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Original Contribution

Medicaid beneficiaries who continue to use the ED: a focus on the Illinois Medical Home Network☆,☆☆

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ABSTRACT

Objectives: Frequent, nonurgent emergency department use continues to plague the American health care system through ineffective disease management and unnecessary costs. In 2012, the Illinois Medical Home Network (MHN) was implemented to, in part, reduce an overreliance on already stressed emergency departments through better care coordination and access to primary care. The purpose of this study is to characterize MHN patients and compare them with non-MHN patients for a preliminary understanding of MHN patients who visit the emergency department. Variables of interest include (1) frequency of emergency department use during the previous 12 months, (2) demographic characteristics, (3) acuity, (4) disposition, and (5) comorbidities.
Methods: We performed a retrospective data analysis of all emergency department visits at a large, urban academic medical center in 2013. Binary logistic regression analyses and analysis of variance were used to analyze data.
Results: Medical Home Network patients visited the emergency department more often than did non-MHN patients. Medical Home Network patients were more likely to be African American, Hispanic/Latino, female, and minors when compared with non-MHN patients. Greater proportions of MHN patients visiting the emergency department had asthma diagnoses. Medical Home Network patients possessed higher acuity but were more likely to be discharged from the emergency department compared with non-MHN patients.
Conclusions: This research may assist with developing and evaluating intervention strategies targeting the reduction of health disparities through decreased use of emergency department services in these traditionally underserved populations.

1. Introduction

Frequent emergency department (ED) use continues to present a significant problem for the American health care system [1]. Many frequent ED visits are made by patients seeking care for nonurgent issues [1]. Although the ED provides essential care for acute health care problems, it is not effective in providing preventive care and continuity of disease management better found in primary care environments. For nonurgent health ailments, ED visits can cost the health care system three times the cost of primary care visits for the same problem [2]. The issue is compounded when patients visit multiple EDs which do not have real-time information about care from other providers [1]. Patients' medical care may spread across multiple, disjointed medical systems. With the existing disconnect between patients, primary care providers (PCPs), and EDs, providers have become less effective in preventing and managing disease [1].

In 2012, the State of Illinois formed Medical Home Network (MHN) [3] to serve 170 000 residents enrolled in Medicaid of the South and West Sides of Chicago. Medical Home Network is a Chicago-based nonprofit organization uniting local providers with a common goal of improving care coordination and health outcomes for Medicaid recipients. A key component of MHN is linking patients to an exclusive PCP to (1) reduce overreliance on already stressed EDs, (2) provide a continuous source of medical care, (3) improve disease management, and (4) reduce health care costs. Medical Home Network tracks patient activity throughout the network and electronically connects local providers across settings and organizations through real-time notifications on clinical and other activity. By 2013, Medicaid recipients were enrolled into MHN if they had a PCP who was a member of MHN.

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Table 1
Basic comparisons between MHN and non-MHN populations for all variables[a]

	Variables	Non-MHN[b]	MHN[b]	Significance
Age[c]		21.46 ± 17.79	21.49 ± 19.29	.94
Acuity[c]	% of high-acuity visitisits	0.09 ± 0.26	0.09 ± 0.24	.46
	% of medium-acuity visits	0.48 ± 0.46	0.49 ± 0.44	.77
	% of low-acuity visits	0.04 ± 0.16	0.03 ± 0.16	.92
Day of the week[c]	% of weekday visits	0.73 ± 0.4	0.73 ± 0.38	.76
	% of weekend visits	0.27 ± 0.4	0.27 ± 0.38	.76
Time of the day[c]	% of visits between 7 AM and 3 PM	0.41 ± 0.45	0.4 ± 0.43	.63
	% of visits between 3 PM and 11 PM	0.44 ± 0.45	0.45 ± 0.43	.28
	% of visits between 11 PM and 7 AM	0.15 ± 0.33	0.15 ± 0.31	.41
ED disposition[c]	% of visits with discharges	0.81 ± 0.36	0.82 ± 0.34	.58
	% of visits with admissions	0.13 ± 0.32	0.13 ± 0.3	.36
	% of visits with transfers	0 ± 0.04	0 ± 0.03	.83
	% of visits with LWBS/AMA/Absconded	0.05 ± 0.18	0.05 ± 0.18	.50
Insurance[c]	Commercial	166 (3.88%)	146 (3.41%)	.51
	Medicare	18 (0.42%)	22 (0.51%)	
	Medicaid	4048 (94.62%)	4071 (95.16%)	
	No data/self-pay	46 (1.08%)	39 (0.91%)	
Primary care physician status[d]	No	21 (0.49%)	20 (0.47%)	.88
	Yes	4257 (99.51%)	4258 (99.53%)	
Employment status[d]	No	3777 (88.29%)	3767 (88.06%)	.74
	Yes	501 (11.71%)	511 (11.94%)	
Diabetes status[d]	No	4034 (94.3%)	4017 (93.9%)	.44
	Yes	244 (5.7%)	261 (6.1%)	
Hypertension status[d]	No	3617 (84.55%)	3606 (84.29%)	.74
	Yes	661 (15.45%)	672 (15.71%)	
Asthma status[d]	No	3368 (78.73%)	3350 (78.31%)	.64
	Yes	910 (21.27%)	928 (21.69%)	
Cancer status[d]	No	4187 (97.87%)	4181 (97.73%)	.66
	Yes	91 (2.13%)	97 (2.27%)	
Heart problem status[d]	No	4091 (95.63%)	4061 (94.93%)	.13
	Yes	187 (4.37%)	217 (5.07%)	
Sex	Male	1427 (33.36%)	1505 (35.18%)	.08
	Female	2851 (66.64%)	2773 (64.82%)	
Ethnicity[d]	Not Hispanic or Latino	2855 (66.74%)	2905 (67.91%)	.25
	Hispanic or Latino	1423 (33.26%)	1373 (32.09%)	
Race[d]	White	803 (18.77%)	766 (17.91%)	.54
	Black or African American	2676 (62.55%)	2719 (63.56%)	
	Others	799 (18.68%)	793 (18.54%)	

Total samples per group = 4278.
[a] Comparison between MHN and non-MHN populations for patient demographic characteristics, employment status, ED visit details, existing comorbidities, acuity, disposition, PCP status, and insurance status.
[b] Mean and SD or number and percentage provided.
[c] *t* Test conducted.
[d] χ^2 Test conducted.

Despite implementation of MHN, it is unknown if and how the number of ED visits varies according to whether or not a patient belongs to MHN. The purpose of this study is to determine whether number of ED visits differs among MHN patients in comparison to non-MHN patients who visited an ED at a large, urban academic medical center in 2013. We hypothesize that MHN patients will have more ED visits in comparison to non-MHN patients. A secondary goal is to explore which related variables potentially modify the relationship between MHN status and number of ED visits. More specifically, we will explore how patient demographic characteristics, employment status, existing comorbidities, insurance and PCP statuses, details of the ED visit, acuity, and disposition potentially modify the relationship between MHN status and number of ED visits. We are not evaluating an intervention such as patient care coordination but aim to provide baseline characteristics of MHN patients when compared with their non-MHN counterparts.

2. Methods

We analyzed patient data for all ED visits at a large, urban academic medical center from January 1, 2013, through December 31, 2013. Clinical and billing data were retrieved from the hospital electronic medical record and data warehouse. Our data set excluded patients with erroneously entered data and those transferred to labor and delivery as indicated in ED disposition. This study was reviewed and approved by the organization's institutional review board as an exempt study.

A dichotomous variable labeled “MHN patient status” served as the primary predictor and indicated whether or not a patient belonged to MHN. The main dependent variable was the total number of ED visits during the study time frame. We also included patient demographic characteristics such as age, sex (male/female), race (white, African American, and other), and ethnicity (Hispanic/Latino and non-Hispanic/Latino) as well as existing comorbidities including asthma, heart problems, diabetes, and hypertension as moderating variables. In addition, employment status and PCP status were also included in the study.

As the analysis was conducted on patient level data, the visit level variables such as acuity, ED disposition (discharged, admitted, transferred, and left without being seen/absconded), day of the week of the ED visit (Monday through Sunday), time of the day of arrival in the ED (ie, 7 AM–3 PM, 3 PM–11 PM, and 11 PM–7 AM) and insurance status (commercial/private, Medicare, Medicaid, and self-pay/no data) were converted into percentage of total ED visits per variable value for each patient. For example, acuity per ED visit was collapsed from 5 levels to 3, namely, low (ie, nonurgent or minor), medium (ie, moderate), and high (ie, severe illnesses). Thereafter for each patient, we calculated the percentage of total ED visits that were of low acuity (ie, number of visits with low acuity/total number of visits). Thus, if a patient had 5