

Trends in Homeless Children and Young Adults Seeking Shelter in a Boston Pediatric Emergency Department Following State Housing Policy Changes, 2011–2016

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Objectives. To describe a trend in emergency department (ED) use by homeless children and young adults before and after a state housing policy change in 2012 and to quantify financial and time costs to the health care system.

Methods. We retrospectively reviewed de-identified electronic medical records of homeless children and young adults aged 0 to 21 years seeking shelter at an urban tertiary pediatric ED in Boston, Massachusetts, between September 1, 2011, and August 31, 2016.

Results. We identified 1078 visits for homelessness by 916 children and young adults. The median number of visits per month increased from 3 before the policy change to 17 after ($P < .001$). The total hospital charges were \$578 351, with a net payment of \$214 231, 97% paid by Medicaid. The average length of stay was 8 hours, totaling more than 8500 hours of occupancy.

Conclusions. The number of homeless children and young adults who visited a pediatric ED increased significantly following a housing policy change, leading to substantial resource burdens on the ED and Medicaid.

Public Health Implications. Policymakers should consider potential health care costs when designing housing policies and consider investing in housing to prevent unnecessary ED visits. (*Am J Public Health.* 2018;108:1076–1078. doi:10.2105/AJPH.2018.304493)

More than 500 000 people in the United States are homeless on any single night, and approximately 40% of those are families with children.¹ Homelessness is a complex public health problem that is linked to negative child health outcomes, including asthma, obesity, developmental delays, and mental health issues.^{2–5} Homeless children also have been found to have higher emergency department (ED) use.^{5,6} Despite previous studies that have described ED use among homeless populations, no known studies have focused specifically on pediatric ED use for shelter as opposed to medical services.

Clinical staff in our pediatric ED in Boston, Massachusetts, anecdotally noticed an increase in visits by homeless children and young adults, particularly among those

presenting to seek shelter rather than medical services. We hypothesized that this was the result of a state housing regulatory change in September 2012, which developed the current criteria for entering the emergency shelter system: families with children who do not qualify for shelter because of (1) domestic violence, (2) a natural disaster, or (3) no-fault eviction must prove to the Massachusetts

Department of Housing and Community Development that they have stayed somewhere “not meant for human habitation” to become eligible for shelter.⁷ As a result, over time, homeless families presented to the ED not only as a safe place to stay but also for discharge paperwork that could be used as proof of staying somewhere “not meant for human habitation.”⁸ This study aimed to identify a trend in ED use by homeless children and young adults in relation to the housing policy, as well as to quantify its financial and time costs to the health care system.

METHODS

We retrospectively reviewed de-identified electronic medical records of all children and young adults aged 0 to 21 years in a tertiary pediatric ED in Boston seen for homelessness between September 1, 2011, and August 31, 2016. We identified a visit as being for homelessness (i.e., families were primarily seeking shelter and not medical care) if they fit 1 of 3 criteria: (1) a chief complaint of homelessness, (2) a primary billing diagnosis of homelessness (*International Classification of Diseases, Ninth Revision [ICD-9]*; Geneva, Switzerland: World Health Organization; 1980) code V60.0 “lack of housing” or the

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TABLE 1—Pediatric Emergency Department Visits, Length of Stay, and Hospital Charges and Payments for Homelessness Before and After a Housing Policy Change: Boston, MA, September 2011 to August 2016

	Before Policy Change (Sep 2011–Aug 2012)	After Policy Change (Sep 2012–Aug 2016)	Pre and Post Difference <i>P</i>
Median no. visits/mo	3.0	16.5	<.001
Median no. children and young adults (aged 0–21 y)/mo	3.0	15.0	<.001
Median length of stay per visit, h	3.1	8.2	<.001
Median hospital charge per visit, \$	309.00	452.00	<.001
Median hospital payment per visit, \$	269.90	252.30	.24

ICD-10 [Geneva, Switzerland: World Health Organization; 1992] code Z59.0 “homelessness”), or (3) a nonmedical chief complaint (e.g., “social concerns,” “medical clearance”) but with a primary or secondary billing diagnosis of homelessness. We excluded young people who were homeless but presented to the ED primarily for a medical complaint from the analysis.

We analyzed data on demographics, insurance claims, and length of stay with SAS version 9.4 (SAS Institute, Cary, NC) and R version 3.4.1 (R Foundation for Statistical Computing, Vienna, Austria). We used the Wilcoxon rank sum test to evaluate the significance of the difference in median number of visits, median number of children and young adults, length of stay, and hospital charges and payments for homelessness before and after the policy change.

RESULTS

We identified 1078 visits for homelessness by 916 children and young adults. Patients were evenly split by gender (50% female) and primarily non-Hispanic Black (43.9%) or Hispanic (42.1%). About half of the patients were younger than 5 years (50.8%), one third were 5 to 12 years (33.7%), and a minority were 13 years or older (15.4%). Most patients were insured by Medicaid (81.6%) or were uninsured (15.5%). Of the pediatric patients, 12% had repeat visits, with a median of 2 visits per patient. Families had a concurrent minor medical complaint (e.g., insect bite, upper respiratory infection) at 7.8% (84/1078) of the visits.

Table 1 shows a statistically significant difference in median number of visits and median number of children and young adults per month, length of stay, and hospital charge before and after the housing policy change. Median hospital payment per visit remained unchanged.

Overall, the visits led to 8658 hours of emergency department occupancy, of which 212 hours (2.4%) were before the policy change. Total hospital charges were \$578 351, of which \$18 875 (3.3%) were before the policy change. Net payment over the study period was \$214 231, with 97% (\$207 183) paid by Medicaid.

DISCUSSION

Over a 5-year period, hundreds of homeless young people seeking shelter presented to an urban tertiary pediatric ED, leading to use of more than 8500 hours of ED resources and \$200 000 of Medicaid funds. We found a statistically significant increase in ED visits and length of stay after a change in shelter eligibility policy. To our knowledge, this study is the first analysis of the use of pediatric ED services by homeless children and young adults seeking shelter, as well as the first cost analysis of families seeking shelter in the ED.

Our findings suggest that Medicaid dollars are being spent on housing families in the ED, which is both inefficient and costly. Based on Massachusetts Department of Housing and Community Development cost estimates of \$130 per family per night in a shelter, Medicaid payments to our hospital would have funded 1594 shelter nights. The current epidemic of family homelessness suggests the

need to increase the efficiency of funding and find innovative solutions to fund housing for health.⁹ In addition to pediatric studies that indicated that homelessness was an important predictor of health and health care use,^{2–6} several adult studies have shown that housing assistance can lead to improved health outcomes and lower health care spending.^{9,10} Our data suggest that money could be better spent on emergency shelter or affordable housing instead of funding homeless families to sleep in the ED.

Our study had 3 main limitations. First, we used chief complaints and billing diagnoses to classify ED visits as being for homelessness. This may have underrepresented the number of homeless families seeking shelter, because anecdotally many families initially presented with only a medical chief complaint (e.g., cough), and their diagnosis was coded primarily as a medical visit (e.g., upper respiratory infection), despite later stating that their true reason for visiting the ED was for shelter. However, we chose to exclude families experiencing homelessness with primary medical complaints to best quantify the costs of families seeking shelter in a health care facility. Also, a recent increased awareness of homelessness may have led to an increased documentation of homelessness, which may have overestimated the number of homeless visits post-regulatory change. Additionally, by using a strict classification of homelessness that aimed to capture families that identified as homeless, our analysis excluded families living in housing-insecure conditions (e.g., couch surfing with friends). Second, this was a single-center study of 1 pediatric ED in Boston; however, we believe that results are generalizable because a preliminary study from another pediatric ED in Boston also saw an increase in families seeking shelter after the shelter policy change.¹¹ Although our study was unable to control for other factors that also may have led to an increase in families seeking shelter, a larger study of the emergency shelter system in Boston found that the number of families entering the system in fact decreased during the study period (5669 in 2011 to 4794 in 2016).¹² Third, a lack of data on the family status of participants aged 13 to 21 years may have incorrectly represented independently living adolescents or young adults as part of families.

PUBLIC HEALTH IMPLICATIONS

Homeless children and young adults seeking shelter in an ED, which increased significantly following a housing policy change, placed a large resource burden on the health care system. Policymakers should consider the potential unintended health care costs of shelter eligibility policies and identify housing strategies that can prevent ED visits by families experiencing homelessness. The use of billing codes to track homelessness in other EDs may allow public health officials to ascertain trends over time. **AJPH**

CONTRIBUTORS

M. Kanak contributed to conceptualization and design of the study, analysis and interpretation of the data, and drafting and revision of the article. A. Stewart contributed to interpretation of the data and revision of the article. R. Vinci and M. Sandel contributed to conceptualization and design of the study, interpretation of the data, and revision of the article. S. Liu contributed to analysis of the data and revision of the article. All authors approved the final version of the article.

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HUMAN PARTICIPANT PROTECTION

This study was deemed exempt by the institutional review board at Boston University School of Medicine.

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