ORIGINAL RESEARCH

Connecting Emergency Department Patients to Primary Care

Randell Wexler, MD, MPH, Jennifer L. Hefner, PhD, MPH, Cynthia Sieck, PhD, MPH, Christopher A. Taylor, PhD, RDN, LD, Jennifer Lehman, BS, Ashish R. Panchal, MD, PhD, Alison Aldrich, MSI, MPH, and Ann Scheck McAlearney, ScD, MS

Background: **Inappropriate emergency department (ED) use among Medicaid enrollees is considered a problem because of cost. We developed and evaluated a system change innovation designed to remove system barriers to primary care access for Medicaid patients.**

Methods: **Patients who presented to the ED without an identified primary care provider were randomized to the intervention (n = 72) or comparison group (n = 68) for a 12-month study designed to connect these patients to primary care offices. Evaluation was mixed quantitative/qualitative.**

Results: **Significantly more intervention participants attended at least 1 primary care visit 3 months after the intervention (odds ratio [OR], 2.52; 95% confidence interval [CI], 1.06–6.02), though this difference was not significant by 12 months (OR, 1.74; 95% CI, 0.79–3.84). The intervention participants also did not have lower odds of returning to the ED for nonurgent reasons by the 12-month follow-up (OR, 1.27; 95% CI, 0.65–2.48). Patient-reported barriers to attending a primary care appointment were primarily social and health system–related factors.**

Conclusion: **The intervention did not decrease ED visits nor increase primary care use over the 12 months of the study period. The qualitative results provide insight into nonurgent ED utilization by patients with Medicaid, suggesting potential future interventions. (J Am Board Fam Med 2015;28: 722–732.)**

Keywords: **Medicaid, Primary Health Care**

The emergency department (ED) is often used for nonurgent or routine health services, resulting in increased costs to health systems and society and reduced quality of care.[1–4] Patients with Medicaid coverage visit the ED at a significantly higher rate than those with private insurance.[5–7] One of the more common reasons cited for inappropriate ED use by Medicaid patients is a lack of regular access to primary care physicians (PCPs).[5,8–10] Studies have shown that, when discharged from the ED, patients with private insurance are much more likely than Medicaid patients to have access to an outpatient ambulatory follow-up appointment.[10,11]

Programs designed to address this issue generally take the approach of arranging follow-up appointments or improving communication between the ED and PCP.[12,13] In such efforts, the potential of health information technology (HIT) to improve communication and coordination of care between settings is clearly important. In the ED in particular, HIT has allowed for innovation in ways that

This article was externally peer reviewed.
Submitted 2 February 2015; revised 18 May 2015; accepted 29 May 2015.

From the Department of Family Medicine, College of Medicine (RW, JLH, CS, CAT, JL, AA, ASM), the School of Health and Rehabilitation Sciences (CAT), the Department of Emergency Medicine, College of Medicine (ARP), and the Division of Health Services Management and Policy, College of Public Health (ASM), The Ohio State University, Columbus.

Funding: This project was supported by grant number R21HS020693 from the Agency for Healthcare Research and Quality. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.
Conflict of interest: none declared.

Corresponding author: Randy K. Wexler, MD, MPH, Department of Family Medicine, The Ohio State University, B0902B Cramblett Hall, 466 West 10th Ave, Columbus, OH 43210 (E-mail: randy.wexler@osumc.edu).

can improve and facilitate patient transfer to primary care[14] through the identification of frequent ED users, in addition to improving communications between the ED and the PCP's office by direct secure messaging within the same electronic medical record (EMR) and enabling electronic scheduling either in real time from a remote location or through patient portals. In a study of patients who were known to be frequent users of ED services, Hansagi and colleagues[15] found that electronic access to PCP notes in the ED improved information at respective care levels. Afilalo and colleagues[14] similarly found that the use of HIT to improve communication between family physicians and the ED led to noticeable improvements in continuity of care, as well as improvements in family physicians' perceptions of patient management. For patients without an established relationship with a PCP, Chan and colleagues[16] found that the use of electronic scheduling of follow-up appointments resulted in greater use of primary care services, but they did not examine the impact on nonurgent ED use.

In this study we aimed to determine whether a HIT intervention could both improve access to primary care for Medicaid enrollees who did not have a usual source of care and increase the flow of clinical information between the ED and PCP offices. Our ED-PCP connector program was developed with 2 objectives: (1) to use HIT to facilitate PCP appointment scheduling for those without a PCP and thereby improve access to primary care for Medicaid patients who routinely use the ED, and (2) to improve our understanding of the dynamics of nonurgent ED use and the potential for HIT interventions to address this issue.

Methods

Study Design

We designed, implemented, and evaluated an ED-PCP connector program using mixed methods analysis. Patients were randomized to receiving the intervention (the ED-PCP connector program) or to a comparison group. This intervention program used an integrated EMR system to schedule during ED visits follow-up appointments with a PCP for Medicaid patients, to notify PCPs of the upcoming scheduled visits, and to provide primary care practices with access to patients' records. Figure 1 is a CONSORT diagram for this randomized controlled trial. Before beginning the study, research personnel who had not previously received training and credentialing to use the EMR completed all necessary requirements for EMR chart access. The Ohio State University Institutional Review Board approved this study.

Study Setting

Our study was conducted at an urban ED within an academic medical center (AMC) with follow-up tracked at primary care practices affiliated with the AMC. The ED and primary care practices used a shared EMR system that is accessible across the AMC.

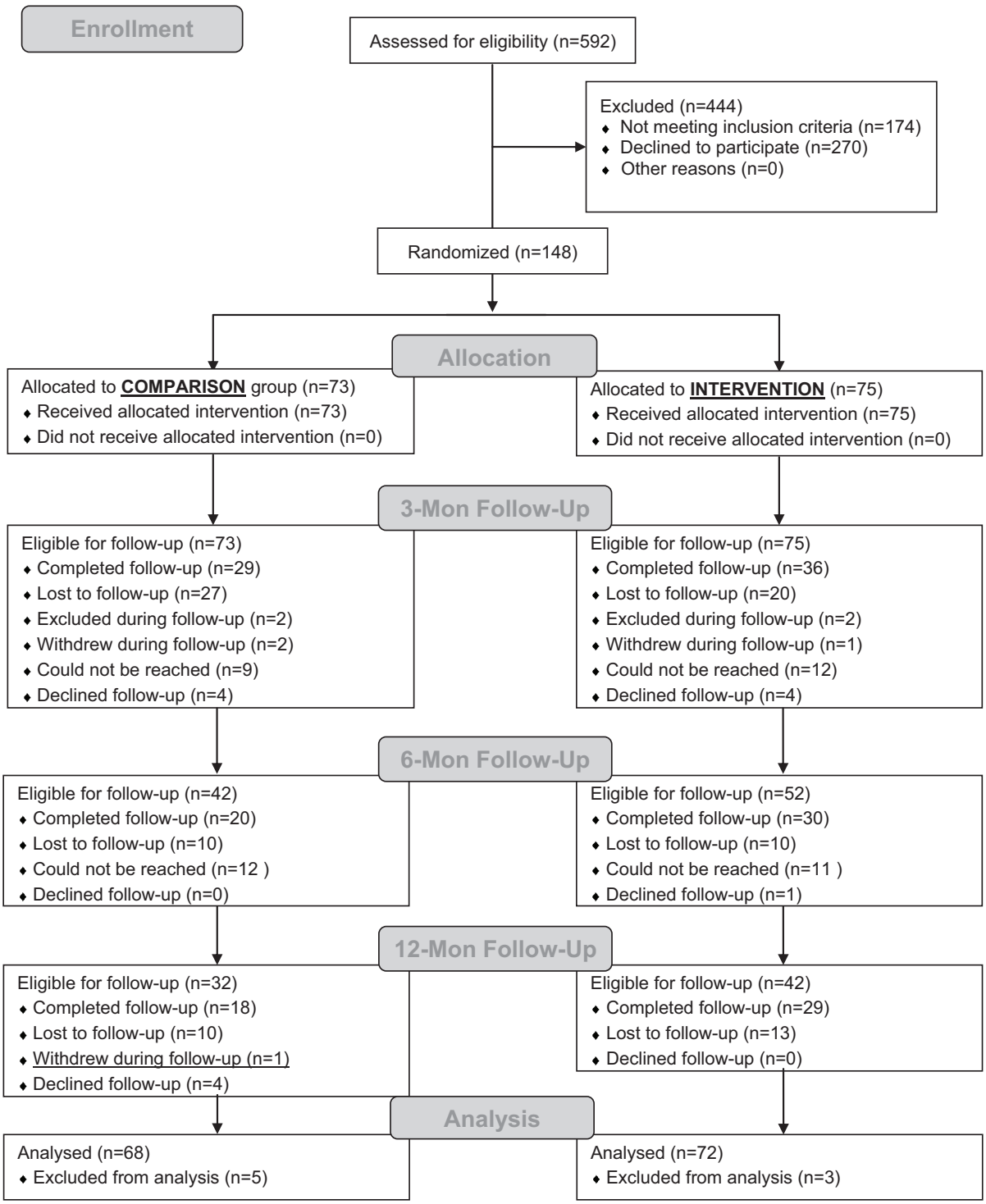
Patient Recruitment

Patients were recruited from the "minor" side of the ED, where individuals are seen for routine, nonurgent medical problems as determined by ED protocol and do not require observation or admission, from January 31 through October 2, 2012. Patients were eligible for study participation if the reason for their ED visit was confirmed by the ED physician to be nonurgent, if they reported no established care with a PCP, and if their primary form of coverage for health care services was Medicaid. In addition, participants confirmed before enrollment that they were at least 18 years of age, were able to speak and read English, and were able to give voluntary informed consent. Patients with a confirmed cognitive deficit or psychiatric disorders other than anxiety or depression were not eligible to participate. After reviewing the details of the study, addressing questions from patients, and obtaining documented informed consent, a trained research assistant (RA) administered a baseline survey and then randomized subjects using an electronic, password-encrypted, blinded randomization table designed by a biostatistician. The RA would access the table and open the next blinded randomization slot to determine intervention versus control.

Intervention Group

If randomized to the intervention group, the RA used the EMR to schedule an appointment at a primary care practice location (either family medicine or general internal medicine based on patient location and physician preference). The subject chose the location, date, and sex of the physician they would like to see. This was done in "real time"

Figure 1. CONSORT 2010 flow diagram.



before the patient was discharged from the ED. The participant was given an appointment reminder card and directions to their chosen practice location. The RA then sent an electronic message through the EMR to the physician with whom the patient was scheduled, providing the patient's name, medical record number, date and time of the scheduled appointment, the reason for the ED visit, and that the patient was part of the ED-PCP connector study. Subjects received an automatic re-

minder call the day before using the contract service employed by all primary care offices.

Comparison Group

If randomized to the comparison group, the patient received a handout to aid in selecting and scheduling an appointment with a PCP and was asked to make an appointment with a PCP to establish care. The handout listed the primary care practices and providers within the health system that were accepting new patients, and it included primary care practices' addresses and phone numbers.

Sample Size and Power Analysis

Our sample size was determined based on our primary outcome of interest: the proportion of subjects who go to PCP offices after being discharged by the ED. With 50 in each group, we could achieve at least 80% power to detect a 2-fold increase in the proportion of subjects who visit PCP offices after the intervention. The proportion of control group patients who will visit PCP offices for follow-up is assumed to be 30%. The type I error will be controlled to less than 0.05 (1-sided).

Data Collection

Quantitative: Patients

Patients completed an Article survey before randomization to collect demographic and health status information, including age, sex, race, ethnicity, marital status, education, employment and profession, household income, and insurance coverage. A follow-up survey at month 12 was conducted over the phone with patients and included a measure of patient locus of control (the 18-item Multidimensional Health Locus of Control Form A) and a patient satisfaction tool (the Consumer Assessment of Healthcare Providers and Systems clinician and group surveys). These 2 measures were considered secondary outcome variables and the month 12 survey response rate was not high enough to include these variables in the final analysis (see Figure 1). Data regarding health care utilization, the primary outcome variable, were extracted from a medical record review at 3, 6, and 12 months after randomization. Extracted data included scheduled or completed visits to primary care (date, location, diagnosis) as well as return visits to the ED (date, location, admission, diagnosis).

Qualitative: Patients (n = 23)

During the follow-up call at month 12, all patients in the study sample were invited to participate in an additional follow-up interview. A subset of patients from the study sample agreed to be contacted for follow-up interviews; 35 participants provided permission to be contacted for the focus group phase (15 from the control group and 20 from the intervention group). Study personnel called these patients using the contact information provided at study intake and scheduled a convenient time for a phone interview. At the time of the phone interview, study personnel read the informed consent document and gained verbal consent, and then proceeded with a semistructured interview that asked questions about the patient's experience with, and perspectives about, the connector program and the ED. In addition, patients who did not attend the scheduled appointment were asked to provide an explanation. All interviews were recorded and transcribed verbatim.

Qualitative: Nonpatients

Providers, staff, and administrators from both the ED and primary care offices that participated in the study also were contacted for follow-up interviews. The study principal investigator (RW)sent a recruitment E-mail to ED staff who had worked in the ED during the time of the ED-PCP connector program recruitment phase. Interested participants then called the study coordinator to schedule an interview. Participating providers and staff were interviewed in person or by phone using a structured interview guide tailored to the participant's role (eg, physician, administrator). Questions asked for their perspectives about the use of HIT to facilitate ED/PCP communication, as well as about possible reasons why Medicaid enrollees might use the ED for nonurgent concerns. All interviews were recorded and transcribed verbatim.

Analysis

Quantitative Analysis

Descriptive statistics, including means and percentages, were calculated for the sociodemographic and health status variables from the intake survey and for the utilization variables from the medical record review. Patients were coded as having at least 1 PCP or ED visit at the 3-month follow-up, be-

tween 3 and 6 months, and between 6 and 12 months if there was a visit date in the medical record during each time frame. The number of visits within each time frame was also counted.

Nonurgent ED visits were confirmed by the study principal investigator(RW), based on the visit description provided in the medical record. Specifically, ED visits were stratified into urgent and nonurgent visits by reviewing the discharge diagnoses and ED visit notes in the medical record; a determination was made based on whether the diagnoses or notes suggested a presentation with severity suitable for the ED. For example, a patient presenting to the ED with shortness of breath who was discharged with a diagnosis of bronchitis was considered to have appropriately utilized the ED for an urgent health visit. Further, any pregnancy-related visit was labeled as urgent. Conversely, patients who were seen for recurrent back pain, sore throat, or ear pain and then discharged with the same diagnosis were considered to have used the ED for a nonurgent visit. All visits in which the urgency of the problem was not clear were recorded as urgent and appropriate.

Pearson χ^2 test of a significant association between 2 categorical variables was used to compare the intervention and control groups on these variables. Logistic regressions of utilization variables by study group were conducted to calculate odds ratios (ORs) and confidence intervals (CIs) for differences in utilization of both primary care and the ED. All quantitative analyses were performed using Stata 12.1 statistical analysis software (StataCorp, College Station, TX).

Qualitative Analysis

The interview transcripts from all interviewees were analyzed using the constant comparative analytic approach using both inductive and deductive methods.[17] First, a coding team of coauthors (JH, CS, CAT) identified broad themes and developed a preliminary coding dictionary. Following the methods described by Constas,[18] next the data were classified into these broad theme categories. Then, for each category of findings, at least 2 team members coded the data and independently developed a list of subcodes; these subcodes were subsequently compared and clarified using team consensus. The analysis process was facilitated by using Atlas.ti (version 6.0) qualitative data analysis software (Atlas.ti Scientific Software Development GmbH).

Results

Study Participants

A total of 148 patients were randomly allocated to study groups. Eight patients were excluded from the final analysis because at the 3-month follow-up each patient either chose to withdraw from the study or was excluded by the study team. Reasons for exclusion included nonsufficient English language skills and identification of a long-standing relationship with a PCP. This resulted in a total of 140 patients being included in the final analysis: 72 in the intervention group and 68 in the comparison group (see Table 1). The majority of participants (>50%) were female, African American, younger than 30 years of age, never married, unemployed, and reporting a yearly income of <$14,000. Intervention and comparison groups were similar sociodemographically with the exception of insurance coverage; a larger proportion of patients in the comparison group reported being uninsured at any point in the past year than did intervention group participants (34% vs 18%; $P = .027$).

There was no significant difference between study groups in either the distribution of reasons for initial visit categories or the level of comorbidity. Among those without missing data, the most prevalent conditions across the study groups were back pain (43%) and depression (36%). In addition, about a quarter of participating patients had been diagnosed with asthma (25%), anxiety (25%), and joint pain (27%). Categories of reasons for the initial nonurgent ED included nonrespiratory infection (22%), respiratory infection (8%), injury (26%), musculoskeletal pain (13%), nonmusculoskeletal pain (16%), and other (15%). The "other" category includes illness, pregnancy test, substance abuse, rash, and follow-up.

In addition, we interviewed a total of 23 patients and 29 providers, administrators, and staff to learn more about their experiences with the ED-PCP connector program (Table 2). Participating patients were asked about the program and whether it was helpful, as well as their perspectives about access to primary care in general. Nonpatients were asked about the use of HIT to facilitate communications about care and about possible reasons Medicaid enrollees might use the ED for nonurgent concerns.

Table 1. Participant Demographics for the Intervention and Control Groups

	Intervention Group		Control Group		
	N	%	N	%	Pearson χ^2
Total participants	72	51.4	68	48.6	
Sex					.034
Female	55	76.4	47	69.1	
Male	17	23.6	21	30.9	
Item nonresponse*	0	0.0	0	0.0	
Race/ethnicity					.188
White	8	11.1	16	23.5	
African American	59	81.9	46	67.6	
Hispanic/Asian/other	4	5.6	5	7.4	
Item nonresponse	1	1.4	1	1.5	
Age (years)					.587
18–25	28	38.9	23	33.8	
26–30	15	20.8	21	30.9	
31–50	26	36.1	19	27.9	
>50	3	4.2	4	5.9	
Item nonresponse	0	0.0	1	1.5	
Marital status					.994
Married or long-term cohabitation	11	15.3	10	14.7	
Divorced/widowed/separated	15	20.8	13	19.1	
Never married	44	61.1	40	58.8	
Item nonresponse	2	2.8	5	7.4	
Education					.567
Some high school or less	18	25.0	21	30.9	
High school graduate	26	36.1	19	27.9	
Some college or more	27	37.5	25	36.8	
Item nonresponse	1	1.4	3	4.4	
Employment					.714
Full-time	16	22.2	12	17.7	
Part-time	10	13.9	12	17.7	
Unemployed†	43	59.7	40	58.8	
Item nonresponse	3	4.2	4	5.9	
Yearly income					.175
<$14,000	38	52.8	42	61.8	
≥$14,000	22	30.6	14	20.6	
Item nonresponse	12	16.7	12	17.7	
Uninsured in the past year					.027
Yes	12	17.7	23	33.8	
No	56	77.8	44	64.7	
Item nonresponse	4	5.6	1	1.5	
Two or more comorbidities‡					.768
Yes	25	34.7	21	47.1	
No	34	47.2	32	47.1	
Item nonresponse	13	18.1	15	22.1	
Reasons for initial ED visit					.819
Infection					
Nonrespiratory	13	19.1	19	26.4	
Respiratory	7	10.3	4	5.6	
Injury	17	25.0	19	26.4	

Continued

Table 1. Continued

	Intervention Group		Control Group		
	N	%	N	%	Pearson χ^2
Pain					
Musculoskeletal	10	14.7	8	11.1	
Nonmusculoskeletal	11	16.2	11	15.3	
Other	10	14.7	11	15.3	

*Item nonresponse includes both missing data and the "prefer not to answer" response selection. There are no significant differences in missing data across groups, and these data were not included in the Chi-Square calculations.
†Unemployed includes respondents looking for work, keeping house full time, students, not working for health reasons, and retired.
‡From a list of nine prevalent chronic conditions: hypertension, heart disease, diabetes, chronic obstructive pulmonary disease, back pain, joint pain, depression, asthma, anxiety.
ED, emergency department.

Patient Use of Primary Care and the ED

Primary care and ED utilization were tracked during the 12-month study period for all patient participants (Table 3). Just over one quarter (28%) of intervention patients attended at least 1 primary care visit at the 3-month follow-up, compared with 13% of patients in the comparison group (OR, 2.52; 95% CI, 1.06–6.02). This difference was not significant by 12 months after randomization (OR, 1.74; 95% CI, 0.79–3.84).

Notably, for intervention group patients, not all appointments scheduled via the connector program were kept; there was a 62% patient no-show rate, and providers canceled 15% of the initially scheduled appointments. Across the study there was no significant difference in the rate of attending a primary care visit in the first 3 months based on any measured demographic variables. Similarly, there was no significant difference in the number of nonurgent ED visits by study group either at 3, 6, or 12 months of follow-up (Table 3). However, the intervention group had a significantly larger mean number of visits to the ED over the 12 months (2.43 visits vs 1.38 for the control group; $P = .036$.

Table 2. Study Interviewees

Interviewee Type	Number of Interviewees
Patients	
Intervention	16
Control	7
Total	23
Administration	
Primary care	5
ED	2
Physicians	
Primary care	12
ED	4
Nurses (ED)	6
Total administrator and provider interviewees	29

ED, emergency department.

Patient Perceptions about the ED-PCP Connector Program

While the program reportedly helped patients with appointment scheduling, developing a relationship with a PCP, and getting primary care in an appropriate setting, interviewees also explained how barriers to primary care access hindered their ability to successfully use the program. Commonly mentioned barriers to attending a primary care appointment included lack of transportation and a need for childcare. These 2 issues were often mentioned in tandem: "I have a huge problem with transportation. I am not mobile and I do not have access to the bus like I'd like to. I have 2 small babies and I do not . . . when I come to most doctor's appointments dealing with myself I'd rather not take the kids." Another common issue was a need for after-hours care. As one patient explained, "It is hard for me to get in there with my work schedule. I might have an emergency ASAP." When patients were asked specifically why they had not attended the scheduled primary care appointment, they referred to a resolution of symptoms that brought them to the ED and/or a lack of a need to follow-up.

Provider, Administrator, and Staff Perceptions about ED and Primary Care Use

When asked for their perspectives about the use of HIT to facilitate ED/PCP communication, ED providers noted that they used the EMR to deter-

Table 3. Primary Care and Emergency Department Utilization, By Study Group Arm

	Intervention		Control		Logistic Regression	
	N	%	N	%	Odds Ratio	95% CI
PC visit(s)						
At least 1 at 3-month follow-up	**20**	**27.8**	**9**	**13.2**	**2.52**	**1.06–6.02**
At least 1 at 12-month follow-up	21	29.2	13	19.1	1.74	0.79–3.84
Attended initially scheduled visit						
Yes	12	16.7	N/A			
No						
Patient cancelled	4	5.6				
Patient no show	45	62.5				
Provider cancelled	11	15.3				
For no above:						
Patient rescheduled initial visit			N/A			
Yes	8	13.3				
No, never rescheduled	43	71.7				
No, patient did not show	9	15				
No, provider cancelled	0	0				
≥2 PC visits by end of study	10	13.9	4	5.9	2.58	0.768–8.66
ED visit(s)						
Any nonurgent visit by 3-month follow-up	25	34.7	19	27.9	1.37	0.67–2.81
Any nonurgent visit between 3 and 6 months	26	36.1	17	25	1.7	0.82–3.52
Any nonurgent visit between 6 and 12 months	35	48.6	29	42.6	1.27	0.65–2.48

Primary care (PC) appointments and emergency department (ED) visits could only be tracked for encounters within the study's health system. Bold denotes a significant difference between groups at $P < .05$.
CI, confidence interval; N/A, not applicable.

mine whether a presenting patient had a PCP, as well as to locate an appropriate provider for a referral if the patient did not already have a provider. They also discussed the ease of viewing a patient's history in the EMR and how that differed when patients were seen outside the AMC's health system. Primary care providers appreciated the ability to view a patient's ED history and experience, and also noted that the information was more complete and accessible when the patient was seen in the health system's ED.

When asked about different aspects of the ED-PCP connector program, nonpatient interviewees noted a variety of reasons that might contribute to Medicaid enrollees' use of the ED for nonurgent concerns. Following the process detailed in the Qualitative Analysis section, we classified 3 main categories of reasons: (1) a lack of understanding of appropriate ED use and primary care; (2) convenience of the ED relative to PCPs; and (3) health care system factors that create barriers to primary care access. Below we explain each of these reasons in greater detail, and in Table 4 we present additional verbatim quotes as further supporting evidence for the salience of these themes.

First, a majority of nonpatient interviewees commented that patients' lack of understanding about the ED and emergent concerns was likely a major contributor to nonurgent ED use. As 1 primary care administrator explained, "I think there's a lot of people who are uneducated about health and illness in general. And they do not . . . really know, 'Do I just have a cold, or do I have life-threatening pneumonia?' All they know is that they are really sick and they do not feel well." An ED physician similarly noted, "I think they see it as all the same, as just an available physician."

The second main reason interviewees suggested might contribute to inappropriate ED use involved convenience of the ED relative to primary care practices. An ED physician reflected about why patients would use the ED: "certainly convenience. You do not need an appointment." Interviewees also commented about convenience when they noted how the ED was perceived as a "one-stop shop" for care. As 1 PCP explained, "You can get

Table 4. Perceived Reasons for Medicaid Enrollees' Use of the Emergency Department for Nonurgent Care

Perceived Reason	Verbatim Comments
Lack of understanding of health care/urgent concerns	"Some might be lack of education, I don't know how much that is. Because when I talk to patients, half or most of them know they could have gone, but they say they couldn't get them in that quick. . . . So, I think it's to them, the complaint might be emergent to them. But in reality, it's not an emergency." (ED nurse) "So if you come in with like, a UTI, or a little rash, you're obviously . . . you don't have the potential to be admitted. You probably don't even need to be seen by a doctor." (PC physician) "Either poor education, not understanding that it's not an emergent situation, or they don't agree with my plans." (PC physician)
Convenience	". . . another is the belief that if I need these sort of tests, X-rays, or whatever, most doctors' offices don't have X-rays there. At least, many of them don't. We don't have them here. So, if people think they're going to need an X-ray, or some sort of fancy thing then they may be more inclined to run to the emergency room. Even if it's not something as obvious as severe chest pain." (PC physician) "Lack of primary care follow-up, lack of rapid follow-up, lack of . . . you know, they want to use it at different times than normal business hours. It's much easier to walk into the ED than actually find a phone number and call and make an appointment and keep an appointment, and there's no cost associated with it." (ED physician) "They don't have to wait for the results." (ED nurse)
Health care system factors	"I think one of the major drivers in that is there's no co-pay. There's no financial responsibility. There's no obligation." (ED administrator) "You're guaranteed to be seen." (ED physician) "If you use the ED, and you don't have a co-pay, OK, I think it's easy." (ED nurse) "People would be coming in for things that could have easily been handled in clinic visits, but they either didn't have a PCP, or they couldn't get in soon enough, or, for whatever reason, they just decided three o'clock in the morning was the best time to go in for something that had been ongoing for days or weeks or things like that." (PC physician)

ED, emergency department; PC, primary care; PCP, primary care physician; UTI, urinary tract infection.

all your answers before you leave." An ED nurse echoed this statement, noting, "They get medicine right there. They get medication right then. They get treatment right then. They get answers to their test results."

A third reason that nonpatient interviewees suggested contributed to potentially inappropriate ED use was health system factors. These factors included the lack of co-pays as well as perceptions that patients might not have easy access to a PCP, thus leading them to seek care in the ED instead of in a primary care setting. In addition, noted among these factors was the fact that if a patient showed up, he or she had to be seen. As 1 ED physician explained, "I think that power, the fact that everybody has to be seen, as whereas primary care physicians, you can turn somebody away. We will have to see them."

Discussion

We found that the use of HIT as part of our ED-PCP connector program intervention was modestly effective at addressing the problem of helping Medicaid patients obtain primary care appointments. For about one quarter of our study population (28%), scheduling a visit was an effective means for this subset of patients to initiate use of primary care. At the same time, for a smaller subset of our comparison group (13%), simply providing a list of providers was sufficient to encourage PC use. For the majority of study patients, however, the intervention did not decrease ED visits nor increase primary care use. Further, we found no significant difference in the utilization of either type of service for either group at the end of our study's 12-month follow-up period.

These findings are consistent with the results of other studies that have shown limited success for programs attempting to link patients to primary care. In another initiative, the Improving Medical Home and Primary Care Access to the Community Clinics through the ED (IMPACT-ED) trial, used an embedded automatic notification to ED physicians to schedule follow-up appointments. This study reported a PCP visit rate of 25% among the intervention group, similar to the present study.[16] In a study of shifting nonurgent patients to an onsite PCP office, patients "navigated" to the clinic

by study personnel upon presentation to the ED were significantly more likely to attend another PCP appointment within a year; however, there was no difference in the number of ED visits.[19]

In our study, we used HIT to schedule a PCP appointment for the patient in real time, thereby both bypassing the phone queue and eliminating potential negative experiences new Medicaid patients may face when calling a PCP's office. While this intervention effectively closed the communication loop between the ED provider and the newly established PCP, we found that this system change was not enough to change patients' care-seeking behavior over the longer term.

To effectively achieve the goal of deterring ED use for nonurgent needs and instead encourage Medicaid patients to visit primary care offices, we must also address the social and health services barriers that affect a patient's ability to attend a primary care visit.[20,21] Issues such as the need for after-hours care, transportation, and provider cancellations can hinder patients' efforts to access primary care. For instance, a provider cancellation rate of 15% sends the wrong message to an already skeptical and vulnerable group of patients. Transforming primary care practices so that patients can be accommodated when a provider unexpectedly needs to be out of the office may be a necessary step toward achieving the goal of appropriate and timely access to care. In addition, it will likely be necessary for providers to develop mechanisms to address socioeconomic barriers such as the need for child care, consistent transportation to and from appointments, and implementation of nontraditional hours so as to be available during the time frame that the working poor are not actually at work. While HIT can help overcome initial barriers to access for this cohort of patients, it is not sufficient to ensure appropriate ED use and establish a long-term personal relationship with a physician that is needed to foster the delivery of truly patient-centered care.

Limitations

This study had several limitations. First, the study took place in only 1 urban, academic ED, and health care utilization variables could be collected only within the study's health system. We did not have access to any data on patient visits to primary care providers or EDs outside of the AMC's EMR; thus we were unable to track out-of-system utilization. At each follow-up call the RA inquired whether the participant received care at any ED or urgent care facility. Any reported out-of-system utilization (primary care or emergency/urgent care) was recorded in the comments for the follow-up calls or accounted for with the Consumer Assessment of Healthcare Providers and Systems survey. We did send requests for information to all outside EDs and over the course of the study received zero responses. Second, we did not collect measures of the general health status of the patients at the end of the intervention; this outcome could have potentially been affected by the connection to a primary care provider for the patients who attended a visit. We acknowledge that utilization is not a direct proxy for health status. In addition, we did not control for a patient's history of ED use. Randomization should result in an equitable distribution of patients by prior ED use, but it is possible that response to this intervention was affected by prior use patterns. Stratification of urgent versus nonurgent was completed by the principal investigator based on discharge summary and ED note review. We acknowledge that this may reduce generalizability but it does not detract from our focus of access and subject opinion.

Conclusion

We found that while this HIT intervention linked Medicaid patients directly with guaranteed primary care appointments and facilitated communication among providers, not all patients attended their scheduled appointments, nor did ED utilization decrease over the long term. Our results suggest that it is necessary not only to provide a referral to a PCP but also to evaluate whether the patient attended their scheduled appointment and to determine whether the patient established the primary care office as a source of care for nonurgent concerns. Although removal of system barriers is necessary to increase access to primary care for the Medicaid population, it is not sufficient. Further research should be undertaken to improve our understanding of "the reasons behind the reasons" driving ED use over primary care.

The authors are extremely grateful to the patients and ED staff who coordinated and participated in this study. The authors also thank the funding agency and Mo Xiaokui, all of whom were affiliated with The Ohio State Univeristy during the study.

References

1. Bamezai A, Melnick G, Nawathe A. The cost of an emergency department visit and its relationship to emergency department volume. Ann Emerg Med 2005;45:483–90.
2. Mehrotra A, Liu H, Adams JL, et al. Comparing costs and quality of care at retail clinics with that of other medical settings for 3 common illnesses. Ann Intern Med 2009;151:321–8.
3. Brim C. A descriptive analysis of the non-urgent use of emergency departments. Nurse Res 2008; 15:72–88.
4. Carret ML, Fassa AC, Domingues MR. Inappropriate use of emergency services: a systematic review of prevalence and associated factors. Cad Saude Publica 2009;25:7–28.
5. Cunningham P, May J. Insured Americans drive surge in emergency department visits. Issue Brief Cent Stud Health Syst Change 2003;(70):1–6.
6. Garcia TC, Bernstein AB, Bush MA. Emergency department visitors and visits: who used the emergency room in 2007? NCHS Data Brief 2010;(38): 1–8.
7. Cheung PT, Wiler JL, Lowe RA, Ginde AA. National study of barriers to timely primary care and emergency department utilization among medicaid beneficiaries. Ann Emerg Med 2012;60:4–10.e2.
8. Asplin BR, Rhodes KV, Levy H, et al. Insurance status and access to urgent ambulatory care follow-up appointments. JAMA 2005;294:1248–54.
9. Redstone P, Vancura JL, Barry D, Kutner JS. Nonurgent use of the emergency department. J Ambul Care Manage 2008;31:370–6.
10. Blanchard J, Ogle K, Thomas O, Lung D, Asplin B, Lurie N. Access to appointments based on insurance status in Washington, D.C. J Health Care Poor Underserved 2008;19:687–96.
11. Donaldson M, Yordy K, Lohr K, Vanselow N, eds. Primary care: America's health in a new era. Washington, DC: National Academies Press; 1996.
12. Flores-Mateo G, Violan-Fors C, Carrillo-Santisteve P, Peiro S, Argimon JM. Effectiveness of organizational interventions to reduce emergency department utilization: a systematic review. PLoS One 2012;7:e35903.
13. Katz EB, Carrier ER, Umscheid CA, Pines JM. Comparative effectiveness of care coordination interventions in the emergency department: a systematic review. Ann Emerg Med 2012;60:12–23.e1.
14. Afilalo M, Lang E, Leger R, et al. Impact of a standardized communication system on continuity of care between family physicians and the emergency department. CJEM 2007;9:79–86.
15. Hansagi H, Olsson M, Hussain A, Ohlen G. Is information sharing between the emergency department and primary care useful to the care of frequent emergency department users? Eur J Emerg Med 2008;15:34–9.
16. Chan TC, Killeen JP, Castillo EM, et al. Impact of an Internet-based emergency department appointment system to access primary care at safety net community clinics. Ann Emerg Med 2009;54: 279–84.
17. Glaser B, Strauss A. The constant comparative method of qualitative analysis. In: The discovery of grounded theory: strategies for qualitative research. New York: Aldine de Gruyter; 1967: 101–15.
18. Constas MA. Qualitative analysis as a public event: the documentation of category development procedures. Am Educ Res J 1992;29:253–66.
19. Doran KM, Colucci AC, Hessler RA, et al. An intervention connecting low-acuity emergency department patients with primary care: effect on future primary care linkage. Ann Emerg Med 2013;61:312–21.e7.
20. Hearld LR, Alexander JA. Patient-centered care and emergency department utilization: a path analysis of the mediating effects of care coordination and delays in care. Med Care Res Rev 2012;69:560–80.
21. Shaw EK, Howard J, Clark EC, Etz RS, Arya R, Tallia AF. Decision-making processes of patients who use the emergency department for primary care needs. J Health Care Poor Underserved 2013;24: 1288–305.