**

| Model[a] | Mean standardized difference of model covariates (%)[b] |
|---|---|
| Glucose screening | 7.6 |
| $HbA_{1c}$ screening | 8.1 |
| LDL screening | 12.8 |
| Blood pressure screening | 9.3 |
| Glucose value | 9.8 |
| $HbA_{1c}$ value | 8.0 |
| LDL value | 12.7 |
| Systolic blood pressure value | 8.4 |
| Diastolic blood pressure value | 7.9 |

[a]Inverse probability of treatment weights differed across outcome models due to differences in sample composition and weighting variables included.
[b]For each weighting variable, we calculated the standardized difference between the treatment and comparison group values as the difference in means or proportion between the groups divided by the treatment group standard deviation (multiplied by 100). We present the mean value of the standardized differences of all weighting variables included in each outcome model.
Abbreviations: $HbA_{1c}$ = hemoglobin $A_{1c}$, LDL = low-density lipoprotein.

We were concerned that our findings could be driven in part by differences in whether individuals in the treatment and comparison groups were established in primary care or newly entering primary care. To examine this possibility, we performed sensitivity analyses in which we restricted our sample to individuals with no observed primary care use in the 6 months prior to the index primary care visit. We also performed a sensitivity analysis assessing blood glucose and hemoglobin $HbA_{1c}$ levels among individuals with diabetes diagnoses only. This study was determined to be exempt by the Institutional Review Board at University of North Carolina at Chapel Hill.

## RESULTS

The enhanced primary care treatment group was younger and more likely to be male, Black, and Hispanic compared to the usual primary care comparison group (Table 1). While all individuals in the treatment and comparison group had Medicaid during the study period, comparison group members were more likely to also have commercial insurance at some point. The enhanced primary care group had higher prevalence of diabetes, hyperlipidemia, alcohol-related disorders, and substance-related disorders, while the usual primary care group had higher prevalence of chronic obstructive pulmonary disease and cardiac illnesses. The enhanced primary care group had a higher rate of schizophrenia (80%) and lower rate of bipolar disorder (37%) compared to the usual primary care group (38% and 73%, respectively). Enhanced primary care participants were more likely to have received cardiometabolic screening prior to or on their index primary care visit, but those that did had similar unadjusted clinical values in relation to the comparison group.

Table 2 presents the average standardized differences for covariates included in each IPWRA model. As explained above, each IPWRA model produced a distinct set of propensity scores, since each model included different baseline variables depending on the model's outcome. Every model produced mean standardized differences below 20.

Table 3 presents the average treatment effects estimated from IPWRA models as well as unadjusted outcome values in the 18-month follow-up period for the treatment and comparison groups. We estimated that enhanced primary care increased $HbA_{1c}$ screening by 18 percentage points (CI, 10 to 25), LDL screening by 16 percentage points (CI, 8.8 to 24), and blood pressure screening by 7.8 percentage points (CI, 5.8 to 9.9) compared to usual primary care. Regarding clinical outcomes, we estimated that enhanced primary care increased blood glucose by 10.7 mg/dL (CI, 1.2 to 20.2), decreased $HbA_{1c}$ by 0.27 percentage points (CI, −0.47 to −0.060), and decreased systolic blood pressure by 3.9 mm Hg (CI, −5.2 to −2.5) when compared to usual primary care. We did not detect effects of enhanced primary care on glucose screening, LDL, or diastolic blood pressure.

Seeking to better understand the seemingly contradictory effect of enhanced primary care on glucose and $HbA_{1c}$, we restricted our sample to individuals with diabetes. We found a larger reduction of 0.36% (CI, −0.64 to −0.092) in $HbA_{1c}$ from enhanced primary care. Among people with diabetes, enhanced primary care had no statistically significant effect on blood glucose compared to usual primary care, with an estimate of 2.2 mg/dL (CI, −10 to 14) (see Table 4). We also restricted our sample to individuals without a primary care visit in the 6 months prior to their index visit to estimate the effect of enhanced primary care on those who are new to primary care. In this subsample, the estimated effects from our primary model persisted with an additional reduction in diastolic blood pressure detected (Table 3). Mirroring the results from our model of people with diabetes, the estimated effect of enhanced primary care on $HbA_{1c}$ in the model with no prior primary care visit was larger than in the main model at 0.54 percentage points (CI, −0.77 to −0.32).

## DISCUSSION

We found evidence that enhanced primary care for people with SMI substantially increased chronic condition screening and improved chronic health measures compared to usual primary care. Enhanced primary care substantially increased $HbA_{1c}$, LDL, and blood pressure screening compared to usual primary care, which was in line with previous findings that integrated care models improved screening for physical health conditions.[14] Enhanced primary care's effect on $HbA_{1c}$ and LDL screening represented a near doubling of the baseline screening rates in the usual primary care group. In a previous analysis using Medicaid claims data, we found that enhanced primary care increased glucose screening but not $HbA_{1c}$ or lipid screening.[18] That analysis notably produced lower screening rates than the current analysis. EHR data may be better suited to capturing screening tests that may not be consistently billed for in Medicaid claims. This would explain the higher screening rates in the current article and lack of a detected positive effect in our previous analysis.

**Table 3. Unadjusted Cardiometabolic Outcomes and Estimated Effects of Enhanced Primary Care**

| | Treatment group (sample size)[a] | Comparison group (sample size)[a] | Average treatment effect (95% confidence interval) |
|---|---|---|---|
| Full sample | | | |
| Screening receipt[b] | | | |
| Glucose screening | 80% (234) | 71% (4,934) | 0.060 (−0.0088 to 0.13) |
| $HbA_{1c}$ screening | 57% (234) | 29% (4,934) | 0.18* (0.10 to 0.25) |
| LDL screening | 50% (234) | 28% (4,934) | 0.16* (0.088 to 0.24) |
| Blood pressure screening[c] | 96% (234) | 90% (4,933) | 0.078* (0.058 to 0.099) |
| Clinical values[d] | | | |
| Glucose, mg/dL | 121 ± 51 (137) | 119 ± 47 (1,995) | 10.7* (1.2 to 20.2) |
| $HbA_{1c}$, % | 6.4 ± 1.7 (79) | 6.7 ± 1.8 (593) | −0.27* (−0.47 to −0.060) |
| LDL, mg/dL | 100 ± 37 (61) | 94 ± 34 (411) | 0.54 (−6.8 to 7.9) |
| Systolic blood pressure, mm Hg | 125 ± 13 (224) | 128 ± 13 (3,789) | −3.9* (−5.2 to −2.5) |
| Diastolic blood pressure, mm Hg | 77 ± 8.2 (224) | 77 ± 8.5 (3,789) | −0.67 (−1.6 to 0.24) |
| Sample with no primary care visits 6 months prior to index visit | | | |
| Screening receipt[b] | | | |
| Glucose screening | 78% (175) | 68% (3,678) | 0.086 (−0.0078 to 0.18) |
| $HbA_{1c}$ screening | 58% (175) | 25% (3,678) | 0.24* (0.17 to 0.30) |
| LDL screening | 55% (175) | 26% (3,678) | 0.22* (0.13 to 0.30) |
| Blood pressure screening | 95% (175) | 88% (3,678) | 0.095* (0.069 to 0.12) |
| Clinical values[d] | | | |
| Glucose, mg/dL | 123 ± 53 (98) | 119 ± 48 (1,231) | 10.9* (3.2 to 19) |
| $HbA_{1c}$, % | 6.2 ± 1.6 (61) | 6.9 ± 1.9 (289) | −0.54* (−0.77 to −0.32) |
| LDL, mg/dL | 101 ± 38 (53) | 98 ± 35 (237) | −3.6 (−11 to 3.9) |
| Systolic blood pressure, mm Hg | 125 ± 13 (165) | 127 ± 14 (2,618) | −3.3* (−5.0 to −1.7) |
| Diastolic blood pressure, mm Hg | 77 ± 8.5 (165) | 77 ± 8.5 (2,618) | −1.5* (−2.6 to −0.32) |

[a]Means and standard deviations for continuous variables and percentages for categorical variables are presented.
[b]Screening outcomes refer to whether each type of screening was received during the 18-month follow-up period.
[c]One comparison group member was dropped from this analysis due to poor propensity score overlap with the treatment group. No comparison group members were dropped due to poor propensity score overlap in other screening outcome models.
[d]Clinical outcomes refer to mean value during the 18-month follow-up period.
*$P < .05$.
Abbreviations: $HbA_{1c}$ = hemoglobin $A_{1c}$, LDL = low-density lipoprotein.

**Table 4. Unadjusted Outcomes and Estimated Effect of Enhance Primary Care Among Sample Members With Diabetes**

| | Treatment group[a] | Comparison group[a] | Average treatment effect (95% confidence interval)[b] |
|---|---|---|---|
| Glucose, mg/dL (n = 1,048) | 136 ± 61 | 139 ± 57 | 2.2 (−10 to 14) |
| $HbA_{1c}$, % (n = 529) | 6.7 ± 1.9 | 7.1 ± 1.9 | 0.36* (−0.64 to −0.092) |

*$P < .05$.
[a]Means and standard deviations are presented.
[b]Clinical outcomes refer to mean value during the 18-month follow-up period.
Abbreviation: $HbA_{1c}$ = hemoglobin $A_{1c}$.

In contrast to many prior studies of integrated care models,[14] enhanced primary care consistently decreased $HbA_{1c}$ and systolic blood pressure in our main and sensitivity analyses. We also found that enhanced primary care modestly increased glucose in our main analysis. This increase in glucose did not persist in our sensitivity analysis including only individuals with diabetes. This finding suggests that the increase in glucose detected in the main analysis was likely driven by screening glucose tests among people without diabetes. The detected increase could be driven by closer monitoring of glucose in individuals at risk of diabetes in enhanced primary care compared to usual primary care.

Enhanced primary care led to large clinically meaningful reductions in $HbA_{1c}$ across models. Studies have found that improved glycemic control leads to decreased clinical complications for people with diabetes.[25] The main model estimated a reduction in $HbA_{1c}$ equivalent to 4% of the baseline $HbA_{1c}$ value for people in usual primary care. For context, pharmaceutical monotherapy is estimated to reduce $HbA_{1c}$ by under 2% and insulin by under 3.5% among individuals with type 2 diabetes.[26] The estimated effect sizes on $HbA_{1c}$ were larger when restricting to individuals with diabetes or those newly entering primary care.

Enhanced primary care's reduction in systolic blood pressure was relatively more modest than the reduction in $HbA_{1c}$ but also clinically meaningful. In our main model, enhanced primary care reduced blood pressure by 3.9 mm Hg. For context, this decrease is similar to what may be achieved through moderate weight loss,[27] decreased dietary

sodium intake,[28] alcohol intake moderation,[29] or increased physical activity.[30] There is evidence that blood pressure control reduces major cardiovascular events, particularly among high-risk individuals.[31,32] In contrast to the results on $HbA_{1c}$ and blood pressure, the lack of effect of enhanced primary care on LDL may result from the fact that, unlike blood pressure and $HbA_{1c}$, LDL treatment is not guided by a target value.

Our analysis contained limitations related to methods and data. We used IPWRA to control for selection bias on many observable characteristics, including baseline values of outcome measures, but we cannot rule out selection on unobserved characteristics. For instance, we were unable to control for use of antipsychotic medications that worsen cardiometabolic outcomes. Though we controlled for the higher prevalence of psychotic disorders in the enhanced primary care population, we may not have completely balanced the populations in terms of antipsychotic use. The use of EHR data in our study also introduced limitations, like the inability to observe screening and clinical outcomes outside of UNC Health. Our analysis was limited to patients with schizophrenia, schizoaffective, and bipolar disorder, so our results are generalizable to that population. Our analysis was limited to the implementation of enhanced primary care in a single location. As such, we cannot rule out the possibility that the effectiveness of the model was dependent on context-specific expertise of staff at this location. That said, multiple clinical staff rotated through the location during the time of implementation. Finally, if any practice in our usual primary care group offered services like enhanced primary care, then our estimates would be overly conservative.

The use of a usual primary care comparison group in this study represented a higher bar for demonstrating the effectiveness of an integrated care model, compared to using behavioral care only or referral to primary care. Given that enhanced primary care is more resource-intensive than usual primary care, a natural question that should be addressed is the cost-effectiveness of the model. The previous finding that enhanced primary care reduced inpatient hospital use suggests the potential for overall cost savings.[18] A recent analysis of a different model of specialized patient-centered medical home for people with SMI also found reduction in emergency and inpatient care use.[33] It is possible that such models prevent hospitalization by improving cardiometabolic health, but other potential mechanisms also exist. More frequent primary care visits may prevent issues that lead to emergency department visits, or patients may have more confidence or access to primary care to address issues that lead to hospitalizations.[34]

There are several mechanisms by which enhanced primary care may improve cardiometabolic outcomes: earlier identification of disease, more consistent use of evidence-based treatment, more intensive or aggressive treatment approaches, better medication adherence, or improved lifestyle modifications. Identifying the mechanisms by which enhanced primary care improves outcomes will be a focus of future analyses. Similarly, identifying the minimal necessary components of the enhanced primary care model to achieve effectiveness will be studied in the future. The smaller patient panels that allow longer and more frequent visits may be found to contribute more to the model's effectiveness than specialized training in treating patients with SMI, as an example. Enhanced primary care is distinct from other models of integrated care in that the comprehensive primary care services are specifically adapted for people with SMI. Adapting primary care service delivery to the specific needs of people with SMI may be a necessary component to achieving improved outcomes in cardiometabolic risk factors.

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