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Hospital readmission among the unsheltered population at a safety net hospital: A closer look at social work engagement

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Abstract:

Frequent utilization of emergency departments and crisis response services by individuals experiencing homelessness present a significant burden on hospital resources. On-site case management in the emergency department (ED) and the use of community health workers have shown potential for cost-effective reduction in ED utilization and improved clinical outcomes. To assess the impact of social work involvement and specific resources on patient disposition and hospital readmission rates for the homeless population, we conducted a retrospective review examining Tampa General Hospital's (TGH) ED utilization patterns among unsheltered or unstably housed adult patients between January 1, 2010 to December 4, 2017. There were 175 patients who met inclusion criteria, accounting for 1824 total encounters. Social work services were engaged for 620 (34.0%) encounters. Discharge location was addressed during 395 (21.7%) encounters overall and only 84 (4.6%) encounters led to final placement in homeless shelters. Social work engagement was not associated with an increased likelihood of return to the ED within 60 days (when chief complaint was not taken into account), but was associated with readmission within 60 days (p -value < 0.001) and with return to ED with similar complaints (p -value = 0.038). In our cohort, social work intervention was underutilized, associated with increased readmission rates at 60 days, and addressed discharge location infrequently. Further research is needed to uncover the multifactorial etiologies accounting for this study's findings and to assess and optimize discharge planning.

Keywords: *social work, homeless, unsheltered, emergency departments, hospital readmission*

Introduction:

Compared to their sheltered peers, homeless individuals experience disparately high rates of chronic and acute health conditions, injuries, and assaults as well as higher rates of substance abuse and psychiatric illness.¹ In Florida, 21.8% of unsheltered individuals surveyed in 2016 identified medical and physical hardships as the primary causes of their homelessness.² In 2017, the Tampa Hillsborough Homeless Initiative (THHI) counted 1,549 homeless individuals in Hillsborough county. The same survey had 40% reporting a disabling condition, 15% reporting a serious mental illness, and 10% reporting a substance abuse disorder.³

Homeless individuals face several barriers to access traditional primary care clinics, including lack of insurance or transportation, stigmatization, prioritization of basic subsistence, and the high rate of physical and behavioral health issues that prevent them from independently navigating a complex healthcare system.^{4,5} This, in addition to increased chronic disease morbidity and lack of safety, food security, and shelter has resulted in unsheltered persons rely primarily on emergency departments (EDs) as their usual source of care.^{6,7} Further, acute events triggered by unmanaged chronic health conditions and lack of preventative care lead to additional ED visits, hospitalizations, and readmissions.⁸ Estimates suggest that there are 72 ED visits annually per 100 homeless persons in the U.S., and the number of visits by homeless individuals is increasing dramatically. One study demonstrated a 44% increase over a five-year time period compared to a 7.4% increase for domiciled persons.^{1,9}

Frequent utilization of emergency departments and crisis response services by individuals experiencing homelessness presents a significant burden on hospital resources.^{5,8,10} Primary care related ED visits (PCR-ED) represent billions of dollars in cost to the US healthcare system annually.¹⁰

Frequent ED usage can be reduced with proper primary care along with successful efforts to establish permanent housing, alleviate mental illness, and abstain from substance use.⁴ Tackling these barriers through interventions such as on-site case management in the ED and the use of community health workers has shown potential for cost-effective reduction in ED utilization and improved clinical outcomes.^{11,12,13,14,15} The existing body of research has demonstrated that utilization of social work to address these intrinsic factors while providing coordination of care, promotion of self-management of disease burden, and patient education on available health resources outside of emergency care can reduce ED visits and hospital admissions if engaged early and efficiently, but the nature of such interventions is complex and has been poorly characterized.^{4,16}

Prior studies suggest that such interventions require careful coordination and should be focused on high utilizers while addressing the specific needs of this vulnerable population, rather than simply focusing on primary care provider access alone.^{17,18} There are a number of logistical limitations to social work engagement in the ED itself. Physicians dealing with non-emergent complaints may be more likely to discharge a patient prior to social work evaluation and intervention in order to maintain bed availability in busy EDs. However, bus-passes, cab vouchers, patient education on low or no-cost clinics, and community resource guides are all

comparatively quick services that previous studies have shown to be effective in reducing ED utilization.¹⁶

This study characterizes the social work services delivered at a safety net hospital in Tampa and evaluates their impact on ED utilization and readmission rates by patients who were identified as unsheltered or unstably housed by a free clinic operated by Tampa Bay Street Medicine (TBSM), a local volunteer-run organization.

Methods:

Study population

This was an IRB-approved retrospective review examining unsheltered or unstably housed adult patients and their utilization of Tampa General Hospital (TGH) ED between January 1, 2010 to December 4, 2017. Since housing status was not consistently documented during ED visits, our sample was identified from a list of 350 patients who sought and received medical care at the biweekly TBSM clinic located in downtown Tampa, Florida from its founding in February 2015 until December 4, 2017. To be included in the study, patients were required to be older than 18 years, unsheltered, and actively seeking medical care at the time of the encounter with at least one documented visit in the free Practice Fusion© electronic medical record (EMR) system used by TBSM.

The TGH Epic® EMR was then queried for the same patients using the names and birthdates from Practice Fusion©. All data from both EMR systems were entered into a Microsoft Excel® database. Insurance status was abstracted from both TBSM Practice Fusion© records as well as the Epic® EMR and was classified based on the most recent information available.

Subgroups and categories

Encounters in which patients were discharged directly from the ED were inspected further. Among this group, encounters were further categorized as “primary care-related” (PCR) visits if medical attention was deemed non-essential within 12 hours, assessed independently by multiple study personnel with subsequent re-evaluation for any assignment discordance. Patients were excluded from this sub-classification if they were admitted to TGH for further management or observation.

Total number of encounters over the study period was also used to create another subset of patients defined as “super-utilizers.” Super-utilizers are those individuals whose total number of encounters in the ED was more than one standard deviation above the mean number of encounters among all patients.

Social work engagement was further classified by the resources provided.

Length of time before the individual's next hospital encounter was measured to define return to the ED within 60 days and readmission within 60 days.

Statistical Analysis

SPSS Version 24 was used to calculate frequencies and evaluate associations. Chi-square and t-test were used to compare various groups for categorical data and continuous data, respectively. A p-value of less than 0.05 signified statistical significance.

Results:

Medical records of 278 unsheltered patients with 1824 total encounters were reviewed. The median age of patients was 53 [A1] [A2] (range: 18-79); 76.6% (134/175) were males; African Americans represented 32.6% (57/175), Caucasians 41.7% (73/175), and 8.6% (15/175) Hispanics (Table 1).

Table 1: Demographic variables and frequencies.

Variable	Frequency No. (%)
Gender	
Male	134 (76.6)
Female	39 (23.4)
Ethnicity	
Caucasians	73 (41.7)
Black	57 (32.6)
Hispanic	15 (8.6)
Asian	3 (1.7)
Not Reported	27 (15.4)

Mean number of ED encounters was 7 (SD = 17) per patient over the study period. We observed a total of 1391 ED encounters for patients who presented to the ED and left the hospital from the ED (i.e. patients not admitted to in-patient services or observation). For this group of patients, 64.3% (895/1391) were primary-care related (PCR) ED and 26.2% (365/1391) were non-PCR ED visits and social work services were engaged for 25% (348/1391) of ED visits (Figure 1).

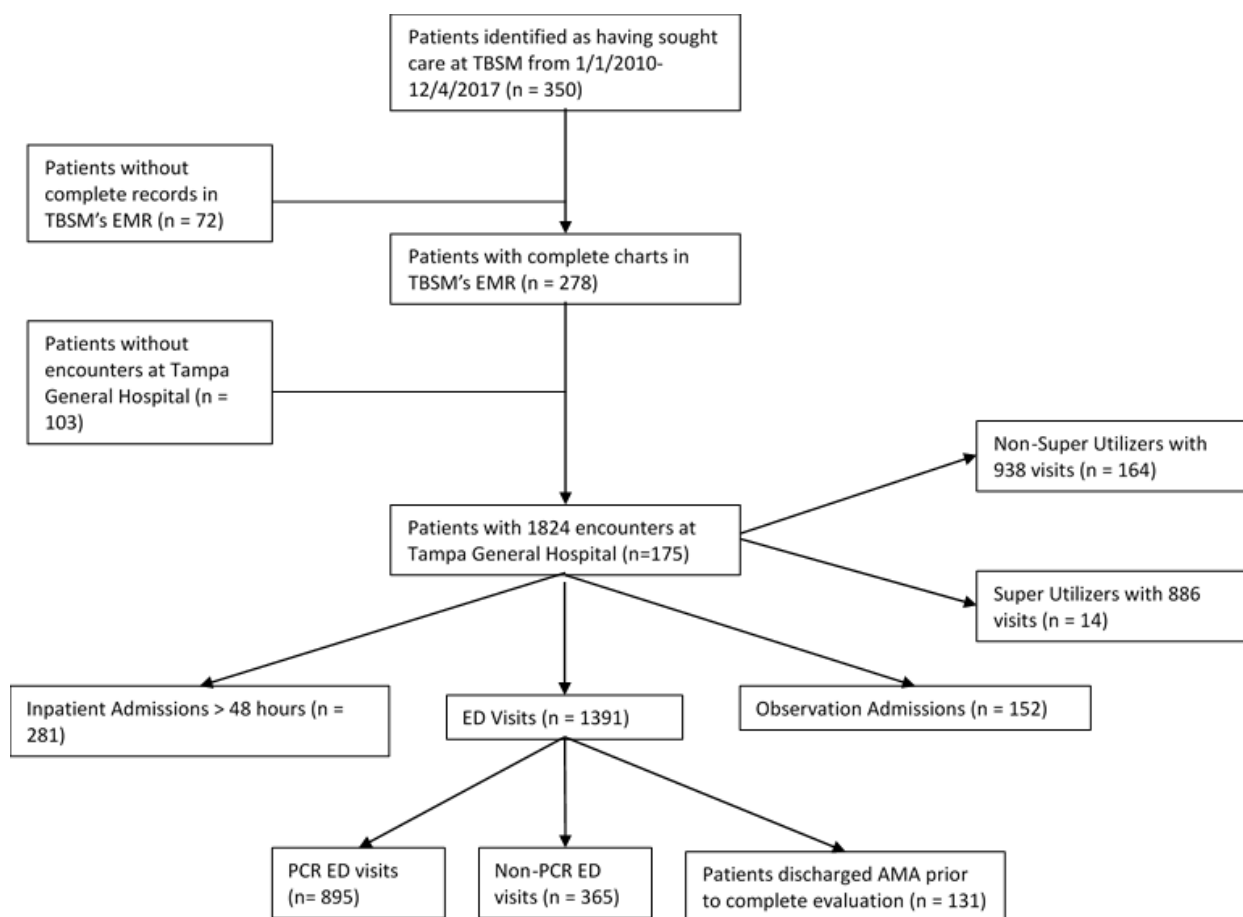


Figure 1: Breakdown of evaluated patient subgroups and encounter-types

Fourteen patients were determined to be “super-utilizers” and together represented 886 encounters (47.5%) between 2010 and 2017 with an average of 63 (SD = 47) ED encounters each. Non-super-utilizers had an average of 6 (SD = 5) encounters between 2010 and 2017.

Social work services were engaged for 25% (346/1389) ED visits, 48.7% (74/152) 24-hour observation visits, 70% (198/281) inpatient admissions lasting greater than 48 hours, and 1.5% (2/131) ED visits in which the patient was discharged without being fully evaluated for a total of 620 (34.0%) visits out of the overall 1824 visits recorded. Social work services included placement in homeless shelters (84/1824, 4.6 %), providing bus passes or cab vouchers (257/1824, 14.1 %), coordinating psychiatric discharge (87/1824, 4.8 %), providing free or reduced cost medications (128/1824, 7.0 %), providing community resource guides (100/1824, 5.5 %), and assisting in enrollment in Medicare/Medicaid (15/1824, 0.8 %) (Table 2).

Table 2: Return to the ED, readmission to the hospital, or return to the ED for a similar complaint by social work engagement and specific services offered.

	Return to ED w/in 60 days	p-value	Readmission w/in 60 days	p-value	Return to ED with same complaint w/in 60 days.	p-value
Social Work Engagement (%)		0.132		< 0.001		0.038
Yes (n = 620)	418 (67.4)		147 (23.7)		217 (35.0)	
No (n = 1204)	769 (63.9)		171 (14.2)		364 (30.2)	
Placement in Shelters (%)		0.184		<0.001		0.368
Yes (n = 84)	49 (58.3)		29 (34.5)		23 (27.4)	
No (n = 1740)	1138 (65.4)		289 (16.6)		558 (32.1)	
Bus Pass or Cab Vouchers (%)		0.647		0.007		0.650
Yes (n = 257)	164 (63.8)		60 (23.3)		85 (33.1)	
No (n = 1567)	1023 (65.3)		258 (16.5)		496 (31.7)	
Medication Assistance (%)		0.308		0.939		0.879
Yes (n = 128)	78 (60.9)		22 (17.2)		40 (31.3)	
No (n = 1696)	1109 (65.4)		296 (17.5)		541 (31.9)	
Psychiatric Discharge (%)		0.053		0.002		0.761
Yes (n = 87)	65 (74.7)		26 (29.9)		29 (33.3)	
No (n = 1737)	1122 (64.6)		292 (16.8)		552 (31.8)	

Social work engagement was associated with readmission to the hospital within 60 days regardless of the initial chief complaint ($p = 0.001$) as well as returning to the ED for a similar chief complaint within 60 days ($p = 0.038$), but it was not associated with return to the ED within 60 days independent of chief complaint (Table 2).

All social work services were more likely to be engaged in the in-patient setting rather than in the ED. Overall social work was also more likely to be engaged in non-PCR-ED visits ($p=0.04$); however, when broken down by specific social work services, there was no difference between social work engagement for PCR and non-PCR ED visits except for psychiatric discharge planning, which was more likely to be offered during non-PCR related visits ($p < 0.001$) (Table 3).

Table 3: Social work utilization and individual services offered by admission status, PCR designation, and Super Utilizer Designation.

	D/c* n = 1391 No. (%)	Admit† (n = 433) No. (%)	p – value	PCR†† ED (n = 895) No. (%)	Non-PCR ED (n = 365) No. (%)	p – value	SUE‡ (n = 886) No. (%)	Non-SUE (n = 938) No. (%)	p – value
Social Work engagement	349 (25.1)	271 (62.5)	< 0.001	232 (25.9)	115 (31.5)	0.044	86 (32.3)	334 (35.6)	0.134
Placement in Shelters	22 (1.6)	62 (14.5)	< 0.001	15 (1.7)	7 (1.9)	0.766	19 (2.1)	65 (6.9)	< 0.001
Bus Pass or Cab Vouchers	130 (9.3)	127 (29.6)	< 0.001	95 (10.6)	34 (9.3)	0.490	89 (10.0)	168 (17.9)	<0.001
Psychiatric Discharge Planning	43 (3.1)	44 (10.3)	< 0.001	5 (0.6)	38 (10.4)	< 0.001	43 (4.9)	44 (4.7)	0.871
Medication Assistance	68 (4.9)	60 (14.0)	< 0.001	55 (6.1)	13 (3.6)	0.066	57 (6.4)	71 (7.6)	0.343
Community Resource Guides	48 (3.4)	52 (12.1)	< 0.001	36 (4.0)	12 (3.3)	0.537	34 (3.8)	66 (7.0)	< 0.001

*D/c – Encounters resulting in direct discharge from the ED

†Admit– Encounters resulting in admission to in-patient wards or to observation units

††PCR – primary care-related

‡SUE– super utilizer encounters

Non-super utilizers received placement in shelters, bus passes or cab vouchers, and community resource guides more often than super utilizers; however, overall, there was no statistical difference between social work engagement in the two groups (Table 3).

A specific discharge location was noted in 21.7% (395/1824) encounters with 6.4% (117/1824) encounters resulting in discharge to homeless shelters, 3.1% (57/1824) to the residence of friends or family, 0.9% (16/1824) to substance abuse rehabilitation institutions, 4.7% (85/1824) to psychiatric hospitals, 1.4% (25/1824) to skilled-nursing-facilities, 3.9% (72/1824) to the streets, and 1.0% (18/1824) to other locations. The remaining 78.3% (1429/1824) patient encounters had no discharge information in their encounter. Follow-up could only be confirmed in patients who were assigned to clinics associated with our hospital system and within our EMR. Out of the 735 instances in which patients were instructed to follow up in these clinics, only 58 (7.9%) of follow up visits were completed. Patients were assigned follow-up at low-cost clinics for 45.4% (828/1824) encounters, however, all of these clinics are located greater than 2 miles from the downtown Tampa area. Individuals were instructed to follow up at a no-cost clinic in 0.6% (11/1824) encounters.

Social work was involved with 32.3% (286/886) of super-utilizer encounters and with 35.6% (334/936) of non-super-utilizer encounters, but the relationship between social work engagement and super-utilizer status was not significant.

Discussion:

This study is the first to investigate social work engagement and ED utilization among homeless individuals in the Tampa Bay area. In our cohort, social work was involved in only a third of all encounters presenting to the ED (regardless of disposition at the end of the end of ED encounter) and a quarter of all ED encounters resulting in discharge from the ED (i.e. not admitted or under observation). Discharge location was addressed 21.7% of the time with only 4.6% of visits leading to placement in shelters at discharge. Likewise, at an urban academic center, social workers addressed housing status in only 4% of all ED visits and homeless patients were discharged back to the streets 64% of the time.¹

Interestingly, social work engagement was associated with readmission to the hospital within 60 days regardless of the initial chief complaint. Social work was also often involved with those who were admitted to in-patient services or observation (271/433, 62.5%). A potential explanation is that these patients were sicker and therefore needed to be readmitted despite receiving social work services during the previous encounter. Perhaps, social work engagement is functioning as a surrogate for some other underlying unidentified confounding variable and should be the subject of further evaluation.

Social work was also associated with returning to the ED for a similar chief complaint within 60 days, a seemingly counter-productive finding at face-value. This association, is, however, corroborated by an additional finding: social work was more often involved with those who

presented to the ED for non-PCR ED encounters (115/365, 31.5%) when compared to PCR encounters (232/895, 25.9%) (p-value < 0.004).

Super-utilizers account for a large percentage of overall visits and repeat visits.^{1,19} Interestingly, in this study, super-utilizers received social work services less often than did non-super-utilizers, and though this difference did not achieve statistical significance, it can be argued that the desired relationship is such that super-utilizers should receive significantly more social work engagement, the absence of which is in fact significant in this study. This is especially important as previous studies have recommended that social work strategies should focus specifically on providing services and support to this subgroup in order to reduce the overall readmission rates of this population.^{1,19}

Embedding forced-function designation of sheltered versus unsheltered status in the discharge orders within the electronic health record would help ensure identification of unsheltered individuals; the designation as ‘unsheltered’ could then be linked with easily printed resources identifying no-cost primary care programs for patients; this would serve as a contingency plan for optimizing patient follow-up if social work is not involved. Another approach is to identify housing status earlier in ED patient flow, such as targeted questions during triage or RN assessment, which can independently alert the social work team for faster engagement and pre-emptively inform discharge planning for the medical team. This would maximize the facetime for social workers to more comprehensively address patient needs, including those that contribute to inappropriate use of the ED, without impeding ED flow. The addition of an identifier in the hospital EMR could “flag” the social work team at subsequent ED visits, so that alternative and individualized interventions can be identified and reduce the risk of repeating time-costly, non-impactful services. An additional cost-efficient solution could entail an educational intervention for ED residents and attending physicians contextualizing the scope of the problem, the importance of obtaining a history that includes housing status, and the benefits of encouraging patient self-management of disease by homeless healthcare initiatives such as TBSM in order to more easily identify those in need of social work assistance.

Our results are limited by a number of factors. First, the studied population excluded ED visits at other tertiary care facilities and ED visits by homeless persons not seen by TBSM. This has two major implications: first, only a subset of the homeless population in Tampa were studied, which imposes limitations on the internal validity of our findings, and second, our data represents only a portion of the overall ED visits and admissions as well as the social work services offered, which may compromise the generalizability of our findings. Further, as inclusion criteria necessitated prior establishment with TBSM through a clinic visit, if one were to suggest our population is already prone to seek out medical care then this introduces selection bias into our study population. Lastly, the unsheltered population itself is a heterogeneous group. There are individuals who are chronically homeless, temporarily homeless, and at risk of homelessness, and these individuals often move from city to city making accurate description and analysis difficult. Further research is needed to characterize these individual groups as well as the effect of social work interventions for each of them.

Conclusion:

In our population of homeless individuals seen by TBSM who also visited the ED at tertiary hospital, we found that social work intervention did not confer any benefit in reducing subsequent repeat ED visits or readmission rates. Importantly, the overwhelming majority of visits were for primary-care related issues, and super-utilizers accounted for almost half of all encounters, yet social work services were not frequently engaged for these two sub-groups. Interventions identifying and targeting patients presenting for primary-care related reasons and those with frequent visits would be useful in reducing unnecessary ED encounters. Additional studies enumerating the challenges of administering social work services in the ED and other potential alternatives to address the aforementioned patient subgroups are necessary in developing a better understanding of the role of social work services for homeless patients in the emergency department.

Reference:

1. Ku BS, Scott KC, Kertesz SG, Pitts SR. Factors associated with use of urban emergency departments by the U.S. homeless population. *Public Health Rep.* 2010;125(3): 398–405. doi:10.1177/003335491012500308
 2. Council on Homelessness. 2016 Annual Report. Tallahassee: Department of Children and Families.
 3. 2017 PIT Homeless Count Data. Tampa: Tampa Hillsborough Homeless Initiative. Homelessness, C. o. (n.d.). 2016 Annual Report. Tallahassee: Department of Children and Families.
 4. Gelberg L, Gallagher TC, Andersen RM, Koegel P. Competing priorities as a barrier to medical care among homeless adults in Los Angeles. *Am J Public Health.* 1997;87(2):217–220. <https://doi.org/10.2105/ajph.87.2.217>
 5. Kushel MB, Vittinghoff E, Haas, JS. Factors associated with the health care utilization of homeless persons. *JAMA.* 2001;285(2):200–206. <https://doi.org/10.1001/jama.285.2.200>
 6. Moore DT, Rosenheck RA. Factors Affecting Emergency Department Use by a Chronically Homeless Population. *Psychiatr Serv.* 2016;67(12):1340–1347. <https://doi.org/10.1176/appi.ps.201500526>
 7. Salhi BA, White MH, Pitts SR, Wright DW. Homelessness and Emergency Medicine: A Review of the Literature. *Acad Emerg Med.* 2018;25(5):577–593. <https://doi.org/10.1111/acem.13358>
 8. Lin WC, Bharel M, Zhang J, O'Connell E, Clark RE. Frequent Emergency Department Visits and Hospitalizations Among Homeless People With Medicaid: Implications for Medicaid
-

Expansion. Am J Public Health. 2015; 105(Suppl 5):S716–S722.
<https://doi.org/10.2105/AJPH.2015.302693>

9. Tadros A, Layman SM, Brewer MP, Davis SM. A 5-year comparison of ED visits by homeless and nonhomeless patients. *Am J Emerg Med. 2016;34(5):805–808.*
<https://doi.org/10.1016/j.ajem.2016.01.012>

10. Weinick RM, Burns RM, Mehrotra A. Many emergency department visits could be managed at urgent care centers and retail clinics. *Health Aff. 2010; 29(9):1630–1636.*
<https://doi.org/10.1377/hlthaff.2009.0748>

11. Jack HE, Arabadjis SD, Sun L, Sullivan EE, Phillips RS. Impact of Community Health Workers on Use of Healthcare Services in the United States: A Systematic Review. *J of Gen Intern Med. 2017; 32(3): 325–344.* <https://doi.org/10.1007/s11606-016-3922-9>

12. Enard KR, Ganelin DM. Reducing preventable emergency department utilization and costs by using community health workers as patient navigators. *J Healthc Manag. 2013;58(6):412–428.*

13. Althaus F, Paroz S, Hugli O, et al. Effectiveness of interventions targeting frequent users of emergency departments: a systematic review. *Ann Emerg Med. 2011;58(1):41–52.e42.*
<https://doi.org/10.1016/j.annemergmed.2011.03.007>

14. Shumway M, Boccellari A, O'Brien K, Okin RL. Cost-effectiveness of clinical case management for ED frequent users: results of a randomized trial. *The Am J Emerg Med. 2008;26(2):155–164.* <https://doi.org/10.1016/j.ajem.2007.04.021>

15. Okin RL, Boccellari A, Azocar F, et al. The effects of clinical case management on hospital service use among ED frequent users. *Am J Emerg Med. 2000;18(5):603–608.*
[doi:10.1053/ajem.2000.9292](https://doi.org/10.1053/ajem.2000.9292)

16. Tricco AC, Antony J, Ivers NM, et al. Effectiveness of quality improvement strategies for coordination of care to reduce use of health care services: a systematic review and meta-analysis. *CMAJ. 2014;186(15):E568–E578.* <https://doi.org/10.1503/cmaj.140289>

17. Maeng DD, Hao J, Bulger JB. Patterns of Multiple Emergency Department Visits: Do Primary Care Physicians Matter? *Perm J. 2017;21:16–055.* <https://doi.org/10.7812/TPP/16-063>

18. Doran KM, Raven MC, Rosenheck RA. What drives frequent emergency department use in an integrated health system? National data from the Veterans Health Administration. *Ann Emerg Med. 2013; 62(2):151–159.* <https://doi.org/10.1016/j.annemergmed.2013.02.016>

19. Tsai MH, Xirasagar S, Carroll S, et al. Reducing High-Users' Visits to the Emergency Department by a Primary Care Intervention for the Uninsured: A Retrospective Study. *Inquiry. 2018;55:46958018763917.* <https://doi.org/10.1177/0046958018763917>
