



## Do primary care medical homes facilitate care transitions after psychiatric discharge for patients with multiple chronic conditions?



Marisa E. Domino, Ph.D.<sup>a,b,\*</sup>, Carlos Jackson, Ph.D.<sup>c</sup>, Christopher A. Beadles, M.D., Ph.D.<sup>a,b,d</sup>,  
Jesse C. Lichstein, M.S.P.H., Ph.D.<sup>a</sup>, Alan R. Ellis, Ph.D., M.S.W.<sup>b</sup>, Joel F. Farley, Ph.D.<sup>e</sup>,  
Joseph P. Morrissey, Ph.D.<sup>a,b</sup>, C. Annette DuBard, M.D., M.P.H.<sup>b,c</sup>

<sup>a</sup> Department of Health Policy and Management, UNC Gillings School of Global Public Health

<sup>b</sup> Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill

<sup>c</sup> Community Care of North Carolina

<sup>d</sup> RTI International, Durham, NC

<sup>e</sup> Division of Pharmaceutical Outcomes and Policy, UNC Eshelman School of Pharmacy, University of North Carolina, Chapel Hill, NC

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### ABSTRACT

**Objective:** Primary-care-based medical homes may facilitate care transitions for persons with multiple chronic conditions (MCC) including serious mental illness. The purpose of this manuscript is to assess outpatient follow-up rates with primary care and mental health providers following psychiatric discharge by medical home enrollment and medical complexity.

**Methods:** Using a quasi-experimental design, we examined data from North Carolina Medicaid-enrolled adults with MCC hospitalized with an inpatient diagnosis of depression or schizophrenia during 2008–2010. We used inverse-probability-of-treatment weighting and assessed associations between medical home enrollment and outpatient follow-up within 7 and 30 days postdischarge.

**Results:** Medical home enrollees ( $n = 16,137$ ) were substantially more likely than controls ( $n = 11,304$ ) to receive follow-up care with any provider 30 days post discharge. Increasing patient complexity was associated with a greater probability of primary care follow-up. Medical complexity and medical home enrollment were not associated with follow-up with a mental health provider.

**Conclusions:** Hospitalized persons with MCC including serious mental illness enrolled in a medical home were more likely to receive timely outpatient follow-up with a primary care provider but not with a mental health specialist. These findings suggest that the medical home model may be more adept at linking patients to providers in primary care rather than to specialty mental health providers.

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### 1. Introduction

Patients with multiple chronic conditions (MCC) who are newly discharged from acute care hospitals have complex care needs [1]. The posthospitalization period is a time of increased vulnerability [2–4] with a higher probability of adverse events including medication reactions [5], complications of hospitalization [6,7] and failure to follow up with critical tests or lab results [8–10]. Furthermore, because patients and caregivers may make errors in medication administration or fail to recognize worsening symptoms during the period following hospitalization [5,8–10], this is a window of opportunity where timely outpatient follow-up may be essential. Patients with comorbid psychiatric and medical conditions, who contribute disproportionately to overall

health care costs, are at particular risk for rehospitalization [11]. Public insurance programs such as Medicare and Medicaid bear much of the cost for readmissions [12,13]. Among nonelderly Medicaid patients in 2007, readmissions for mental illness occurred at a rate of 11.8%, second only to circulatory conditions, and accounted for 12% of all nonobstetric readmissions [13].

In recent years, health systems have focused increasingly on improving the transition in care from the inpatient setting to the outpatient setting, especially through enhanced communication, patient engagement and coordination of providers [14–16]. Early outpatient follow-up may improve communication between providers in different settings as well as increase patient engagement. In theory, prompt follow-up allows continued disease monitoring and facilitates the coordination of inpatient and outpatient care plans, including medication reconciliation to minimize medication interactions and adverse reactions, reinforcement of medication adherence and matching of individual needs with appropriate services to prevent subsequent hospital readmissions. In practice, follow-up within 30 days of discharge may

\* Corresponding author at: The University of North Carolina at Chapel Hill, Gillings School of Global Public Health, 135 Dauer Dr., Campus Box 7411, Chapel Hill, NC, 27516-7411.

E-mail address: [domino@unc.edu](mailto:domino@unc.edu) (M.E. Domino).

not always improve outcomes. A recent study found that after controlling for covariates, follow-up within 7 days of discharge from a Veteran Affairs hospitalization for major depression modestly improved the rate of receipt of guideline concordant psychotherapy but was weakly related to receipt of antidepressants or rehospitalization [17]. Patient and service system characteristics, such as contacts prior to admission and stays in general versus psychiatric hospitals, have been found in other studies to be positively associated with rates of outpatient follow-up among persons with schizophrenia [18]. The timing of mental health follow-up visits is important; persons with a mental health follow-up visit within 7 days had equal or lower hospital readmission and emergency department services in the following 6 months compared to persons who did not receive follow-up within 30 days [19].

Despite mixed empirical evidence, the benefit of early outpatient follow-up following discharge has intuitive appeal in terms of greater treatment engagement and increased opportunities for intervention and observation. Yet, among Medicare and Medicaid enrollees with hospital readmissions, fewer than half receive outpatient follow-up between discharge and readmission [12,20]. Low rates of outpatient follow-up are explained in various ways in the literature but are generally attributed to both system and patient characteristics, including lack of an established outpatient clinician, length of time to follow-up appointment and severity of condition [21].

Primary care medical homes may reduce or eliminate some of these barriers to outpatient follow-up. Medical homes are intended to provide a usual source of care, expanded access to care, facilitation of patient engagement through care management and promotion of coordination among providers. The patient-centered medical home model also promotes a “whole person” orientation, encompassing both mental and physical health, and makes greater use of team approaches to treatment [22]. In combination, these strategies may improve outpatient follow-up postdischarge.

Early outpatient follow-up with a mental health provider after psychiatric discharges specifically may be optimal, as suggested by commonly utilized quality indicators: receipt of outpatient mental health follow-up visits within 7 and 30 days of psychiatric discharge (National Committee for Quality Assurance Healthcare Effectiveness Data Information Set) [23]. Early outpatient follow-up with a primary care provider for all types of hospitalizations for persons with MCCs is also beneficial for continued monitoring of both mental and physical conditions and prevention of hospital readmission. Conditions such as depression are often managed in primary care, without involvement of mental health specialists. To our knowledge, no prior study has examined the rates of both primary care and mental health follow-up after a hospital discharge with a psychiatric diagnosis among adults with MCCs. In this study, we examined whether, among Medicaid enrollees with serious mental illness (schizophrenia and/or major depressive disorder) and at least one other chronic condition, those enrolled in a primary-care-based medical home were more likely to receive follow-up with (a) primary care providers or (b) mental health specialists within 30 days of discharge from an inpatient setting as compared to those not enrolled in a medical home.

## 2. Methods

### 2.1. Data

We used the North Carolina Integrated Data for Researchers, a unique data source containing North Carolina Medicaid claims data linked with data from state psychiatric hospitalizations, state-funded mental health services and encounters from a five-county regional behavioral health carve-out [24]. The data included demographic information and monthly data on Medicaid enrollment, medical home enrollment through the Community Care of North Carolina (CCNC) program, diagnoses and medical care utilization for fiscal years 2008 through 2010. The linked data source allowed for greater detection of

mental illness, as mental health diagnoses were available from all four administrative data systems, patching gaps in Medicaid claims during periods of disenrollment and including psychiatric hospitalizations not covered by Medicaid (i.e., stays in state-operated psychiatric facilities that are subject to the Institute for Mental Disease exclusion for nonelderly adults).

### 2.2. Study design and sample

The study samples included persons in the administrative data sources with two or more of the following eight chronic health conditions: major depressive disorder, schizophrenia, hypertension, diabetes, hyperlipidemia, seizure disorder, asthma and chronic obstructive pulmonary disease. We required at least one inpatient diagnosis or two outpatient diagnoses at any point during the 3-year study period. Starting with this group of Medicaid enrollees with MCCs, we created an observation for each hospital stay in which hospital diagnoses included depression or schizophrenia. This broad definition includes hospitalizations for mental illness as well as hospitalizations for medical conditions during which mental illness was detected or possibly complicated the stay. Multiple hospital stays per person were included in the study sample. The hospitalizations in our data included Medicaid-funded general hospital stays (both medical and psychiatric) as well as state psychiatric hospital stays regardless of funding source. We included only persons age 18–64 who were enrolled in Medicaid for the 6 months before and including the month of discharge and who were not dually enrolled in Medicare. We removed left- and right-censored stays, that is, those that occurred less than 6 months after the beginning or within 30 days of the end of our study period. We also conducted separate analyses on two types of hospital discharges that are more likely to reflect targeted stays for a serious mental illness: (a) discharges from state psychiatric hospitals and (b) Medicaid-funded general hospital stays with a psychiatric Diagnosis-related group (DRG) code.

### 2.3. Measures

The main outcome measures were the occurrence of an outpatient visit within 7 and 30 days of a psychiatric hospital discharge. Outpatient visits included only face-to-face office visits; physical/occupational therapy claims were excluded. For each time period (7 and 30 days), we separately measured outpatient visits to any provider (mental health, primary care or other), to mental health specialists and to primary care providers based on provider specialty/type codes. All outpatient services provided through the regional behavioral health carve-out were assumed to be to a mental health specialist.

Patients were considered enrolled in a medical home if monthly management fees to both the primary care provider and the CCNC medical home network were identified in the claims during the month of discharge. The CCNC program is the medical home program for the state’s Medicaid population and links enrollees to primary care medical homes, implements disease-specific quality improvement initiatives and provides care management for high-risk patients [25]. Patient enrollment in a CCNC medical home was voluntary for our study population during the study period and could be initiated by either the patient or an affiliated CCNC provider or practice. In addition, practice participation in CCNC is voluntary, which can result in substantial variation between CCNC and non-CCNC practices. Practices that serve more Medicaid patients or are more willing to use team approaches to care may be more likely to participate in CCNC, and patients in these practices may be more likely to enroll in the CCNC program. We control for observable differences between enrollees and nonenrollees, but selection bias on unobservables may remain. We refer to providers participating in the CCNC program as medical homes, but note that the CCNC medical homes predate the National Committee for Quality Assurance recognition program by more than a decade and thus may or may not be recognized by that program as medical homes.

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