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# Western Journal of Emergency Medicine:

## Integrating Emergency Care with Population Health

### Indexed in MEDLINE

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Emergency medicine is a specialty which closely reflects societal challenges and consequences of public policy decisions. The emergency department specifically deals with social injustice, health and economic disparities, violence, substance abuse, and disaster preparedness and response. This journal focuses on how emergency care affects the health of the community and population, and conversely, how these societal challenges affect the composition of the patient population who seek care in the emergency department. The development of better systems to provide emergency care, including technology solutions, is critical to enhancing population health.

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# Association of Social Needs and Housing Status Among Urban Emergency Department Patients

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**Introduction:** People experiencing homelessness have high rates of social needs when presenting for emergency department (ED) services, but less is known about patients with housing instability who do not meet the established definitions of homelessness.

**Methods:** We surveyed patients in an urban, safety-net ED from June–August 2018. Patients completed two social needs screening tools and responded to additional questions on housing. Housing status was determined using validated questions about housing stability.

**Results:** Of the 1,263 eligible patients, 758 (60.0%) completed the survey. Among respondents, 40% identified as Latinx, 39% Black, 15% White, 5% Asian, and 8% other race/ethnicities. The median age was 42 years (interquartile range [IQR]: 29-57). and 54% were male. Of the 758 patients who completed the survey, 281 (37.1%) were housed, 213 (28.1%) were unstably housed, and 264 (34.8%) were homeless. A disproportionate number of patients experiencing homelessness were male (63.3%) and Black (54.2%), P <0.001, and a disproportionate number of unstably housed patients were Latinx (56.8%) or were primarily Spanish speaking (49.3%), P <0.001. Social needs increased across the spectrum of housing from housed to unstably housed and homeless, even when controlling for demographic characteristics.

**Conclusion:** Over one in three ED patients experience homelessness, and nearly one in three are unstably housed. Notable disparities exist by housing status, and there is a clear increase of social needs across the housing spectrum. Emergency departments should consider integrating social screening tools for patients with unstable housing. [West J Emerg Med. 2023;24(5 Supplement)1–9.]

## INTRODUCTION

Homelessness is a well-established factor associated with poor health outcomes. People experiencing homelessness (PEH) have higher mortality and morbidity than the general population,[1–8] as well as higher incidences of substance use disorders and mental illness.[9–15] The majority of adults experiencing homelessness lack a regular source of healthcare.[1,6] They face numerous barriers to accessing care including lack of insurance, financial limitations, lack of transportation, difficulty making appointments, stigma, and competing immediate needs such as food and shelter.[16] Additionally, there are significant racial and ethnic disparities, with communities of color disproportionately impacted by homelessness.[17]

For all these reasons, the emergency department (ED) is a major purveyor of healthcare for PEH.[18] This touch point within the healthcare system is recognized as an important opportunity to address housing instability and social needs, as evidenced by the passage of California State Senate bill 112, which requires hospitals to identify PEH and offer specific resources prior to discharge including food, shelter, and transportation.[19] As there is no funding attached to the bill, California EDs have attempted to address the requirements of SB 1152 variably and have largely modified documentation of existing resources for PEH. There is, however, a large body of literature that documents the complex social needs of PEH and ED-based interventions developed to improve outcomes in this population.[20]

The spectrum of housing also includes housing instability, which does not have a standard definition in the healthcare literature.[21] It is variably referred to as housing instability, housing insecurity, unstable housing, marginal housing, housing vulnerability and is sometimes grouped together with homelessness as the umbrella term "homeless and unstably housed." These terms refer to a range of experiences contributing to a precarious living situation, including difficulty paying rent or mortgage; spending the majority of monthly income on rent; living in crowded spaces; living with others for free; being evicted; or moving frequently.[22]

Perhaps because of its lack of clear definition, housing instability and its effect on health has been less well studied than homelessness. Both populations have increased rates of unmet basic healthcare needs,[3] violence,[23] human immunodeficiency virus and hepatitis C virus,[24] and overall mortality.[25,26] Prior studies have also shown associations between housing instability and anxiety and depression,[27] increased substance abuse and psychiatric symptoms,[28] poorer access to healthcare,[29] and high rates of acute care use.[30] Unstably housed persons have increased social needs compared to stably housed persons of similar income, suggesting that housing insecurity is a graded risk factor, with patients experiencing worse health outcomes as housing instability increases.[29]

It is likely that unstable housing and homelessness are underrecognized, despite their high prevalence among ED patients.[18] People experiencing housing instability are at high risk of becoming homeless,[31] yet little is known about this population in the ED.

### Study Aim

Our goal in this study was to compare the demographics and social needs of patients presenting to an urban ED stratified by housing status.

## METHODS

### Study Design

We conducted a cross-sectional study of patients from an urban, safety-net ED and Level I trauma center in Oakland, California, with 68,000 annual visits. All patients ≥18 years who spoke English or Spanish and presented to the ED during study hours were considered eligible. We excluded minors because our ED sees only a small number of pediatric patients. Patients were also excluded if they were medically unstable, unresponsive, had altered mental status precluding participation, or had already participated in the study. The study was approved by the institutional review board at Alameda Health System.

*Population Health Research Capsule*

What do we already know about this issue?
*Despite the detrimental effect of housing insecurity on health outcomes, the prevalence of homelessness and housing insecurity is likely underrecognized in EDs.*

What was the research question?
*What are the demographics and social needs of patients presenting to an urban ED stratified by housing status?*

What was the major finding of the study?
*Over 1/3 of patients experience homelessness, nearly 1/3 are unstably housed, and social needs rose across this housing spectrum.*

How does this improve population health?
*We highlight the burden of housing insecurity and associated social needs among urban ED patients. Our findings suggest opportunities for ED-based interventions.*

### Survey Development

Survey administration, development, and validation is described in a prior manuscript.[32] The survey instrument used questions from two social needs screening tools: the Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences (PRAPARE), developed by the National Association of Community Health Centers,[33] and the Accountable Health Communities (AHC) Health-Related Social Needs Screening Tool, developed by the Centers for Medicare and Medicaid Services.[34] The full survey instrument is available in Appendix A.

### Housing Categories

We divided respondents into three housing categories: homeless, unstably housed, and stably housed. The questions defining each category were selected from the two surveys mentioned above with additional questions developed by an expert committee to better understand our population's housing status. In accordance with standard definitions of homelessness, patients were considered to be experiencing homelessness if they responded "Yes" to any of the following statements: "I do not have housing;" "I do not have a steady place to live;" "I am currently homeless;" or "Last night I stayed at a shelter, housing for homeless persons, a location not meant for human habitation, or a friend/family member's room/apartment."

Patients were considered unstably housed if they answered "Yes" to any of the following statements: "I am worried about my housing"; "I have a place to stay, but I am worried about losing it"; "I have moved three or more times in the last 12 months"; "I had to move in with other people in the last 12 months because of housing problems"; or "I am unable to stay in current place for more than 90 days." If patients answered "No" to all statements, they were considered to be stably housed.

### Survey Administration and Data Abstraction

Patients were recruited in four-hour blocks of time covering all times of day, for a total of two full weeks (14 days, 24 hours/day) between June–August 2018. Trained research assistants (RA) approached patients during their ED visit and obtained verbal consent using a standardized script. The RAs systematically approached patients in order of arrival time and, when possible, returned to patients who were unavailable at the time of the initial approach. During study blocks, RAs were not able to approach every eligible patient who was registered due to time constraints. Eligible patients who were not approached were included in an analysis of non-respondents.

Using a password-protected tablet, survey responses from participants were input directly into REDCap, a secure electronic data capture system[35,36] hosted at Alameda Health System. The RAs read the questions aloud or participants completed the survey directly on the tablet; RAs were bilingual Spanish and English speakers. We excluded non-English or Spanish speakers as the hospital interpreters were not available for research purposes. Trained abstractors documented arrival and discharge times, disposition, medical history, prior ED utilization, and past admissions from the electronic health record (EHR) (Wellsoft Corporation, Somerset, NJ) during a standardized chart review.

### Outcomes

The primary outcomes were the proportion of homeless, unstably housed, and stably housed patients in our cohort. Secondary outcomes included demographics and social needs among patients in each housing category. We also used regression analysis to control for demographic characteristics to explore the graded risk of social needs along the housing spectrum.

### Data Analysis

For each housing category, we calculated standard descriptive statistics. We reported continuous variables as medians and means and reported categorical variables as proportions or percentages. We made comparisons by using chi-square, ANOVA, and Mann-Whitney tests between outcome variables. We considered $P < .05$ to be significant for comparisons between data points.

For all individuals without any missing values ($n = 714$), we used a separate logistic regression for each social factor, where the social factor was regressed on housing status as well as adjusting for the following covariates: age; gender; race/ethnicity; education; primary language; English proficiency; veteran status; insurance; disability; and past medical history. The outcomes were assumed to be conditionally linear in their relationship to housing status with the link function. The estimated coefficient was associated with housing status for all 17 regressions. In addition, a permutation test was performed where over 500 iterations, the housing status variable was randomly shuffled, thereby breaking any association between housing status and the various outcomes of interest. The regressions were again used in each of the 500 iterations, and we compared the observed statistics from the un-permuted data to the null distribution created by the random permutations.

We performed a propensity score analysis using the EHR to determine whether the survey respondents were substantively different from patients who were potentially eligible but did participate in the survey. We included patients who were approached but declined to participate, as well as potentially eligible patients who were not approached. If patients were ineligible once approached (did not speak English or Spanish, had altered mental status, or were critically ill), they were not included in the analysis of non-respondents. Respondents were randomly selected and paired 1:1 with non-respondents matched by hour of arrival. The propensity score analysis included the following covariates: age; gender; acuity; language; race; insurance type; disposition; past medical history; whether the patient was on a psychiatric hold or in legal custody; homelessness documented in the chart; and ED and hospital admissions in the 12 months prior to study visit. We performed analyses using R Core Team (2017) (R Foundation for Statistical Computing, Vienna, Austria) and Stata version 15.1 (StataCorp LLC, College Station, TX). Incomplete surveys were not included in the analyses.

## RESULTS

During the study period, there were 2,573 ED visits from 2,357 unique patients. Of these, 1,522 patients were approached and screened for survey administration, and 1,263 were deemed eligible. Of the 1,263 eligible patients, 758 (60.0%) completed the survey, 478 declined, and 27 started but did not complete the survey. Among respondents, 40% identified as Latinx, 39% Black, 15% White, 5% Asian, and 8% other race/ethnicities. The median age was 42 years (interquartile range [IQR]: 29-57) and 54% were male.

Of the 758 patients who completed the survey, 281 (37.1%) were housed, 213 (28.1%) were unstably housed, and 264 (34.8%) were homeless. There were significant differences across all demographic variables analyzed by housing status (Table 1) other than veteran status. Notable

**Table 1.** Baseline characteristics of all respondents by housing status.

| Sociodemographic characteristics | Overall N = 758 | | Housed N = 281 (37.1%) | | Unstably housed N = 213 (28.1%) | | Homeless N = 264 (34.8%) | | *P* value |
|---|---|---|---|---|---|---|---|---|---|
| Age group | | | | | | | | | ***P* <0.001** |
| 18 - 24 years | 100 | 13.2% | 44 | 15.7% | 20 | 9.4% | 36 | 13.6% | |
| 25 - 54 years | 439 | 57.9% | 139 | 49.5% | 145 | 68.1% | 155 | 58.7% | |
| 55 - 64 years | 138 | 18.2% | 55 | 19.6% | 32 | 15.0% | 51 | 19.3% | |
| > 64 years | 81 | 10.7% | 43 | 15.3% | 16 | 7.5% | 22 | 8.3% | |
| Male | 410 | 54.1% | 130 | 46.3% | 113 | 53.1% | 167 | 63.3% | ***P* < 0.001** |
| Race/Ethnicity | | | | | | | | | ***P* < 0.001** |
| Black/African American | 294 | 38.8% | 97 | 34.5% | 54 | 25.4% | 143 | 54.2% | |
| Latinx | 305 | 40.2% | 119 | 42.3% | 121 | 56.8% | 65 | 24.6% | |
| White | 112 | 14.8% | 44 | 15.7% | 29 | 13.6% | 39 | 14.8% | |
| Asian | 39 | 5.1% | 18 | 6.4% | 7 | 3.3% | 14 | 5.3% | |
| Other | 59 | 7.8% | 23 | 8.2% | 10 | 4.7% | 26 | 9.8% | |
| Education | | | | | | | | | ***P* < 0.001** |
| Less than a high school degree | 210 | 27.7% | 61 | 21.7% | 83 | 39.0% | 66 | 25.0% | |
| High school diploma or GED | 260 | 34.3% | 97 | 34.5% | 55 | 25.8% | 108 | 40.9% | |
| More than high school | 281 | 37.1% | 122 | 43.4% | 73 | 34.3% | 86 | 32.6% | |
| Median Income (IQR) | | | 20,000 | 11,000-45,000 | 18,000 | 10,000-28,500 | 11,000 | 1,000-21,000 | ***P* < 0.001** |
| Primary Language | | | | | | | | | ***P* < 0.001** |
| English | 518 | 68.3% | 197 | 70.1% | 100 | 46.9% | 221 | 83.7% | |
| Spanish | 216 | 28.5% | 76 | 27.0% | 105 | 49.3% | 35 | 13.3% | |
| Other | 22 | 2.9% | 8 | 2.8% | 7 | 3.3% | 7 | 2.7% | |
| English-speaking proficiency (self-assessed) | | | | | | | | | ***P* < 0.001** |
| Well/Very well | 586 | 77.3% | 225 | 80.1% | 124 | 58.2% | 237 | 89.8% | |
| Not well/Not at all | 168 | 22.2% | 54 | 19.2% | 89 | 41.8% | 25 | 9.5% | |
| Veteran | 26 | 3.4% | 8 | 2.8% | 7 | 3.3% | 11 | 4.2% | *P* = 0.91 |
| Main Insurance | | | | | | | | | ***P* < 0.001** |
| None | 58 | 7.7% | 26 | 9.3% | 20 | 9.4% | 12 | 4.5% | |
| Medi-Cal | 351 | 46.3% | 104 | 37.0% | 95 | 44.6% | 152 | 57.6% | |
| Medicare | 114 | 15.0% | 56 | 19.9% | 19 | 8.9% | 39 | 14.8% | |
| Private | 176 | 23.2% | 64 | 22.8% | 65 | 30.5% | 47 | 17.8% | |
| Other public insurance | 59 | 7.8% | 31 | 11.0% | 14 | 6.6% | 14 | 5.3% | |
| Physical or mental disability affecting activities of daily living | 93 | 12.3% | 34 | 12.1% | 47 | 22.1% | 12 | 4.5% | ***P* < 0.001** |

*GED,* general education development; *IQR,* interquartile range. Bold *P*-values indicate statistical significance.

disparities in demographic characteristics by housing category compared to the study population as a whole included the following: a higher proportion of patients aged 25-54 years who were unstably housed (68.1% vs 57.0%); male patients experiencing homelessness (63.3% vs 54.1%); Black patients experiencing homelessness (54.2% vs 38.8%), Latinx patients who were unstably housed (56.8% vs 40.2%), and Spanish-speaking patients who were unstably housed (49.3% vs 28.5%). Thirty-five (13.3%) of the 264 PEH in our study had homeless or housing instability noted in the chart, and only one (0.4%) of the unstably housed patients had any housing instability documented in their EHR.

The healthcare utilization of patients by housing status was notable for a higher median number of ED visits in the 12 months preceding the study among PEH (median 2, IQR: 2-5), compared to unstably housed (median 2, IQR: 1-3) and housed patients (median 2, IQR: 1-3), *P* = 0.02. There were no differences in hospitalization rates by housing category in the year prior to survey administration (Table 2). We found significant differences in disposition from the study ED visit by housing category at the index visit, however with higher rates of admission among housed patients (14.2%) compared to unstably housed (7.0%) and PEH (7.6%), and higher rates of disposition to psychiatric facilities among patients experiencing homelessness (3.4%) compared to unstably housed (0.0%) and housed patients (0.1%), *P* <0.001. More homeless patients (4.5%) were in custody at the time of their ED visit compared to unstably housed (1.4%) and housed patients (1.1%), *P* < 0.02.

**Table 2.** Healthcare usage and medical history by housing status.

| | Housed<br>N = 281 | | Unstably housed<br>N = 213 | | Homeless<br>N = 264 | | |
|---|---|---|---|---|---|---|---|
| Characteristic | n | % | n | % | n | % | *P* value |
| Health and healthcare usage characteristics - chart review | | | | | | | |
| ED visits in past 12 months, median (IQR) | 2 | (1-3) | 2 | (1-3) | 2 | (1-5) | ***P*=0.017** |
| Hospitalizations in past 12 months, median (IQR) | 0 | (0-0) | 0 | (0-0) | 0 | (0-0) | *P=0.062* |
| Disposition | | | | | | | ***P*<0.001** |
| Hospital admission | 40 | 14.2% | 15 | 7.0% | 20 | 7.6% | |
| Psychiatric admission | 1 | 0.4% | 0 | 0.0% | 9 | 3.4% | |
| Home | 226 | 80.4% | 190 | 89.2% | 216 | 81.8% | |
| Other | 14 | 5.0% | 8 | 3.8% | 19 | 7.2% | |
| In custody | 3 | 1.1% | 3 | 1.4% | 12 | 4.5% | ***P*=0.016** |
| Past medical history (last 5 visits) | | | | | | | |
| Hypertension | 99 | 35.2% | 62 | 29.1% | 83 | 31.4% | *P=0.335* |
| Diabetes | 45 | 16.0% | 41 | 19.2% | 42 | 15.9% | *P=0.555* |
| Stroke | 15 | 5.3% | 7 | 3.3% | 7 | 2.7% | *P=0.234* |
| Other heart disease | 27 | 9.6% | 21 | 9.9% | 19 | 7.2% | *P=0.505* |
| COPD | 17 | 6.0% | 7 | 3.3% | 10 | 3.8% | *P=0.270* |
| HIV | 5 | 1.8% | 3 | 1.4% | 7 | 2.7% | *P=0.597* |
| Depression or anxiety | 32 | 11.4% | 28 | 13.1% | 42 | 15.9% | *P=0.299* |
| Bipolar disorder | 6 | 2.1% | 6 | 2.8% | 18 | 6.8% | ***P*=0.012** |
| Schizophrenia | 2 | 0.7% | 4 | 1.9% | 20 | 7.6% | ***P*<0.001** |
| PTSD | 2 | 0.7% | 4 | 1.9% | 8 | 3.0% | *P=0.133* |

*IQR,* interquartile range; *COPD,* chronic obstructive pulmonary disease; *HIV,* human immunodeficiency virus; *PTSD,* post-traumatic stress disorder. Bold *P* values indicate values that are statistically significant.

Table 3 shows the social, emotional, and substance use needs of patients by housing category. Across each category of social needs, emotional stress and trauma, and substance use history, the prevalence increased across the housing spectrum, with housed being the lowest, followed by unstably housed, followed by homeless with the highest prevalence.

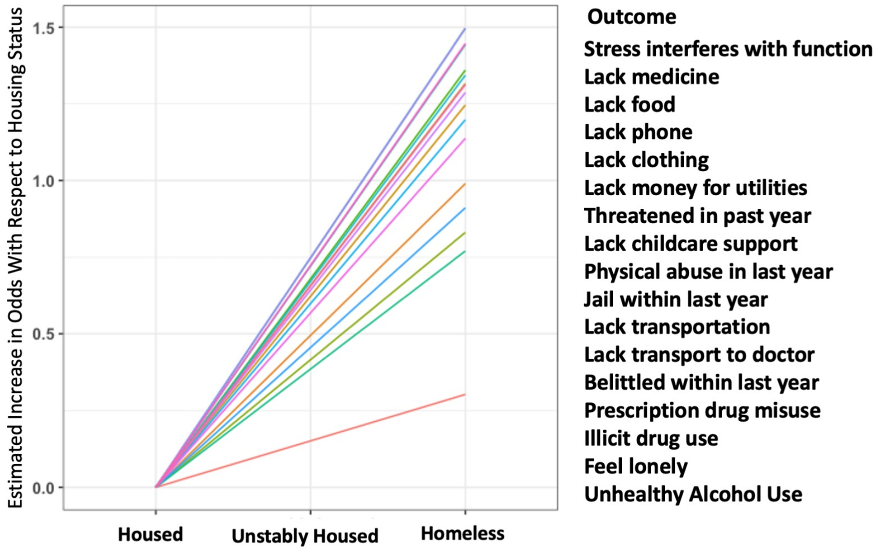
We reported the estimated coefficient associated with housing status for all 17 regressions, and the resulting lines are visualized in Figure 1. Each social factor was associated with increased risk as patients progressed from housed to unstably housed, with the highest risk for PEH. The regressions were again used in each of the 500 iterations, and the observed coefficient statistics compared to the null distribution created by the random permutations, which can be seen in Appendix B. When randomly inserting housing status, the distribution of coefficients for all of the social needs variables were significantly different than the observed coefficient, indicating a significant association with housing status for all of the analyzed social needs.

**Table 3**. Social and emotional needs by housing status included in regression analysis.

| Characteristic | Housed<br>N = 281 n | Housed<br>N = 281 % | Unstably housed<br>N = 213 n | Unstably housed<br>N = 213 % | Homeless<br>N = 264 n | Homeless<br>N = 264 % | *P* value |
|---|---|---|---|---|---|---|---|
| Health and social needs characteristics - survey responses | | | | | | | |
| Unable to afford food in past 12 months | 27 | 9.6% | 58 | 27.2% | 102 | 38.6% | ***P* < 0.001** |
| Unable to afford clothing in past 12 months | 19 | 6.8% | 43 | 20.2% | 81 | 30.7% | ***P* < 0.001** |
| Unable to afford medicine or healthcare in past 12 months | 28 | 10.0% | 53 | 24.9% | 99 | 37.5% | ***P* < 0.001** |
| Unable to afford a telephone in past 12 months | 22 | 7.8% | 45 | 21.1% | 80 | 30.3% | ***P* < 0.001** |
| Utilities threatened to be shut off in past 12 months | 22 | 7.8% | 49 | 23.0% | 78 | 29.5% | ***P* < 0.001** |
| Unable to afford childcare in past 12 months | 9 | 3.2% | 14 | 6.6% | 26 | 9.8% | ***P* = 0.03** |
| Transportation barriers to medical care in past 12 months | 33 | 11.7% | 67 | 31.5% | 111 | 42.0% | ***P* < 0.001** |
| Transportation barriers to non-medical appointments in past 12 months | 33 | 11.7% | 72 | 33.8% | 122 | 46.2% | ***P* < 0.001** |
| Social and emotional health | | | | | | | |
| See or speak to people close to you less than twice per week | 76 | 27.0% | 96 | 45.1% | 125 | 47.3% | ***P* < 0.001** |
| Feel stress "quite a bit" or "very much" of the time in the past 12 months | 62 | 22.1% | 81 | 38.0% | 157 | 59.5% | ***P* < 0.001** |
| Incarcerated for 2 or more nights in past 12 months | 14 | 5.0% | 12 | 5.6% | 49 | 18.6% | ***P* < 0.001** |
| Emotional and physical abuse | | | | | | | |
| Experienced physical abuse in the past 12 months | 21 | 7.5% | 32 | 15.0% | 69 | 26.1% | ***P* < 0.001** |
| Talked down to or insulted in the past 12 months | 61 | 21.7% | 72 | 33.8% | 131 | 49.6% | ***P* < 0.001** |
| Have been threatened in the past 12 months | 16 | 5.7% | 29 | 13.6% | 69 | 26.1% | ***P* < 0.001** |
| Substance use history* | | | | | | | |
| Unhealthy alcohol use | 92 | 32.7% | 87 | 40.8% | 117 | 44.3% | ***P* = 0.02** |
| Unhealthy prescription drug use | 21 | 7.5% | 28 | 13.1% | 53 | 20.1% | ***P* < 0.001** |
| Unhealthy illegal drug use | 30 | 10.7% | 38 | 17.8% | 81 | 30.7% | ***P* < 0.001** |

*Unhealthy substance use determined using National Institute on Drug Abuse Single-Item Screening Question.

Figure 1. Results from regression analysis and estimated coefficients associated with housing status.



Outcomes on the right side of the figure correspond in order to the diagonal lines in the figure from top to bottom. Estimated increase in odds of corresponding social needs, controlling for race/ethnicity, age, education, language, insurance, disability, and medical co-morbidity, with respect to housing category.

**Figure 1.** Results from regression analysis and estimated coefficients associated with housing status.

The full results of the propensity score analysis were published in a prior manuscript; the distribution of scores grouped toward the middle suggested that the respondents and non-respondents were similar with regard to baseline characteristics.[32]

## DISCUSSION

We found that the majority of patients in our study faced homelessness acutely or imminently, with 37% of ED patients experiencing homelessness and 28% who were unstably housed. This is a much higher prevalence than in previous ED studies.[13,37,38] This higher prevalence is likely explained by several factors, some of which are unique to our ED and part of the country. Our study takes place in an urban safety-net ED in a geographic region that has high rates of homelessness and housing instability. It is important to note that while this may be a finding that may not be applicable to all EDs, the high rates of housing instability and social needs among patients in our ED highlights the important role of safety-net EDs for vulnerable communities. Given the stark disparities in the US healthcare system, our work is likely generalizable to many EDs serving similar populations, but the findings may be less informative for EDs serving more privately insured patients or in parts of the country with lower rates of homelessness. Moreover, the observation of a graded risk of housing associated with increasingly prevalent social needs suggests that developing ED-based interventions for patients who are unstably housed may be particularly important areas for future work.

To intervene on behalf of these particularly vulnerable patients, we must first recognize and identify them. There was a large discrepancy between the housing category identified in the study and what was documented in the study participants' corresponding medical charts: <1% in the unstably housed group and 13% in the homeless group had documentation in the EHR correctly reflecting their housing status. Screening for housing instability is lacking in most EDs, and screening tools to ask about housing instability, perhaps by including the questions used in this study, could be integrated into ED-based screening programs.[32,33] Additional questions could prove somewhat burdensome for many EDs without proper support, and further investigation is needed to confirm the optimal number and combination of questions to screen for housing insecurity.

We found notable demographic disparities in patients with unstable housing compared with PEH in our population. Housing insecurity and homelessness have been shown to affect people of color at vastly disproportionate rates, with Black populations estimated to be four times as likely to experience homelessness during their lifetime than their White counterparts and Latinx twice as likely.[17] In our cohort, Latinx patients were disproportionately overrepresented in the unstably housed group. Additionally, patients who were unstably housed were more likely to report a significant disability (22%) compared to PEH (4.5%) and stably housed individuals (12.1%). This is consistent with other data showing that US poverty rates among those with disabilities is more than twice as high as those without.[39] Unstably housed patients also reported lower levels of English proficiency or speaking a primary language other than English, suggesting a higher immigrant population in this group. Research strongly suggests that language barriers adversely affect patients' health status and ability to access healthcare, although less is known about the impact of language on housing stability.[40,41]

Given that housing instability is a graded risk factor, and that there are known poor outcomes for PEH,[6] unstably housed populations are a prime target for harm-reduction interventions. Interventions in the ED could target a specific social need, like food insecurity (present in 27% of unstably housed individuals in our study), or specific social needs most prevalent in a particular community. Case management or other approaches to ensure that patients who are unstably housed do not "fall through the cracks" regarding their social needs could help lessen stressors and possibly prevent progression to homelessness. By identifying and targeting this vulnerable group, ED-based interventions could be targeted to have significant impact on patient outcomes and address needs of patients who are unstably housed before progression to homelessness.

In our ED we have attempted to address social needs holistically, rather than attempting to take on the entirety of a patient's housing needs from a brief ED visit. Realistically, finding permanent supportive housing is extremely complicated, and is an unreasonable expectation to place on emergency clinicians. Rather, we have modified our approach to target specific needs of our population who are experiencing homelessness or are unstably housed. We do have a general approach to PEH that includes a partnership with social work and local housing organizations, but it is often more practicable to address individual needs. While this approach may only be related to some of the underlying social issues, EDs should consider addressing some of the specific needs of patients given the complexities of the housing crisis — especially in urban areas with large homeless and unstably housed populations. For example, our social work and substance use disorder treatment teams routinely work to provide PEH and unstably housed patients with food and clothing, thereby integrating individual needs while seeking temporary emergency shelter placement if patients are agreeable. Additionally, our approach to these interventions is specifically trauma informed; support staff all receive training in trauma-informed care, helping us to also consider the past trauma, psychosocial, and emotional needs of our patients when addressing social determinants of health.

The consistent increase in social needs as patients progressed from housed, to unstably housed, to homeless is in line with studies showing that housing stability is a graded risk factor for poorer outcomes among populations outside the ED.[29,42] More research is needed regarding the benefits of ED screening for housing instability, but neglecting to screen for and target the unstably housed, and focusing solely on homelessness, is similar to ignoring angina and only treating the acute heart attack: a missed opportunity for intervention and risk reduction.

## LIMITATIONS

Our study has several important limitations. This data represents a single-center, convenience sample in an urban setting and may not be generalizable to EDs in other settings. There are seasonal variations to homelessness and because our study was conducted in summer months, data may not be representative of housing statistics at other times of the year. Further, only 65% of all patients eligible during study periods were approached. This was mostly due to limited time capacity of RAs, which may have biased who was approached.[32] This data notably includes patients in custody at time of the survey, who are excluded from federal definitions of homelessness. It does not include data from patients who presented medically unstable or unresponsive, or who were unable to complete the survey due to initiation of medical care. It's possible that the sicker patients who were excluded by this study design had even higher levels of homeless and housing instability, given what we know about PEH having a higher burden of illness and mortality.

Another limitation was that surveys were only conducted in English and Spanish, with 17% of screened patients ineligible due to a language barrier. Finally, there is no standard definition of housing instability. As discussed, we made our own screening tool and used a more comprehensive definition than prior studies. The question of how to define and identify housing instability remains central to further work in this area.

## CONCLUSION

In our study sample we found nearly one third of our patient population was unstably housed, and another third was experiencing homelessness. We note important disparities, including higher rates of homelessness among Black patients, and higher rates of unstable housing among Latinx and Spanish-speaking patients. We also found that social, emotional, and substance abuse-related needs increased significantly as housing became more unstable, even when controlling for baseline demographic characteristics.

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# Cultural Humility Curriculum to Address Healthcare Disparities for Emergency Medicine Residents

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**Introduction:** Emergency medicine (EM) residency programs have variable approaches to educating residents on recognizing and managing healthcare disparities. We hypothesized that our curriculum with resident-presented lectures would increase residents' sense of cultural humility and ability to identify vulnerable populations.

**Methods:** At a single-site, four-year EM residency program with 16 residents per year, we designed a curriculum intervention from 2019-2021 where all second-year residents selected one healthcare disparity topic and gave a 15-minute presentation overviewing the disparity, describing local resources, and facilitating a group discussion. We conducted a prospective observational study to assess the impact of the curriculum by electronically surveying all current residents before and after the curriculum intervention. We measured attitudes on cultural humility and ability to identify healthcare disparities among a variety of patient characteristics (race, gender, weight, insurance, sexual orientation, language, ability, etc). Statistical comparisons of mean responses were calculated using the Mann-Whitney U test for ordinal data.

**Results:** A total of 32 residents gave presentations that covered a broad range of vulnerable patient populations including those that identify as Black, migrant farm workers, transgender, and deaf. The overall survey response was 38/64 (59.4%) pre-intervention and 43/64 (67.2%) post-intervention. Improvements were seen in resident self-reported cultural humility as measured by their responsibility to learn (mean responses of 4.73 vs 4.17; $P < 0.001$) and responsibility to be aware of different cultures (mean responses of 4.89 vs 4.42; $P < 0.001$). Residents reported an increased awareness that patients are treated differently in the healthcare system based on their race ($P < 0.001$) and gender ($P < 0.001$). All other domains queried, although not statistically significant, demonstrated a similar trend.

**Conclusion:** This study demonstrates increased resident willingness to engage in cultural humility and the feasibility of resident near-peer teaching on a breadth of vulnerable patient populations seen in their clinical environment. Future studies may query the impact this curriculum has on resident clinical decision-making. [West J Emerg Med. 2023;24(5.1)10–17.]

## INTRODUCTION

The healthcare of vulnerable populations disproportionately falls to the emergency department (ED), which has become the safety net for many local communities.[1] When patients access care through the ED, they often encounter emergency medicine (EM) trainees as a part of their care team. To provide equitable care it is important for EM trainees to understand that healthcare inequities and social determinants of health impact the diverse populations that they will encounter while working in the ED. While most agree that knowledge about cultural issues is important when providing clinical care, many trainees feel unprepared and unequipped to address the social needs of the populations they serve.[2]

The Accreditation Council for Graduate Medical Education (ACGME) Common Program Requirements include trainee recognition and management of healthcare disparities through the domains of interpersonal and communication skills, systems-based practice, and quality improvement.[3] The ACGME's 2018 Clinical Learning Environment Report (CLER) highlighted that "across most clinical learning environments, formal education and training on cultural competency did not address the specific populations served by the institution."[4] Additionally, the report noted that programs with a healthcare disparities curriculum focused on generic experiences and did not address the specific populations served by the physicians in those institutions.

Despite this call to action, there is little information about how to help trainees recognize the breadth of disparities that they encounter at the bedside.[5] Anecdotally, healthcare disparities in the medical education curriculum are taught as long-form lectures with PowerPoint presentations, typically with an expert as the teacher. This passive approach comes with challenges including lack of learner engagement and difficulty achieving desired educational objectives and outcomes.[6] Alternate strategies include community-based efforts, simulation, and case-based learning. However, these approaches are time- and resource-intensive and therefore not possible for many training programs.

The approach to addressing health disparities and social determinants of health in medical training programs has largely focused on teaching cultural competency. While cultural competency focuses on delivering quality care to patients with diverse beliefs, attitudes, values, and behaviors it has also been criticized as being one dimensional, promoting finite knowledge, and having a discrete endpoint.[7-9] The framework of cultural humility is an alternative approach. As defined by Tervalon and Murray-Gargia, cultural humility is "a lifelong commitment to self-evaluation and self-critique, to redressing the power imbalances in the patient-physician dynamic, and to developing mutually beneficial and non-paternalistic clinical and advocacy partnerships with communities on behalf of individuals and defined populations."[10] Cultural humility emphasizes a growth mindset with a lifelong dynamic process of self-reflection.

*Population Health Research Capsule*

What do we already know about this issue?
*Emergency medicine residency programs have variable approaches to educating residents on recognizing and managing healthcare disparities.*

What was the research question?
*Can residents identify vulnerable patient populations and use cultural humility in a resident-led lecture to address healthcare disparities?*

What was the major finding of the study?
*Residents demonstrated increased cultural humility ($P < 0.001$) and awareness of patient bias due to race and gender ($P <0.001$).*

How does this improve population health?
*The long-term desired outcome is for residents to address biases in healthcare delivery and reduce disparities through equitable patient care.*

Previous studies describing cultural humility curricula with family medicine residents, pediatric residents, physical therapy students, and medical students have shown positive results.[11-14] As described in those studies, cultural humility is taught through instructor-led presentations, and cases are drawn from simulation, patient panels, or home visits. Our study introduces a novel healthcare disparities curriculum based on resident-led presentations, drawn from their own clinical encounters, that encourage the practice of self-directed learning and cultural humility. Our first hypothesis was that a resident-led lecture series that sought to address patients' social needs within their local community would increase residents' appreciation for cultural humility. Our second hypothesis was that residents are capable of identifying patient populations that experience healthcare disparities from the community that they serve in their ED.

## METHODS

### Study Design

This prospective observational study from July 1, 2019–June 30, 2021 examines the impact of a curriculum intervention on EM residents' appreciation for cultural humility and attitudes toward healthcare disparities over two academic years by administering a pre- and post-intervention, self-reported survey. This study was deemed exempt by the University of Michigan IRB (HUM 00164660).

### Population

Participants in this study were EM residents in a single, four-year EM residency program with 16 residents per year. These residents rotate at three core training sites: a tertiary care academic ED; a small city community ED; and an urban county ED. At this program, EM residency didactics are held once weekly. All residents are required to attend at least 70% of the sessions.

### Curricular Design

We used Kern's six-step model for medical education curriculum development.[15] We used the ACGME CLER report and annual program review as our general needs assessment. A specific-needs assessment electronic survey was deployed to current residents to identify specific knowledge and skills gaps. We identified four barriers to asking patients about their social needs: 1) fear of threatening the doctor/patient relationship; 2) lack of knowledge of the resources available to patients; 3) lack of knowledge of the community they serve; and 4) limited time with the patient in an ED encounter.

Following this initial survey, we designed a novel longitudinal curriculum integrated into the existing weekly EM residency didactic structure. We proposed a case-based, near-peer teaching curriculum (ie, learner as teacher) and centered our curriculum on junior residents as content developers and presenters. As part of our intervention, in the spring each rising second-year resident was required to sign up to give a 15-minute presentation on healthcare disparities in the upcoming academic year. A total of 16 15-minute lectures were scheduled for each year.

Prior to the start of each academic year, rising second-year residents were given a document outlining the background and objectives for the lecture series (Appendix 1). The learner-teachers were asked to 1) briefly describe a patient encounter where observed inequities challenged the statement, "Quality care is equitable care"; 2) describe how to increase awareness of patients at risk for disparate care; and 3) provide actionable information on at least one institutional, community, or state resource that could be used to address the observed barrier. During their presentation, residents were expected to provide a brief overview of the disparity and available local resources, and to conclude with a facilitated group discussion. A running list of previous lecture topics was provided. While repeating a similar topic was not prohibited, residents were instructed to focus on a unique intersectional perspective to avoid duplication.

From July 2019–February 2020, all presentations were given in person. Like all other resident didactics, the format was switched to an online virtual format in March 2020 as a result of the coronavirus 2019 pandemic. The lectures were temporally spaced to allow integration of healthcare disparities topics into the broader curriculum and to avoid isolating these talks on a specific day. We felt it was important to emphasize that education on healthcare disparities had equal importance to education on clinical and scientific topics within the field of EM. During the first year of implementation, residents were scheduled to present on different weeks. To smooth the scheduling demands, the following year the lectures were scheduled in pairs.

### Assessment

We assessed the impact of the curriculum via a pre- (June 2019) and post- (June 2021) online survey tool (Qualtrics XM, Provo, UT) that measured residents' attitudes on cultural humility and their ability to identify healthcare disparities among a variety of patient characteristics (race, gender, weight, insurance, sexual orientation, language, ability, etc) (Appendix 2). All 64 current residents at each time point — at the time of study implementation and at the conclusion of the assessment — were invited to complete the surveys. To maintain respondents' anonymity, we did not collect their demographics.

To maximize internal validity and minimize self-report bias, we created the survey by combining questions from two previously validated and published studies that were then reviewed by a group of EM medical education experts prior to survey administration.[16,17] Questions were selected by study authors with content expertise to reflect the aims of the study hypothesis. One set of questions was used to measure their cultural humility by asking residents about their cultural awareness, attitudes, and behaviors using a five-item Likert scale. Another set of questions asked residents about their perceptions of the differences in care patients received in the ED based on their identities, using a four-item scale of 0-25% of the time through 75-100% of the time. Lastly, in the post-implementation survey, additional questions were included for formal evaluation and assessment of the curriculum and to allow for narrative feedback. We reviewed this feedback for themes and have included representative narratives in the discussion.

### Analysis

We performed statistical comparisons of mean responses using Student's *t*-test, and did comparisons between pre- and post-intervention survey response distributions using the Mann-Whitney U test (also known as the Wilcoxon rank-sum test) for unpaired ordinal data. All data cleaning and statistical analysis was done using R (The R Foundation for Statistical Computing, Indianapolis, IN).[18] We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for this observational study.[19]

## RESULTS

From 2019 to 2021, 32/32 (100%) second-year residents presented on 28 unique healthcare disparities topics covering a broad range of vulnerable patient populations (Table 1). During the two-year study period, 16/24 (66%) months had at least one resident presentation scheduled for the lecture series. The overall survey response rate was 38/64 (59.4%) pre-intervention and 43/64 (67.2%) post-intervention (Table 2). Responses were obtained from residents at all levels of training.

Questions about cultural humility, specifically cultural attitudes and behavior, that had higher rates of self-reported behavior following the curriculum intervention include "I ask patients to tell me about their own explanations of illness" ($P$=0.030); "I adapt my care to patient's preferences" ($P$=0.030); "I welcome feedback from co-workers about how to relate to patients from different cultures" ($P$=0.009); "I have the responsibility to learn about all the different groups of people that make up society" ($P$<0.001); and "I should be aware of the different cultures that exist within my practice" ($P$<0.001) (Figure 1). Residents reported a statistically significant increase in concern that patients are treated differently in the healthcare system based on their race ($P < 0.001$) and gender ($P < 0.001$) (Figure 2). The remaining survey questions, although not statistically significant at the 5% level, trended in a similar direction (Appendix 3).

At the end of the study period, 38 of 42 residents (90.5%) reported that the lecture series had changed their approach to caring for patient populations who are marginalized, 30 (71.4%) reported increased knowledge with regard to caring for patient populations who are marginalized, 30 (71.4%) reported increased awareness of their current knowledge gaps in caring for patient populations who are marginalized, and 26 (54.2%) reported an increased desire to learn more about caring for patient who are marginalized.

We also obtained qualitative feedback regarding the curriculum design, and representative comments are included below.

Representative Positive Comments:

"It was great to see so many different topics presented.

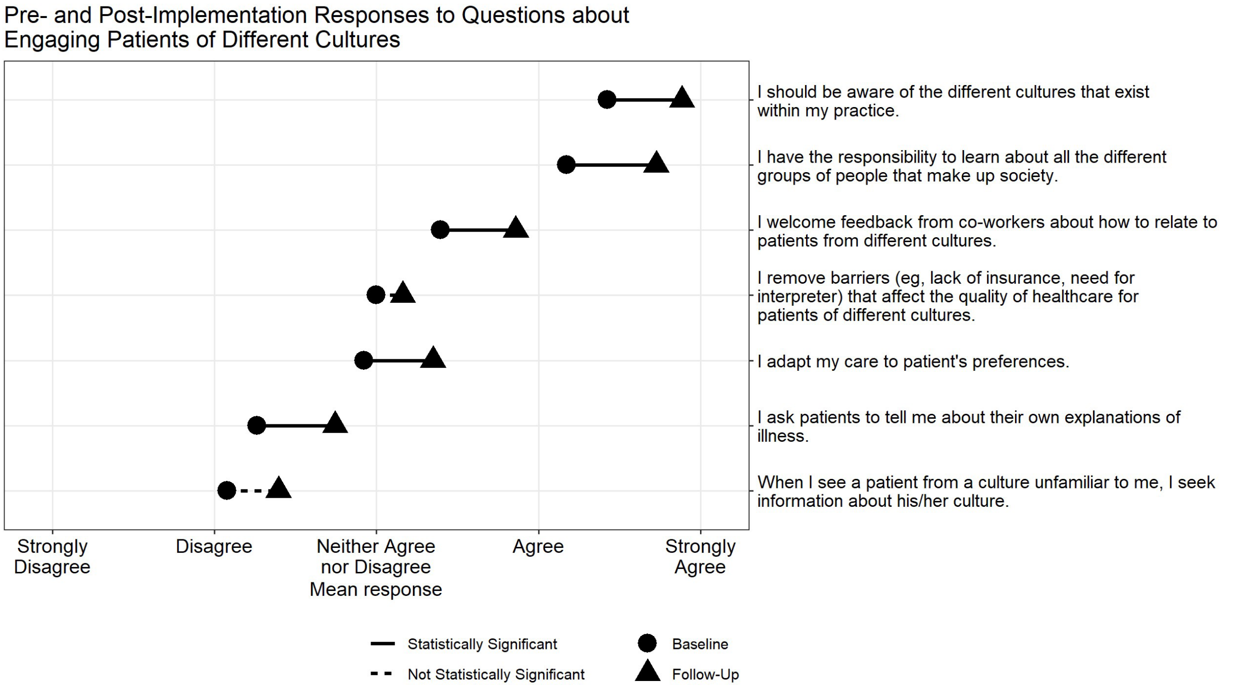
**Table 1.** Lecture titles. Second-year residents presented 32 lectures between 2019–2021, covering 28 unique topics.

| | |
|---|---|
| Advocating for Incarcerated Populations | Healthcare Disparities in Athletes |
| Alcohol Use | Health Literacy |
| Alcohol Use Disorder * | Housing Insecurity |
| Amish Healthcare | Identifying Sex Trafficking in the Emergency Department |
| Care of Patients with Sickle Cell Disease | Immigrant and Latino Healthcare/Border Medicine |
| Caring for Incarcerated Patients * | Mental Health and Minorities |
| Coronavirus Disease 19 Healthcare Disparities | Migrant Farmworkers |
| Coronavirus Disease 19-Related Inequities * | Non-English Speaking Patients and Interpreters |
| Culture Differences in Pain Expression and Emergency Department Pain Management | Patient requesting Clinician Based on Bias |
| Deaf/Hard-of-hearing Health Challenges in the Time of Coronavirus Disease 19 | Patients Boarding with Inpatient Psychiatric Needs |
| Disparities in Clinical Trials | Race and Pain Management |
| Disparities in Psychiatric Care | Rural Health Disparities |
| Disparities in Trauma | Social Isolation |
| Financial Barriers | Transgender Care |
| Food Insecurity | Transgender Health * |
| Healthcare Disparities Among Refugee Populations | Transportation |

*Repeated topics.

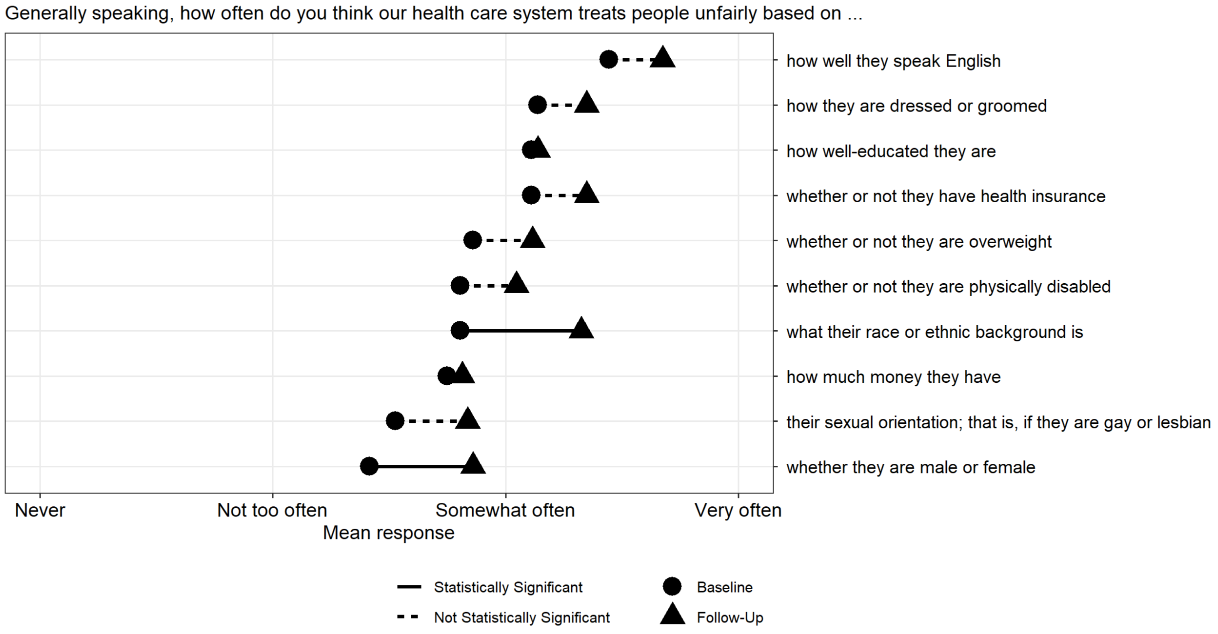
**Table 2.** Resident survey response rates by postgraduate training year during each phase of the study

| | Overall | Pre-intervention survey | Post-intervention survey |
|---|---|---|---|
| n | 84 | 40 | 44 |
| First year (Intern) | 27 (32.5) | 14 (35.0) | 13 (30.2) |
| Second year | 20 (24.1) | 12 (30.0) | 8 (18.6) |
| Third year | 22 (26.5) | 11 (27.5) | 11 (25.6) |
| Fourth year | 14 (16.9) | 3 ( 7.5) | 11 (25.6) |



Statistical Significance calculated by Mann-Whitney U Test
Source: Survey Data

**Figure 1.** Measurement of cultural humility pre- and post- implementation responses.



Statistical Significance calculated by Mann-Whitney U Test
Source: Survey Data

**Figure 2.** Rate of recognizing healthcare disparities pre- and post- implementation responses.

Each presentation included literature or resources that I wasn't previously aware of."

"I felt like I learned pertinent information from these lectures, and it made me proud of my program for actively teaching about these topics."

"I learned a lot from my classmates."

"I am glad this was added into conference."

"[It was] helpful to illuminate ongoing disparities in a multitude of areas and domains."

Representative Critical Comments:

> Some of the lectures definitely could have used more polish and have been better prepared ahead of time, I think lecture quality undermined some of the points - a Zoom lecture has to be fantastic to grab and hold attention; otherwise it gets ignored.
>
> "As many of the higher yield topics are presented, [it is] harder to come up with a good topic."
>
> "Changing the lecture series to a different format (sim/community outreach) could also be interesting."
>
> "I think it would benefit from… few larger lectures, rather than 16, 15-minute lectures [per year]."

## DISCUSSION

In this two-year longitudinal didactic curriculum, second-year EM residents at a four-year academic EM program led self-reflective discussions on healthcare disparities to engage peers on patient encounters in their clinical learning environment. As compared to pre-intervention, residents reported an increased desire to learn about patients at risk for healthcare disparities and a change in their approach to improve care for patients marginalized in the healthcare system. This finding suggests an increase in residents' sense of cultural humility, as the lectures spurred their interest to address knowledge gaps related to these patients. Residents identified a wide range of topics and were able to identify many unique cases where patients were marginalized by the healthcare system.

Importantly, these topics were identified by residents without specific topic selection a priori. We noted a correlation between the curriculum intervention and resident recognition of racial and gender disparities experienced by their patients. A similar increase in recognizing disparities was seen among all historically marginalized groups queried. The statistical differences noted for racial and gender disparities may have been due to their relative frequency in the clinical context. Additionally, these identities may be more readily apparent in clinical encounters compared to an individual's income, level of education, or sexual orientation.

We designed and implemented a unique curriculum that encourages residents to use the fundamentals of cultural humility, rather than cultural competency, to promote learner-directed didactics and introspection. There is a consistent trend away from cultural competency and toward cultural humility.[7,8] Lekas et al emphasizes that training in cultural competency risks stereotyping, stigmatizing, and "othering" of patients and offers little acknowledgment of the intersectionality of multiple marginalized identities. The authors argue that physicians should instead be trained in cultural humility, which focuses on self-reflection, is more patient-centered, addresses a physician's openness to share power with the patient, and emphasizes the goal of learning continuously from their patients.

Anger et al discusses the theoretical differences between cultural humility and cultural competency and underscores the value of shifting to cultural humility. Uniquely, the emphasis on self-reflection in cultural humility facilitates learners to explore their unconscious and conscious biases. Recently, the Association of American Medical Colleges released competencies on diversity, equity, and inclusion that specifically include assessing the practice of cultural humility.[20] Additionally, the ACGME has begun to explore the incorporation of cultural humility into residency education as evidenced by the creation of the Pursuing Excellence Health Care Disparities Collaborative.[21] The goals of this initiative include cultural humility, social determinants of health, and quality improvement.

One study surveying EM residency program directors found that approximately two-thirds of responding programs had cultural competency as part of their curriculum.[22] Similar to what was reported by the ACGME, over 90% of these curricula used generic structured didactics with a focus on race and ethnic disparities. Those authors identified notable gaps in incorporating additional healthcare disparities such as limited English proficiency, gender identity and sexual orientation, and social determinants of health. In a recent study by Ward-Gaines et al, EM residents were exposed to various health equity topics using simulation immersion.[23] Residents reported a greater understanding of various healthcare disparities. While their study described cultural competency outcomes, the authors discussed the importance of self-reflection – a key tenet of cultural humility.

Our study is the first to show how an EM residency can incorporate cultural humility into its didactic curriculum. One important outcome of our curriculum is that residents are exposed to a wide range of topics not limited to race and ethnicity. Residents selected patient populations with disparities defined by social isolation, immigration, incarceration, sexual orientation, language, deafness, and mental health. We believe that this cultural humility-based healthcare disparities curriculum in EM residency programs is a feasible approach that can be implemented into existing didactic structures.

An important feature of our curriculum is the focus on cultural humility, specifically self-reflection and lifelong learning. Residents were encouraged to select clinical encounters where a social determinant of health was a potential barrier to care. They presented the clinical case, and ways to overcome the barriers, to their peers and faculty in a flipped classroom style — with the learner as a teacher. Importantly, the case-based model encouraged critical self-reflection as trainees were asked to share real-life episodes of unequal care encountered during their clinical shifts. In addition, they were tasked with discovering and sharing local resources that could be brought to the bedside to address patients' needs in the ED and upon discharge (eg, how to get a peer-recovery coach to come to the ED to counsel and support a post-overdose patient; how to access the local food pantries; how to ask about pronouns when caring for transgender individuals; what local advocacy groups support youth in crisis; etc). After participating in the curriculum, residents reported increased awareness of and concern for individuals marginalized within the healthcare system. While the statistical significance varied in each domain, the trend of increasing concern over time was consistent. In addition, resident responses also revealed increased awareness of their knowledge gaps and a desire to learn more about populations that are marginalized. This is consistent with the goal of cultural humility as a lifelong and dynamic process.

Collectively, these are important skills for emergency physicians to have throughout their career. Emergency physicians may work in various practice settings and are exposed to innumerable cultural customs and changing patient demographics. It is not feasible to achieve a "competency" that is individualized to every patient. An emphasis of learning from the individual patient and self-reflection provides a unique advantage of cultural humility over cultural competency. Future studies may assess this impact through measuring encounter-level outcomes such as resource utilization, connection to community resources, or ED return visits. We have adapted our own healthcare disparities curriculum to encourage more engagement with ED-based operational metrics as stratified by various patient demographics.[24]

## LIMITATIONS

This was an observational study without a control group to assess the impact that time had over the two-year study period. Statistical analysis was limited by a small sample size precluding any subset analysis by residency cohort. Individual-level impact was not assessed as respondent identifiers were not recorded. Changes in behavior were self-reported, and we did not assess change in care delivery. It is possible that some differences in responses of our pre- and post- implementation survey were due to increased awareness of healthcare disparities from COVID-19 and the increased recognition of structural racism in the United States that was highlighted by the disproportionate incidence of mortality in Black patients.[25]

Additionally, our curriculum was designed and initially implemented roughly nine months before the regional impact of COVID-19 required that all educational content to be converted from in person to a virtual format. Anecdotally, the switch to virtual format led to a tendency for more time to be filled with presentations, which left less time available for discussion. We anticipate that had this transition not occurred, the curriculum would have had a greater impact.

## CONCLUSION

This resident-driven lecture series empowered learners to identify and present on healthcare disparities relevant to their clinical learning environment. Over the study period, residents were encouraged to engage as lifelong learners. Residents demonstrated growth in cultural humility through self-reflection and lifelong learning, and they gained a greater appreciation for existing healthcare disparities. We believe future curricula should reinforce a longitudinal, integrated approach, and attempt to assess curriculum impact on direct patient care.

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# Disparate Utilization of Urine Drug Screen Nationwide in the Evaluation of Acute Chest Pain

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**Introduction:** Urine drug screens (UDS) have unproven clinical utility in emergency department (ED) chest pain presentations. A test with such limited clinical utility may exponentiate biases in care, but little is known about the epidemiology of UDS use for this indication. We hypothesized that UDS utilization varies nationally across race and gender.

**Methods:** This was a retrospective observational analysis of adult ED visits for chest pain in the 2011–2019 National Hospital Ambulatory Medical Care Survey. We calculated the utilization of UDS across race/ethnicity and gender and then characterized predictors of use via adjusted logistic regression models.

**Results:** We analyzed 13,567 adult chest pain visits, representative of 85.8 million visits nationally. Use of UDS occurred for 4.6% of visits (95% CI 3.9%-5.4%). White females underwent UDS at 3.3% of visits (95% CI 2.5%-4.2%), and Black females at 4.1% (95% CI 2.9%-5.2%). White males were tested at 5.8% of visits (95% CI 4.4%-7.2%), while Black males were tested at 9.3% of visits (95% CI 6.4%-12.2%). A multivariate logistic regression model including race, gender, and time period shows significantly increased odds of ordering UDS for Black patients (odds ratio [OR] 1.45 (95% CI 1.11-1.90, p = 0.007)) and male patients (OR 2.0 (95% CI 1.55-2.58, p < 0.001) as compared to White patients and female patients.

**Conclusion:** We identified wide disparities in the utilization of UDS for the evaluation of chest pain. If UDS were used at the rate observed for White women, Black men would undergo nearly 50,000 fewer tests annually. Future research should weigh the potential of the UDS to magnify biases in care against the unproven clinical utility of the test. [West J Emerg Med. 2023;24(5 Supplement)18–23.]

## INTRODUCTION

Multiple prior studies have identified racial and gender disparities in emergency department (ED) testing and care. For example, Black patients have been found to be less likely to receive pain medications for acute pain[1] and less likely to undergo comprehensive evaluations for chest pain.[2] Gender disparities have also been noted, including in the management of coronary artery disease.[3] This is further complicated by the possible role of substance use in the development and evaluation of chest pain and coronary artery disease.

Substance use is a critical area in which to consider disparities in acute care, as there are notable societal biases across race and gender that may adversely affect quality and outcomes. These biases have been seen in the opioid epidemic, including inequity in the management of opioid use disorders.[4] These biases also are entwined with the racialized history of the "War on Drugs" since the 1980s,[5] including unjustified sentencing practices tied to terminology surrounding the use of powder cocaine and crack cocaine. At the same time, minority communities have been found to be significantly less likely to have treatment facilities available for substance use disorder.[6]

Concern for the possibility of cocaine or stimulant ingestion contributing to a patient's chief complaint of chest pain is a commonly cited reason for obtaining a urine drug screen (UDS) in the ED.[7] The UDS tests for metabolites of some common drugs of abuse, including cocaine and amphetamines; however, UDS cannot reliably identify acute intoxication and has a significant false positive rate.[8] Limited existing empirical work has addressed the usefulness of UDS in the evaluation for acute coronary syndrome, and a positive result on a UDS for cocaine or amphetamine has been found to have no predictive power for the presence of coronary artery disease in patients presenting with chest pain.[7] When a test has limited clinical utility, disparities in its use should be viewed with increased scrutiny.

### Goals of This Investigation

Our goal was to explore how often UDS is employed in the evaluation of patients presenting with chest pain in a nationally representative sample of ED visits from 2011 to 2019. We hypothesized that UDS utilization would vary significantly across race and gender.

## METHODS

### Design

This was a repeated cross-sectional analysis of the National Hospital Ambulatory Medical Care Survey (NHAMCS) from 2011 to 2019. The NHAMCS is a large dataset of ED visits across the US, which includes demographic data such as race and gender, chief complaint, and UDS use. The NHAMCS data is publicly available from the National Center of Health Statistics, a component of the US Centers for Disease Control and Prevention (CDC). The NHAMCS data is weighted to create a nationally representative dataset, collected via a systematic sampling of a national population of ED visits.[9]

### Sample

The analysis sample was limited to adult ED visits for patients presenting with chief complaints for chest pain or ischemic heart disease. We identified visits regarding chest pain via the "reason for visit" field reported in the NHAMCS, which is coded according to a "Reason for Visit Classification for Ambulatory Care." The NHAMCS documentation includes the full classification of this coding. Reasons for visit used for inclusion in the study were "chest pain," "chest discomfort," "heart pain," "angina," and "ischemic heart disease." Reason for visit was selected over final diagnosis as we considered this to be more closely reflect the ordering practices of clinicians using information available at the time of ordering.

### Outcomes and Measures

The primary outcome was whether a UDS was ordered for each visit, which is reported as a binary variable. Rates of UDS ordering were stratified across multiple characteristics, including race, gender, and time trends. Data regarding results of the UDS or specific types of drugs tested was unavailable. In the context of sample size limitations, the race variable was categorized using Black or White racial classification as well as ED visits reporting race as "unknown."

### Analysis

Survey weights and complex sample design features were implemented to provide nationally representative estimates from the weighted data, and standard errors were adjusted for complex sampling design. We performed analyses in R 4.0.2 (R Foundation for Statistical Computing, Vienna, Austria). All code to reproduce the results are available on request.

*Population Health Research Capsule*

What do we already know about this issue?
*There is minimal clinical utility of urine drug screens for patients with chest pain. However urine drug screen use may amplify biases in care.*

What was the research question?
*Does ordering of urine drug screens vary for patients presenting with chest pain by race and sex?*

What was the major finding of the study?
*Black male patients had a urine drug screen in 9.3% (95% CI 6.4%-12.2%) of visits for chest pain, compared to 4.6% (CI 3.9%-5.4%) for all patients.*

How does this improve population health?
*Identifying low yield testing that may amplify biases should be a component of interventions targeting health equity.*

## RESULTS

The analysis included 160,526 ED visits (unweighted), including 13,567 chest pain-related visits across nine years, representative of 961 million ED visits (weighted) and 85.8 million ED visits (weighted) for chest pain in that timeframe. Among all ED visits, UDS were ordered for 4.7%. Of the 85.8 million estimated ED visits for chest pain in the study period, for 3.9 million (4.6%) of them a UDS was performed. Table 1 describes the demographics of these ED visits, as well as the subset of visits for chest pain complaints.

The rate of UDS utilization in chest pain visits was 4.6% (95% CI 3.9%-5.4%). White females presenting for chest pain had a UDS rate of 3.3% (95% CI 2.5%-4.2%), while Black females had a rate of 4.1% (95% CI 2.9%-5.2%). White males were tested at 5.8% of chest pain visits (95% CI 4.4%-7.2%), and Black males at 9.3% of chest pain visits (95% CI 6.4%-12.2%). Male patients with unknown race were tested at a rate of 5.3% (95% CI 3.0-7.6%), and female patients with unknown race at a rate of 2.5% (95% CI 1.3%-3.6%) (Figure 1). Across the years of the study, UDS utilization was also noted to be increasing. In 2011, chest pain visits had a UDS

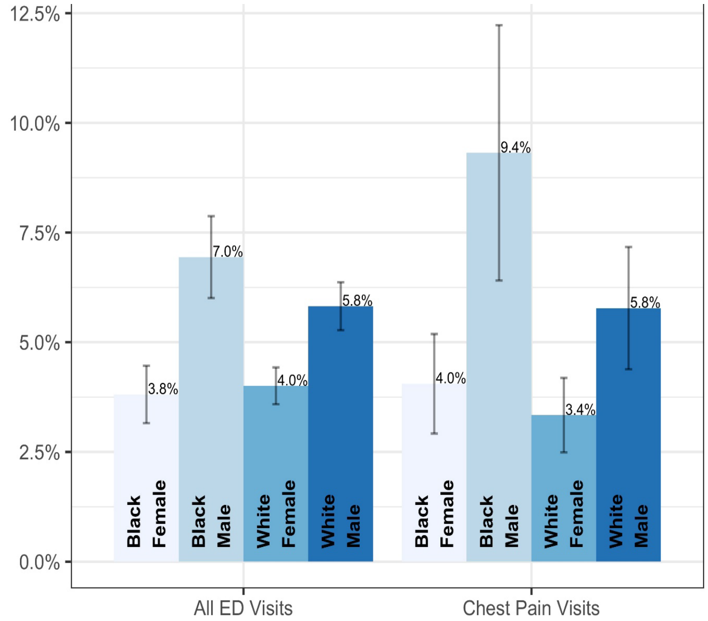

**Figure 1.** Urine drug screen utilization by gender and race, with 95% confidence intervals.

**Table 1.** Characteristics of emergency department visits for chest pain in the 2011-2019 National Hospital Ambulatory Medical Care Survey (weighted counts, rounded to the nearest thousand).

| | All Visits | UDS | Visits for Chest Pain | UDS |
|---|---|---|---|---|
| Age | | | | |
| 18-29 | 240,938,000(25.1%) | 13,013,000(28.6%) | 13,325,000(15.5%) | 703,000(17.7%) |
| 30-39 | 169,990,000(17.7%) | 9,877,000(21.7%) | 13,036,000(15.2%) | 933,000(23.5%) |
| 40-49 | 147,636,000(15.4%) | 8,263,000(18.1%) | 15,379,000(17.9%) | 899,000(22.7%) |
| 50-64 | 201,702,000(21.0%) | 9,932,000(21.8%) | 23,610,000(27.5%) | 1,089,000(27.5%) |
| 65+ | 201,491,000(21.0%) | 4,449,000(9.8%) | 20,485,000(23.9%) | 341,000(8.6%) |
| Race | | | | |
| White | 578,655,000(60.2%) | 27,718,000(60.9%) | 51,050,000(59.5%) | 2,274,000(57.3%) |
| Black/African American | 195,091,000(20.3%) | 9,915,000(21.8%) | 18,230,000(21.2%) | 1,116,000(28.1%) |
| Asian | 14,244,000(1.5%) | 425,000(0.9%) | 1,352,000(1.6%) | 30,000(0.8%) |
| Native American/ Alaska Native | 6,037,000(0.6%) | 414,000(0.9%) | 472,000(0.5%) | 10,000(0.3%) |
| Native Hawaiian/other Pacific Islander | 2,469,000(0.3%) | 107,000(0.2%) | 248,000(0.3%) | 3,000(0.1%) |
| More than one race reported | 2,497,000(0.3%) | 84,000(0.2%) | 211,000(0.2%) | 400(0%) |
| Unknown | 162,763,000(16.9%) | 6,872,000(15.1%) | 14,274,000(16.6%) | 533,000(13.4%) |
| Gender | | | | |
| Female | 550,823,000(57.3%) | 21,121,000(46.4%) | 47,776,000(55.7%) | 1,579,000(39.8%) |
| Male | 410,933,000(42.7%) | 24,412,000(53.6%) | 38,060,000(44.3%) | 2,387,000(60.2%) |
| Disposition | | | | |
| Discharge | 769,389,000(80%) | 25,400,000(55.8%) | 59,113,000(68.9%) | 2,472,000(62.3%) |
| Admit | 157,051,000(16.3%) | 18,259,000(40.1%) | 24,256,000(28.3%) | 1,415,000(35.7%) |
| Transfer | 33,585,000(3.5%) | 1,755,000(3.9%) | 2,325,000(2.7%) | 72,000(1.8%) |
| Died | 1,731,000(0.2%) | 119,000(0.3%) | 141,000(0.2%) | 7,000(0.2%) |
| N (%) | 961,757,000(100%) | 45,533,000(100%) | 85,836,000(100%) | 3,966,000(100%) |

*UDS,* urine drug screen.

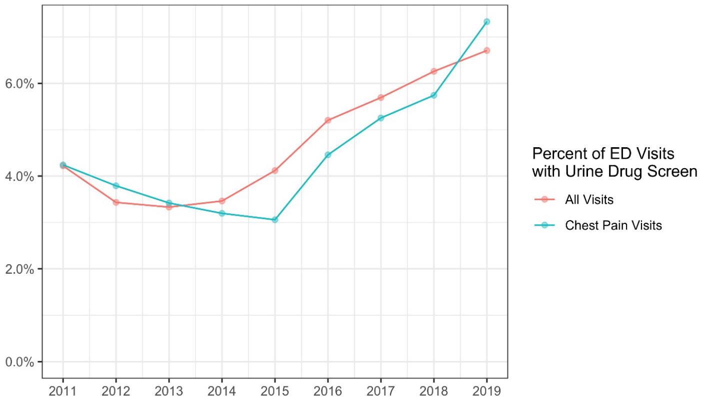

**Figure 2.** Urine drug screen utilization for all visits and among visits for chest pain by year.
*ED,* emergency department.

rate of 4.2%, increasing to 7.3% in 2019. The annual trends are shown in Figure 2.

In a multivariable logistic regression model, including time trends, male gender was associated with increased rates of UDS ordering as compared to female gender (Table 2) (2.00 odds ratio, 95% CI 1.55-2.58). Similarly, Black race was associated with increased odds of UDS ordering as compared to White race (1.45 OR, 95% CI 1.11-1.90).

## DISCUSSION

Despite the lack of clear clinical utility for UDS in the ED evaluation of patients with chest pain, the frequency of UDS testing has grown considerably nationwide and is disproportionately used in the evaluation of Black men with chest pain. Based on the national estimates, if the rate of UDS ordering for Black men were the same as that for White women, Black men presenting to EDs with chest pain would have nearly 50,000 fewer UDS performed per year.

The UDS has poor clinical utility in the ED. In the hospital setting, the drugs tested for vary, but many hospitals perform an immunoassay for metabolites of amphetamines, cocaine, cannabis, opiates, barbiturates, and benzodiazepines. In identifying these metabolites, the urine testing can remain positive for days to weeks after the last use. Additionally, many of the screened drugs have a variety of false positives and false negatives, including common prescribed and over-the-counter medications. In the ED, these characteristics severely limit the ability of the UDS to recognize acute intoxication or identify clinically relevant substance use. Prior work in the toxicology community has argued that due to these issues, the UDS should rarely, if ever, be used to guide management for acute presentations.[8]

Some may argue that there are specific scenarios regarding chest pain presentations where the knowledge of acute cocaine or stimulant intoxication has notable clinical relevance. While the UDS provides information regarding recent exposure, the limitations in acute settings will significantly blunt its ability to guide chest pain workups. Chronic cocaine use has been associated with atherosclerosis; however, existing data has shown no difference regarding the prevalence of coronary artery disease based on a positive UDS in those presenting with chest pain.[7] Additionally, our results note that the UDS rate for all complaints is similar to those presenting with chest pain (4.7% vs 4.6%, respectively). This further casts doubt on the consideration that UDS be ordered specifically in targeted chest pain evaluations.

Multiple studies have attempted to quantify the prevalence of substance use across populations with conflicting answers. Overall drug use rates are similar across Black and White populations,[10] with methamphetamine use reported higher in White populations and similar rates of cocaine use in all groups. A recent study shows lower overdose death rates involving methamphetamines in Black populations,[10] but rates of deaths involving cocaine are higher in Black populations.[12] Similar rates by gender of positive cocaine or methamphetamine testing have been seen in patients admitted for chest pain observation.[10] Notably higher rates of methamphetamine use are seen in Native American/Alaskan Native populations;[10] unfortunately due to the sample size limitations in the NHAMCS, this study could not comment on any ordering disparities regarding that population.

Arbitrary or bias-driven variations within clinical practice are a concern within emergency medicine. Some variation within clinical practice is inevitable, as identical workup and management is not indicated for every presentation for the same chief complaint. However, with increasing awareness

**Table 2.** Associations of urine drug screen use in all ED patients using multivariable logistic regression.

| | OR | 95% CI | P-value |
|---|---|---|---|
| Gender | | | |
| Male | 1.998 | 1.550-2.577 | <0.001 |
| Female | (ref) | | |
| Race | | | |
| Black/African American | 1.453 | 1.110-1.901 | 0.007 |
| White | (ref) | | |
| Year (linear trend) | 1.104 | 1.036-1.177 | 0.002 |

*OR,* odds ratio; *CI,* confidence interval.

of the role of implicit, explicit, and institutional biases, our results underscore the need to consider the utility of the UDS. Further, as drug use continues to be highly stigmatized, consideration must be given to the biased and disparate care that the results of the UDS may create. Given the complicated interplay between healthcare inequities, racism (both structural and interpersonal), and the stigma regarding substance use, it is incumbent upon emergency physicians to recognize how these factors weigh on clinical decision-making. This importance is only magnified when we consider that the clinical utility of the test in question is poorly justified, as in the case of the UDS for chest pain presentations.

## LIMITATIONS

This study has several limitations, primarily related to reliance on a secondary analysis of previously collected data. We did not have a patient-oriented or clinical outcome; future investigations should explore how ordering practices might have downstream consequences for patients. Despite this lack of clinical outcome, there is an absence of empirical data justifying the broad use of UDS in the evaluation of chest pain; and at the same time disparities persist in care access, quality, and outcomes for Black patients. Furthermore, due to sample size limitations, we were unable to address all patient-reported race/ethnicity categories; thus, our study is limited to analyzing only Black and White patients, rather than reflecting the entire emergency care patient population nationally. This inherently does not reflect the complexities of race and ethnicity self-identification, nor can it account for inaccuracies in the collection of this datapoint. However, given the racialized history of drug policy in the US that uniquely targets Black communities, we feel that our results are important despite this limitation.

The NHAMCS data does have some limitations,as with any retrospective data collection, but significant effort is taken by the CDC to maximize its utility as a representative sample.[9] Additionally, the NHAMCS does not provide the information to analyze hospital-level variation of the disparities identified in this study, which will need to be analyzed with alternative sources of data. Specifically, our study highlights the need to understand whether the increased use of UDS among Black patients reflects clinician, hospital, or even regional variation.

## CONCLUSION

In this study we identify notable disparities in UDS use for ED patients presenting for chest pain, with Black male patients having significantly higher odds of receiving a urine drug screening. Given existing work that UDS is not useful for ruling out clinically significant coronary artery disease, alongside the notable limitations of clinical information provided by the test, the emergency medicine community should apply scrutiny to its ongoing use. Going forward, future investigations should consider the mechanisms behind this ordering disparity, as well as possible downstream clinical and non-clinical impacts.

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# Patient-Centered Outcomes of an Emergency Department Social and Medical Resource Intervention

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**Introduction:** Few studies have examined the impact of emergency department (ED) social interventions on patient outcomes and revisits, especially in underserved populations. Our objective in this study was to characterize a volunteer initiative that provided community medical and social resources at ED discharge and its effect on ED revisit rates and adherence to follow-up appointments at a large, county hospital ED.

**Methods:** We performed a cross-sectional analysis of ED patients who received medical and social resources and an educational intervention at discharge between September 2017–June 2018. Demographic information, the number of ED return visits, and outpatient follow-up appointment adherence within 30 and 90 days of ED discharge were obtained from electronic health records. We obtained data regarding patient utilization of resources via telephone follow-up communication. We used logistic regression analyses to evaluate associations between patient characteristics, reported resource utilization, and revisit outcomes.

**Results:** Most patients (55.3% of 494 participants) identified as Latino/Hispanic, and 49.4% received healthcare assistance through a local governmental program. A majority of patients (83.6%) received at least one medical or social resource, with most requesting more than one. Patients provided with a medical or social resource were associated with a higher 90-day follow-up appointment adherence (odds ratio [OR] 2.56; 95% confidence interval [CI] 1.05-6.25, and OR 4.75; 95% CI 1.49-15.20], respectively), and the provision of both resources was associated with lower odds of ED revisit within 30 days (OR 0.50; 95% CI 0.27-0.95). Males and those enrolled in the healthcare assistance program had higher odds of ED revisits, while Hispanic/Latino and Spanish-speaking patients had lower odds of revisits.

**Conclusion:** An ED discharge intervention providing medical and social resources may be associated with improved follow-up adherence and reduced ED revisit rates in underserved populations.
[West J Emerg Med. 2023;24(5 Supplement)24–31.]

## INTRODUCTION

In the last two decades, the growth in the number of annual emergency department (ED) visits in the United States has outpaced the number expected by population growth by nearly two-fold.[1,2] There has been a concomitant increase in the proportion of safety-net EDs serving high volumes of patients who are underinsured or enrolled in Medicaid.[3,4] These trends are in part due to health inequities ingrained by social structures and economic systems, known as social determinants of health (SDoH).[5] Both race/ethnicity and socioeconomic status have been strongly associated with disparities in attendance at safety-net hospitals as well as morbidity and mortality.[5-10] Repeated ED utilization is also linked to higher mortality rates, especially in elderly patients.[11] Patients with frequent ED revisits have limited connections to community resources and reduced comprehension of discharge instructions.[12] Decreasing ED revisits may help alleviate high ED volumes, which are associated with increased in-hospital mortality, longer times to treatment initiation, and a higher likelihood of leaving against medical advice.[13-15]

There is a growing body of literature on the effectiveness of linking patients to primary care services from the ED and addressing SDoH to decrease hospital crowding.[16,17] The ED is uniquely positioned to serve as a critical site to facilitate addressing social needs and promoting these linkages.[18-20] For example, the Health Leads model and Highland Health Advocates both use help desks to connect patients to community-based resources from the ED; however, there remains a lack of evidence regarding how these approaches impact ED utilization outcomes.[21,22] Further, there is limited literature describing the utilization of social worker services, case management, and implementation of community interventions from an ED setting.[23-25]

Housing status, food insecurity, employment status, insurance status, education status, ability to pay for utilities, and availability of transportation are SDoH domains that can be targeted for intervention by multidisciplinary teams.[26-28] While there are promising results from studies using vertical approaches that address one single SDoH domain, there are limited studies that have investigated the impact of programs that target multiple SDoHs.[29,30] In this study we sought to assess a volunteer initiative that provided community medical and social resources at ED discharge and its effect on ED revisit rates and adherence to follow-up appointments at a large, county hospital ED.

*Population Health Research Capsule*

What do we already know about this issue?
*The ED is uniquely positioned to address patients' social needs and promote linkages to community services, but limited evidence exists describing linkage models.*

What was the research question?
*Are health system utilization outcomes impacted if patients are provided community resources at ED discharge?*

What was the major finding of the study?
*Patients receiving resources had lower odds of ED revisit at 30 days and a higher 90-day follow-up appointment adherence.*

How does this improve population health?
*Providing resources upon ED discharge through a standardized process may reduce ED revisits and encourage outpatient follow-up.*

## METHODS

### Study Design and Setting

We conducted a retrospective, cross-sectional study of ED patients at a large, county hospital (89,000 annual ED visits) in Houston, TX, who received a volunteer patient discharge intervention between September 1, 20171–June 1, 2018. This service was provided by a student-led organization of roughly 60 undergraduate volunteers from a nearby university. Texas did not expand Medicaid coverage under the Affordable Care Act, and most patients in this health system are underinsured or use a county financial assistance program (FAP) for medical services within the hospital system.[31,32] This study received institutional review board approval.

### Intervention

Volunteers underwent biannual eight-hour trainings covering intervention procedures, resources provided to patients, and simulations of common patient encounters (Supplemental File 1). Spanish language competency of volunteers was assessed by native speakers. Teams of 3-4 volunteers with one supervising "shift leader" rotated from 1 PM-9 PM Monday to Saturday through a lower acuity treatment area for patients with an Emergency Severity Index of 3 or higher. The inclusion criterion was any patient marked for discharge in the care area displayed on the care area electronic board. Volunteers reviewed the patient with a nurse to confirm discharge status and to obtain the after-visit summary. Patients to be discharged to a skilled nursing facility, in-patient rehabilitation, or correctional facility were not approached. Low-acuity treatment areas were targeted as they had individual patient rooms with space for the volunteer teams to deliver the intervention and had a higher proportion of patients discharged compared to high-acuity areas.

Patients who agreed to participate were asked questions from a standardized questionnaire to gather demographic information. Interventions were conducted in English or Spanish depending on patient preference. Patients were then provided a standardized educational intervention that involved reviewing their medication list and follow-up appointments and emphasizing the importance of medication and appointment adherence. Finally, patients were offered information on a variety of local and federal social and medical resources given in their preferred language. Resources were provided based on patients' interest in receiving each resource. Medical resources included information on prescription discount cards, lists of pharmacies, primary care clinics, or low-cost dental clinics. Social resources included information on programs such as

FAPs for rent, supplemental nutrition programs, and subsidized transportation programs. Each intervention lasted 5-15 minutes.

Patients were called one week after discharge by volunteers and asked questions from the standardized questionnaire regarding medication adherence, adherence at follow-up appointments, and utilization of resources that they received in the ED. Two additional attempts were made to reach patients who did not answer the first call at 30 minutes and again at one week after.

### Data Collection

Patient responses during the intervention and follow-up calls were recorded using standardized forms. Additional patient information including demographics, ED chief complaint, and outcome variables was obtained from electronic health records (EHR) and recorded in a standardized tool. We used the patients' listed ZIP codes as a proxy for socioeconomic status,[33] and median household income data was obtained from the 2013-2017 American Community Survey.[34] Data was de-identified and stored in a secure database.

### Outcomes

The primary outcome was the frequency of ED revisits to any Harris County-funded hospital, with a secondary outcome of adherence to follow-up clinic appointments. Revisits and appointment adherence were evaluated within 30 and 90 days after initial ED discharge, as prior studies have used these times as endpoints, and more than 30 days may be required to enroll or experience impact from new services.[35-37] The 90-day outcomes were inclusive of ED revisits and appointment attendance within the initial 30 days.

### Analysis

Patients who were less than 18 years of age or pregnant at the time of the intervention were excluded from data analysis. We also excluded patients with missing identifying information on the standardized forms. Patient characteristics and outcomes were analyzed using descriptive and inferential statistics. We used binomial logistic regression to assess the relationship among independent variables (patient demographics, type of resources provided at ED discharge, and reported resource utilization at follow-up call) and dependent variables (follow-up appointment adherence and ED revisits), using SPSS Statistics for Windows, version 26 (IBM Corp., Armonk, NY). We performed a residuals analysis to identify outliers with standardized residuals greater than 2.5 standard deviations, which were removed from the final analysis.

## RESULTS

### Characteristics of Study Subjects

A total of 614 patients received the intervention during the study period (**Figure**). Patients below 18 years of age (104), pregnant at the time of discharge (7), or with missing medical record numbers or ED visit dates (9) were excluded. We included a final 494 patient encounters in the data analysis. The median

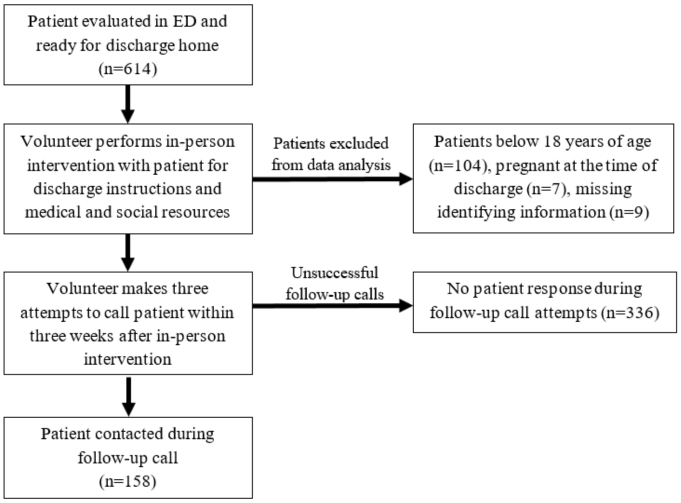

**Figure.** Educational intervention workflow showing the steps performed when discharging and following up with patients. *ED*, emergency department.

**Table 1.** Characteristics of patients who received intervention.

| Characteristic | Number (%) / median (IQR) |
|---|---|
| Age (median years) | 43 (31 - 53) |
| Gender | |
| Female | 273 (55.3) |
| Male | 221 (44.7) |
| Race/ethnicity | |
| Black | 152 (30.8) |
| White | 48 (9.7) |
| Hispanic/Latino | 273 (55.3) |
| Other | 21 (4.3) |
| Preferred language | |
| English | 316 (64.0) |
| Spanish | 174 (35.2) |
| Other | 2 (0.4) |
| Unknown | 2 (0.4) |
| ZIP code household median income quintile | |
| 1st quintile ($26,644 - $47,297) | 290 (58.7) |
| 2nd quintile ($47,297 - $69,446) | 146 (29.6) |
| 3rd-5th quintiles ($69,446 - $180,758) | 53 (10.7) |
| Unknown | 5 (1.0) |
| Insurance status | |
| Uninsured | 165 (33.4) |
| County financial assistance program | 244 (49.4) |
| Public/private insurance | 67 (13.6) |
| Unknown | 18 (3.6) |
| Resource requested | |
| No resources | 81 (16.4) |

*IQR*, interquartile range; *ED*, emergency medicine.

**Table 1.** Continued.

| Characteristic | Number (%) / median (IQR) |
|---|---|
| Social resources only | 71 (14.4) |
| Medical resources only | 88 (17.8) |
| Both resources | 254 (51.4) |
| Resources used as reported on follow-up call | |
| Not reached by phone | 336 (68.0) |
| Reached by phone and did not use resources (or no resources given) | 77 (15.6) |
| Reached by phone and reported resource use | 81 (16.4) |
| Outcomes | |
| Any ED revisit within 30 days | 76 (15.4) |
| Number of ED revisits within 30 days (median visits) | 1 (1) |
| Any ED revisit within 90 days | 114 (23.1) |
| Number of ED revisits within 90 days (median visits) | 1 (1 - 2) |
| Attendance of follow-up appointment within 30 days | 185 (72.5) |
| Attendance of follow-up appointment within 90 days | 240 (75.0) |

*IQR*, interquartile range; *ED*, emergency medicine.

**Table 2.** Most common medical and social resources requested by patients through the intervention.

| Resource | Number given (% of total patients) |
|---|---|
| Top 5 medical resources given | |
| Low-cost dental clinic information | 216 (43.7) |
| Primary care clinic information | 205 (42.0) |
| List of local pharmacies | 147 (29.8) |
| Information card for local medical insurance | 126 (25.5) |
| Prescription discount card | 122 (24.6) |
| Top 5 social resources given | |
| General information sheet on food and insurance assistance | 234 (47.4) |
| Information on local financial and utility bill assistance | 61 (12.3) |
| List of homeless shelters and emergency housing options | 59 (11.9) |
| Information on English as a second language courses | 58 (11.7) |
| Application for local transportation assistance services | 49 (9.9) |

patient age was 43 years (**Table 1**). Most patients were female (55.3%), and the majority identified as Latino/Hispanic (55.3%). Primary Spanish speakers made up over one third (35.2%) of all patients. The most frequent chief complaints were abdominal pain (19.6%), generalized pain (8.5%), and headache (6.1%). About half of the patients (49.4%) were enrolled in the county healthcare FAP. We found that 33.4% of patients were uninsured, and only 13.6% had insurance coverage. These characteristics overall reflected the general ED population at this hospital.[31]

## Main Results

A total of 413 patients (83.6%) requested at least one resource at discharge, with 329 (66.6) requesting more than one resource. The most requested medical and social resources were dental care information and information on food and insurance assistance, respectively (**Table 2**). From 494 ED encounters included in this study, volunteers contacted 158 patients (32%) in a follow-up call one week after discharge. Compared to patients who were not successfully contacted, this patient population did not significantly differ in gender ($P = 0.29$), race/ethnicity ($P = 0.18$), language ($P = 0.89$), or insurance status ($P = 0.12$). Of the contacted patients, 81 (51.3%) reported using a resource received from the intervention. Of all patients, 76 (15.4%) returned to the ED at least once within 30 days of discharge, and 114 (23.1%) returned within 90 days.

Components of our intervention were associated with improved outcomes of decreased odds of ED revisits and improved attendance of follow-up appointments (**Table 3**). Patients who requested both medical and social resources from the intervention was associated with lower odds (odds ratio [OR] 0.50, 95% confidence interval [CI] 0.27-0.95) of an ED revisit at 30 days compared to those requested no resources. Those who reported using a resource received from the intervention (OR 0.46, 95% CI 0.24-0.92) had lower odds of revisiting at 90 days. There were higher odds of outpatient follow-up appointment adherence for patients who received a social resource at discharge (OR 4.75, 95% CI 1.49-15.20), and those who received a medical resource (OR 2.56, 95% CI 1.05-6.25).

We observed a difference in the odds of ED revisits and attendance of follow-up appointments associated with some patient characteristics. Increased odds of an ED revisit within 30 days of discharge were seen in males (OR 1.76, 95% CI 1.07-2.88) and patients enrolled in the county FAP (OR 2.11, 95% CI 1.15-3.87). Males also had higher odds (OR 1.91, 95% CI 1.25-2.91) of revisiting at 90 days. Patients in the 3rd-5th quintile median household income had lower odds of attendance to follow-up appointments within 30 days of ED discharge (OR 0.38, 95% CI 0.16-0.90).

In contrast, primarily Spanish speakers had lower odds of an ED revisit (OR 0.53, 95% CI 0.33-0.85) and higher odds of attending at least one follow-up appointment at 30 and 90 days. Hispanic/Latino patients had lower odds of revisiting the ED within 90 days compared to Black patients (OR 0.52, 95% CI 0.33-0.83) as well as higher odds of follow-up attendance at 30 and 90 days. Patients enrolled in a county FAP also had higher odds of follow-up attendance compared to uninsured patients.

**Table 3.** Logistic regression analysis of 30- and 90-day follow-up appointment attendance and emergency department revisit.

| Characteristic | 30-day ED revisit OR (95% CI) | 90-day ED revisit OR (95% CI) | 30-day follow-up appointment attendance OR (95% CI) | 90-day follow-up appointment attendance OR (95% CI) |
|---|---|---|---|---|
| Gender | | | | |
| Female | | | Reference | |
| Male | *1.76 (1.07-2.88) | *1.91 (1.25-2.91) | 0.83 (0.48-1.44) | 0.83 (0.50-1.38) |
| Race/ethnicity | | | | |
| Black | | | Reference | |
| Hispanic/Latino | 0.62 (0.36-1.07) | *0.52 (0.33-0.83) | *2.86 (1.52-5.40) | *3.29 (1.86-5.83) |
| White | 0.72 (0.30-1.78) | 0.98 (0.48-2.00) | 0.62 (0.25-1.57) | 2.10 (0.81-5.41) |
| Preferred language | | | | |
| English | | | Reference | |
| Spanish | 0.72 (0.42-1.23) | *0.53 (0.33-0.85) | *2.00 (1.12-3.57) | *2.56 (1.4-4.50) |
| ZIP code median household income quintile | | | | |
| 1st Quintile | | | Reference | |
| 2nd Quintile | 0.97 (0.55-1.70) | 0.93 (0.58-1.51) | 1.03 (0.55-1.92) | 0.73 (0.42-1.29) |
| 3rd-5th Quintiles | 1.50 (0.7-3.15) | 1.64 (0.86-3.10) | *0.38 (0.1-0.90) | 0.47 (0.2-1.03) |
| Insurance status | | | | |
| Uninsured | | | Reference | |
| Public/private Insurance | 1.26 (0.51-3.11) | 1.41 (0.70-2.85) | 0.68 (0.28-1.65) | 0.57 (0.25-1.28) |
| County financial assistance program | *2.11 (1.15-3.87) | 1.63 (0.99-2.69) | *2.01(1.03-3.91) | *1.89 (1.02-3.50) |
| Resources requested | | | | |
| No resources | | | Reference | |
| Social resources | 0.60 (0.26-1.36) | 0.65 (0.31-1.35) | 3.28 (1.15-9.36) | *4.75 (1.49-15.20) |
| Medical resources | 0.52 (0.23, 1.14) | 0.54 (0.2-1.09) | 2.48 (0.97-6.31) | *2.56 (1.0-6.25) |
| Both | *0.50 (0.27-0.95) | 0.63 (0.3-1.11) | 1.63 (0.8-3.26) | 1.23 (0.65-2.33) |
| Resources used as reported on follow-up call | | | | |
| Not reached by phone | | | Reference | |
| Reached by phone and did not use resource | 0.83 (0.41-1.68) | 0.90 (0.5-1.61) | 1.42 (0.66-3.09) | 1.43 (0.67-3.04) |
| Reached by phone and reported resource use | 0.63 (0.30-1.32) | *0.46 (0.24-0.92) | 1.00 (0.46-2.16) | 0.94 (0.48-1.87) |

* $P < 0.05$.
*CI*, confidence interval; *OR*, odds ratio.

## DISCUSSION

Our findings indicate that ED discharge interventions focused on patient needs and providing social and medical resources may assist in promoting appropriate patient access to the healthcare system after ED discharge. The most requested resources were information on local dental, primary care, and pharmacy services, as well as food and health insurance resources. Similar needs were identified in surveys of ED patients who made early or frequent returns to the ED after their initial ED discharge.[38,39] These patients reported difficulty scheduling a primary care appointment, attending outpatient appointments due to lack of insurance, and finding transportation to attend follow-up appointments.[38,39]

In our study, patients who requested both social and medical resources had lower rates of adherence to follow-up compared to those who requested only one category of resources, possibly indicating that patients with multiple needs had more barriers to appointment adherence. Furthermore, patients reported the discharge process of their initial ED visit was rushed, unprepared, and left them confused.[38] Our volunteer-led service was designed to address these factors more comprehensively during ED discharge.

Despite identified patient needs, interventions dedicated to providing SDoH resources are sparse. Wassmer et al described using a peer counseling program that provided education on medical and social needs in the ED.[40] Patients who had visited the ED four or more times in the previous year were counseled during their ED visit and in subsequent visits, with a decrease in ED utilization over two years extending past the follow-up period of the study.

A population-based approach to ED social interventions may improve the effectiveness of addressing SDoH by identifying risk factors for ED revisits and developing interventions to target specific population needs. This study found that male gender, Black race, and use of the county FAP were associated with increased odds of in-system ED revisits. Other studies have reported mixed results on the association between these factors and ED usage. One study found an association between male gender and higher ED revisit rates in older adults.[11] However, others demonstrated no such association or an inverse association,[41-44] which likely demonstrates that the impact of gender may be influenced by other risk factors. Multiple studies have demonstrated higher ED revisit rates among Blacks compared to other ethnic groups; however, this may be due to differences in average income, enrollment in Medicare and Medicaid, implicit bias against this group within medical systems, and lack of access to primary care physicians.[39,44,45]

The impact of using a healthcare FAP for addressing healthcare costs has not been well characterized. Similar to the findings in this study, Wassmer et al found that patients receiving financial assistance from a county program in California had higher utilization of the ED,[40] which was speculated to be due to younger, lower income patients on financial assistance than those enrolled in public insurance programs. Interestingly, although the use of a county FAP was associated with increased odds of ED revisit, this was also associated with increased odds of follow-up appointment attendance at 90 days post-discharge. Possibly, the cost of appointments is ameliorated by the assistance program, and for similar reasons these patients receiving financial assistance may be less deterred from revisiting the ED.

Our study differed from preceding literature on the impact of English proficiency. Ngai et al demonstrated that patients with limited English proficiency have a higher likelihood of an unplanned ED visit within 72 hours of ED discharge compared to English speakers, even after adjusting for potential confounders.[46] The opposite trend was observed in this study, with lower odds of a return to the ED within 90 days in primary Spanish speakers. The reason for this is likely multifactorial. Previous studies suggest that less acculturated Hispanic adults, measured by citizenship status and length of stay in the US, use fewer healthcare resources overall than more acculturated counterparts, and those who are undocumented may fear discovery and deportation, avoiding ED use for non-urgent reasons.[47,48] Finally, having a higher median income was significant for lower odds of follow-up appointment adherence, but not a significant risk factor for ED revisits. Previously, lower socioeconomic status has been established as a risk factor for increased ED utilization, but its impact on appointment adherence has been debated.[3,49]

Dedicated personnel in the ED setting are likely needed to effectively attend to patients' overlapping medical and social gaps. Many healthcare organizations employ ED social workers, case managers, and patient navigators who address the impact of SDoH through patient counseling, referrals to community services, and patient discharge planning.[50] The advantage provided by this personnel is supported by multiple systematic reviews demonstrating that their work reduces ED revisits.[24,51] However, a social worker-based intervention may not be feasible at all hospitals, which may be understaffed in high-volume, safety-net facilities treating patients with complex medical and social problems.[27]

Our study explored the possibility of using trained volunteers to perform an educational intervention. The Health Leads models similarly used volunteer patient advocates to connect patients with social resources.[21] Recruiting volunteers for our intervention allowed for more patients to be educated on available resources. Such a model may be scalable to other hospital settings, as implementation required minimal training of volunteers and an upfront investment of time to collect information about county and federal resources. In our experience, this investment was associated with a reduction of ED revisits similar to that seen in complex care coordination systems, suggesting that dedicated volunteers may serve as an adequate patient navigator proxy. Further studies are warranted to examine the impact volunteers and such ancillary staff has on patient outcomes.

## LIMITATIONS

As this study used a retrospectively reviewed cross-section of patients' phone interviews and EHRs, causation cannot be inferred between the intervention and revisits or follow-up adherence. This was a single-site study at a county ED assessing patients at low-acuity units; therefore, our findings may not be generalizable to other ED settings. We were unable to collect data on a control cohort of patients who did not receive this intervention due to resource-limitations, and we did not calculate the proportion of participants of all ED patients triaged to these acuity areas during the study period. Most patients in this study were either uninsured or used a county FAP covering care for in-system healthcare services only, and there was no method to track out-of-system healthcare encounters after discharge.

We used convenience sampling to select patients during times when volunteers were present in the ED. Patients discharged during late evening or morning hours were not included, which may have skewed the characteristics of the population studied. ZIP code data was used as a proxy for socioeconomic status and may not have been representative of each patient's income. Recall bias may be introduced via patient self-reporting of usage of medical and social resources during the follow-up call. Non-response bias may have been introduced as only one follow-up call was made, and further follow-up calls were constrained by available resources, but we did not observe a significant difference between patients who were and were not reached.

## CONCLUSION

The outcomes from this intervention suggest that there is an opportunity to improve patient engagement with the healthcare system by providing resources that address social determinants of health. This suggests that a standardized in-person approach may reduce ED revisits and improve outpatient follow-up. Future investigation is needed to examine the best methods for implementation, comparing in-person and non-individualized interventions, and cost effectiveness of programs to address SDoH in the ED that meet patients' social needs and promote healthcare accessibility.

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# Scoping Review: Medical Education Interventions Optimizing Social Workers in the Emergency Department

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**Introduction:** As the significance of social workers (SW) in improving healthcare delivery in the emergency department (ED) continues to expand, emergency physicians will increasingly be expected to effectively partner with SWs in both academic and community settings. In this scoping review we sought to provide evidence-based recommendations for effective emergency clinician educational interventions on how to incorporate SWs in the ED to address health-related social needs while also identifying directions for future research.

**Methods:** We conducted a systematic literature review of publications in PubMed, CINAHL, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, and APA PsycINFO. A search strategy was designed in accordance with Peer Review of Electronic Search Strategies (PRESS) guidelines. Using the scoping review framework by Arksey and O'Malley, we applied consensus-based inclusion and exclusion criteria to guide study selection. A Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA) flow chart delineating the selection process was generated using Covidence.

**Results:** Our search strategy identified nine qualifying articles for further analysis out of an initial sample of 2,119 articles. Of the nine articles that underwent full text review, 89% (8/9) evaluated a short educational didactic with or without a hands-on component to reinforce learning. Barriers to successful implementation of curricula discussed in all articles included time constraints, lack of buy-in from clinical faculty, lack of knowledge of appropriate referral sources once a problem is identified, and perceived distraction of the training from more standard clinical topics. Facilitators of curricula implementation and training success included the presence of a pre-existing and structured weekly conference schedule, ability to complete the training in a relatively short time frame or during intern orientation, presence of simulation resources, and residents' overall perceived interest in the topics.

**Conclusion:** Ultimately, we found that interdisciplinary learning with SWs is generally well received by participants, and we offer various suggestions on incorporation into student and resident education. Moving forward, we recommend that a standardized curriculum of working with SWs be developed using didactic sessions, simulation, and/or direct observation with feedback. [West J Emerg Med. 2023;24(5 Supplement)32–36.]

## INTRODUCTION

For more than 60 years, the value of social workers (SW) in medicine has been recognized.[1] The emergency department (ED) requires a multidisciplinary, team-based approach in which SWs are a vital component.[2] Although many academic EDs employ SWs and care managers, there is a lack of standardized training for medical students, residents, attending physicians and other clinicians in the ED on how to effectively incorporate SWs into the patient care team.

As the significance of SWs in improving healthcare delivery in the ED continues to expand, particularly with respect to lowering costs, increasing patient satisfaction, improving quality, and reducing physician burnout, emergency physicians will increasingly be expected to effectively partner with SWs in both academic and community settings.[3] The SW scope of practice encompasses a wide range of services, including discharge assistance and counseling. A holistic approach renders SWs particularly valuable in addressing health-related social needs in the dynamic. safety-net setting of an ED.[3] In this literature review and scoping framework we sought to provide evidence-based recommendations for effective ED clinician educational interventions on how to incorporate social workers in the ED to address patients' health-related social needs while also identifying directions for future research.

## METHODS

While serving on the Emergency Medicine Residents' Association (EMRA) Social Emergency Medicine (EM) Committee, one of the authors of this study (TR) created a working group to improve education in social EM. Specifically, the purpose was to investigate existing literature related to educating residents and medical students on ED care models that include SWs and care managers, and to create resources to assist members in implementing multidisciplinary care models as part of their training programs. Using Peer Review of Electronic Search Stratregies (PRESS) guidelines, we conducted a systematic literature review in PubMed, CINAHL, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, and APA PsycINFO.[5] We developed the search threads after categorizing the four necessary elements of our research question: curriculum; students; social work; and emergency setting. The **table** illustrates the search terms used.

We established inclusion and exclusion criteria. Two authors (TR and HP) reviewed respective abstracts for potential relevance based on search results. The same two authors achieved consensus after resolving differences through real-time rigorous comparison of articles to predefined inclusion and exclusion criteria. Two other authors (TR and HP) reviewed the full text of selected abstracts and independently assessed their relevance. For any disagreements, all four authors convened for real-time comparison to predefined inclusion and exclusion criteria. This process led to a group consensus for a final decision for all remaining full-text articles. The reference section for each included article was checked for additional articles that were otherwise missed in the initial search.

We used the web-based tool Covidence (Melbourne, Australia) to facilitate study selection. We performed the final two steps of sorting and summarizing collected data after collectively establishing the categorization scheme. We organized articles by training level, educational strategy, evaluation methods, outcomes, facilitators to implementation, and barriers to implementation. The purpose of this categorization scheme was to provide guidance on best practices for replication of the studied educational interventions. The results of our literature search are presented in a PRISMA flow chart in the **figure**.

## RESULTS

Of an initial sample of 2,119 articles, our search strategy identified nine qualifying articles for further analysis. No additional articles were detected after searching the references of the selected nine articles. The educational strategies, outcomes, and barriers to implementation discussed in these articles are summarized in a table including links to each paper that are included in the Appendix.

**Table.** Search strategy.

| Curriculum | Students | Social Work | Emergency |
|---|---|---|---|
| "Curriculum"[Mesh] | "Internship and Residency"[Mesh] | "Social Work"[Mesh] | "Emergency Medicine"[Mesh] |
| OR "Education, Professional"[Mesh] | OR "Students, Medical"[Mesh] | OR "Social Workers"[Mesh] | |
| | | OR "Community Health Workers"[Mesh] | OR "Emergency" |
| OR Curricul* | | | |
| OR class OR classes | OR student* | OR "Case Managers"[Mesh] | |
| OR course* | OR clerkship | | |
| OR Educat* | OR intern* | OR "Interdisciplinary Studies"[Mesh] | |
| OR instruct* | OR resident* | | |
| OR mentor | OR "house staff" | | |
| OR school* | | OR social work* | |
| OR shadow | | OR case manage | |
| OR skill* | | OR care manage* | |
| OR teach* | | OR navigator | |
| OR train* | | | |

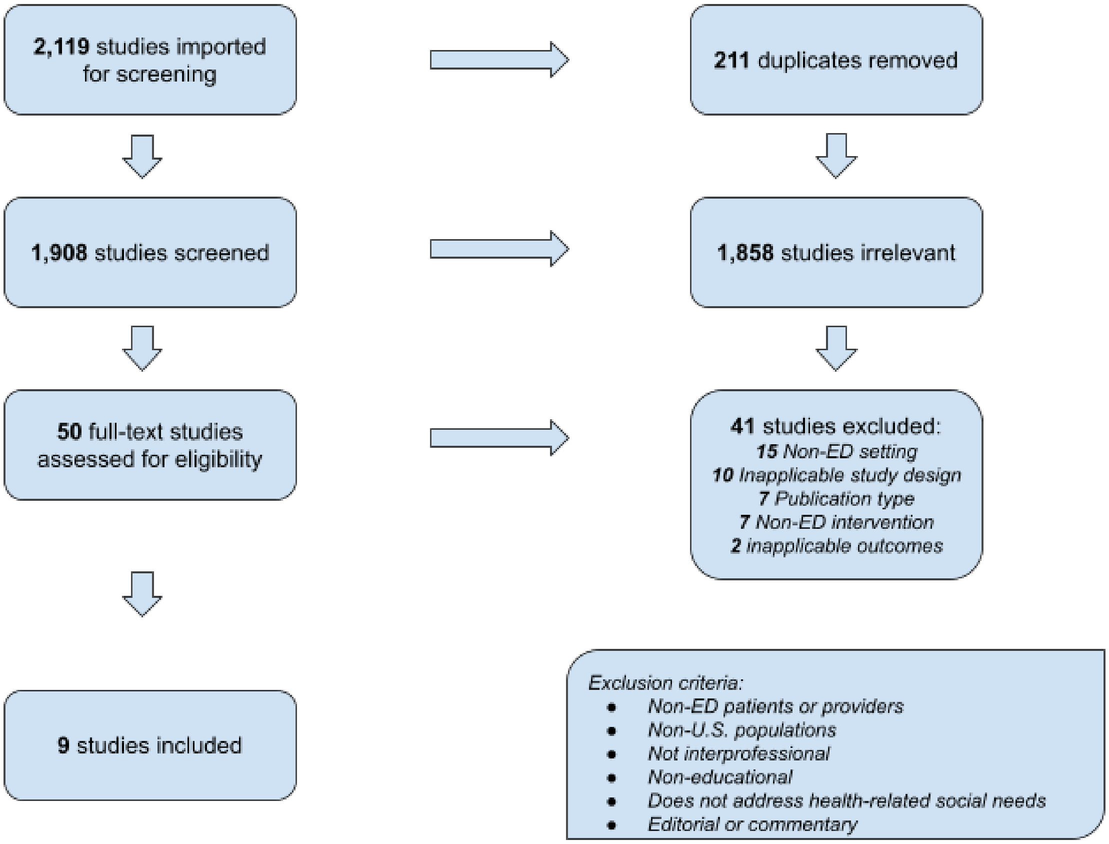

**Figure.** PRISMA Flow Chart
*ED*, emergency department; *Non-U.S*, non-United States.

Although a limited number of articles were included in the final review, we found a wide range of curricula structure, levels of time investment, and deliverables to sustain long-term impact of the educational interventions. Four of the nine articles shared a similar curricular design of an introductory didactic session followed by varying mechanisms of hands-on practice with the new skill.[6-9] Four additional articles described the use of a didactic model alone of at least one training session without hands-on practice.[10-13] The remaining article described use of hands-on training alone.[14]

Most articles described simulation cases or interactive case review. Four articles described involvement of direct patient interaction.[7,9,12,14] Three of these were directly integrated into regularly scheduled clinical shifts.[9,12,14] Five articles reported training time allotments between 20 minutes to three hours.[6,8,10,11,13] Other articles did not clearly report time requirements. Another identified educational strategy was the development of pocket-sized reference cards for participants to use for long-term reinforcement of the training.[6,10]

The included studies all entailed interdisciplinary training. Most of the included studies directly involved EM residents and/or attending physicians. Only one article reported training of medical students.[8] All studies included SWs or SW students as direct contributors to curricula development, execution, and/or attendance. Seven studies involved at least one additional specialty, such as nursing, pharmacy, or other ED staff.

Studies included evaluations of the impact of the medical interventions on trainees. Seven studies used pre- and post-intervention surveys as their primary means of analysis, most commonly assessing for self-reported confidence in the skill in question. One study objectively assessed competence in the new skill.[9] Social workers directly evaluated participants in two articles.[9,14] Results of each article were positive, with residents frequently reporting improved confidence or knowledge on the topic.

## DISCUSSION

Working on the front lines, emergency physicians become intimately familiar with health-related social needs when providing optimal care to patients. With growing recognition of the importance of interdisciplinary training, the successful incorporation of SWs into medical education has been reported in several instances in the literature. Through this scoping review, we were able to derive a framework of barriers and facilitators to guide implementation of similar educational interventions at other institutions. Of the articles that underwent full text review, 89% (8/9) described a short educational didactic with or without a hands-on component to reinforce learning. Short educational modules were likely implemented within the current paradigm of Accreditation Council for Graduate Medical Education-protected academic time, which most EM programs group as a five-hour continuous didactic time.

Barriers to successful implementation of such curricula included time constraints for new material within already established resident conference schedules, lack of buy-in from clinical faculty, lack of knowledge of appropriate referral sources once a problem is identified, and perceived distraction of the training from more standard clinical topics. Facilitators of curricula implementation and training success included the presence of a pre-existing and structured weekly conference schedule (thus reported as both a barrier to and a facilitator of implementation), ability to complete the training in a relatively short time frame or during intern orientation, presence of simulation resources, and residents' overall perceived interest in the topics.

Opportunities for inclusion of social work professionals in the medical education environment abound. Resident physicians are required to participate in weekly didactic activities including lectures, labs, asynchronous learning, simulations, grand rounds, or other forms of education that are often consolidated into a weekly conference day in which residents are not responsible for clinical duties during this protected learning time. As seen in the studies reviewed here, SW involvement in didactics was well received by resident learners, particularly in simulation scenarios and case-based learning.[6-7,10] Social workers could be recruited by organizers of residency education to host lectures or workshops on topics that they commonly deal with in the ED (eg, patient housing instability, trauma-informed care, substance use disorder/addiction) as well as lead simulation cases for residents to practice working with SWs. Similarly, medical students in the clinical stage of training could participate in this type of case-based learning either during dedicated didactic sessions or while rotating in the ED alongside the residents.

Future investigation on the most effective approach to implementation and extent of education during training is warranted, as no identified studies compared different educational models. Additionally, we found significantly more data in the literature pertaining to residents and attending physicians than to medical students. This highlights the need for greater studies on SW involvement in the training of medical students. Medical student training could help mitigate discussed barriers to curricula implementation, such as by fostering early role-modeling and advocacy of greater education on health-related social needs. Finally, more research on design of standardized curricula and incorporation into residencies is needed. This could ensure that all future emergency physicians have adequate training in working with SWs to optimally address patients' health-related social needs.

## LIMITATIONS

Our methods section did not search every available database. There may be published data not stored in a public database or unpublished data. As we searched articles published as of February 2021, there may be relevant data that was published after our search.

## CONCLUSION

Despite the prevalence of social workers working as part of the ED team, there remain limited examples in the literature of effective educational collaboration. None of the identified examples directly compared different educational strategies. Of existing educational models, most employ a short didactic model, which is similar to the way other topics are taught to residents. Very limited information exists on educational opportunities involving medical students and SWs. More research would be helpful to inform future standardized curricula. This review summarizes current practices in the literature and identifies areas for future research.

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# The Impact of "Emergency-only" Hemodialysis on Hospital Cost and Resource Utilization

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**Introduction:** Undocumented immigrants are excluded from benefits that help compensate for scheduled outpatient hemodialysis (HD), compelling them to use emergency departments (ED) for HD. Consequently, these patients can receive "emergency-only" HD after presenting to the ED with critical illness due to untimely dialysis. Our objective was to describe the impact of emergency-only HD on hospital cost and resource utilization in a large academic health system that includes public and private hospitals.

**Methods:** This retrospective observational study of health and accounting records took place at five teaching hospitals (one public, four private) over 24 consecutive months from January 2019 to December 2020. All patients had emergency and/or observation visits, renal failure codes (International Classification of Diseases, 10th Rev, Clinical Modification), emergency HD procedure codes, and an insurance status of "self-pay." Primary outcomes included frequency of visits, total cost, and length of stay (LOS) in the observation unit. Secondary objectives included evaluating the variation in resource use between persons and comparing these metrics between the private and public hospitals.

**Results:** A total of 15,682 emergency-only HD visits were made by 214 unique persons, for an average of 36.6 visits per person per year. The average cost per visit was $1,363, for an annual total cost of $10.7 million. The average LOS was 11.4 hours. This resulted in 89,027 observation-hours annually, or 3,709 observation-days. The public hospital dialyzed more patients compared to the private hospitals, especially due to repeat visits by the same persons.

**Conclusion:** Health policies that limit hemodialysis of uninsured patients to the ED are associated with high healthcare costs and a misuse of limited ED and hospital resources.
[West J Emerg Med. 2023;24(5 Supplement)37–40.]

## INTRODUCTION

Over 6.500 undocumented immigrants suffer from end-stage renal disease (ESRD) requiring renal replacement therapy, most commonly hemodialysis (HD), in the United States.[1] These vulnerable patients lack access to standard three times weekly HD, do not qualify for Medicaid and Medicare dialysis benefits, and are excluded from provisions of the Affordable Care Act.[2] Undocumented immigrants have the option to buy private insurance, but at a high cost. Many are unable to afford insurance, since 40% have annual incomes

<$34,000 for a family of four or <$16,000 for an individual.[3] Given these barriers, this patient population must resort to the emergency department (ED) for emergency-only HD.

Emergency-only HD is covered under the 1986 Emergency Medical Treatment and Labor Act (EMTALA), which requires EDs to stabilize emergency medical conditions regardless of the patient's ability to pay. Emergency-only HD is provided when a patient presents to an emergency department (ED) and meets criteria for emergent or life-threatening conditions, such as hyperkalemia, uremia, volume overload, mental status changes, etc, due to untimely dialysis. Emergency-only HD has been associated with a 14-fold increase in mortality compared to standard outpatient HD.[4] Undocumented immigrants must tolerate this risk as emergency-only HD is their only option to sustain life.

Limited data is available regarding the impact of these policies on the hospital cost and resource utilization regarding emergency-only HD in the state of Georgia. Therefore, our objective in this study was to describe the impact of emergency-only HD on hospital cost and resource utilization in a large academic health system in Atlanta, Georgia.

## METHODS

We conducted a cross-sectional analysis of electronic health records (EHR) and accounting records at five different teaching hospitals. We included a high-volume public hospital and four private hospitals providing care in the same large academic system. Inclusion criteria for the study were patients with an ED or observation unit visit over the two years from January 1, 2019–December 31, 2020 with either an *International Classification of Diseases, 10th Rev, Clinical Modification* code I12.x or I13.x, or a Current Procedural Terminology code 82000002 for HD and an insurance status of "self-pay." We excluded patients who were admitted to inpatient status. We obtained data from hospital EHR and from two separate accounting databases (Strata in the public hospital and EPSi in the private hospitals). The main objective was a simple description of the resource burden of emergency-only HD, including frequency of visits, total (direct and indirect) cost, and observation unit length of stay (LOS). In a secondary analysis, we evaluated the variation in resource use between persons and compared these metrics between the private and public hospitals.

We excluded 141 patients with observation unit stays of >48 hours, because they were likely miscoded hospitalized patients, as shown by correspondingly higher average cost. Statistical analysis included mean, median, sum, variance estimates, and differences in means. We used Stata Statistical Software Release 17 (StataCorp LLC, College Station, TX) for all calculations and production of all figures.

## RESULTS

During the 24-month study period there were 15,682 visits for emergency-only HD by persons without insurance, excluding HD visits that resulted in hospital admission. These visits were made by 214 unique persons, for an average of 36.6 visits per person per year. The average cost per visit was $1,363, for an annual total cost of $10.7 million. The average LOS per visit was 11.4 hours. This resulted in 89,027 observation-hours annually, or 3,709 observation-days. See **Table 1** for a breakdown of metrics by public-vs-private hospital setting.

There was a high degree of variation in frequency of ED use for emergency-only HD between individuals, as shown

*Population Health Research Capsule*

What do we already know about this issue?
*Emergency hemodialysis (HD) is associated with a multiple fold increase in mortality and cost compared to standard three times weekly hemodialysis.*

What was the research question?
*What is the impact of emergency HD on hospital cost and resource use in an academic health system in Atlanta, Georgia?*

What was the major finding of the study?
*Average cost per emergency HD visit was $1,363, for an annual total cost of $10.7 million. Average length of stay per visit was 11.4 hours.*

How does this improve population health?
*This study highlights the cost and resource burden of emergency HD on the healthcare system and the need to seek solutions for providing standard outpatient HD.*

**Table 1.** Resource use by persons receiving emergency-only hemodialysis, by hospital setting.

| | Total | Private | Public |
|---|---|---|---|
| Visits | 15,682 | 566 | 15,116 |
| Persons | 214 | 61 | 153 |
| Visits/person/year | 36.6 | 4.6 | 49.4 |
| Average cost ($) | 1,363 | 1,302 | 1,366 |
| Average LOS (hours) | 11.4 | 7.5 | 11.5 |
| Total annual cost (million $) | 10.69 | 0.37 | 10.32 |
| Total annual observation-days | 3,709 | 88 | 3,621 |

*LOS,* length of stay.

in **Figure 1**, which plots the distribution of annual visit frequency per person by hospital setting and demonstrates the high-frequency users of the ED for HD. Not only was the overall frequency of emergency-only HD much lower in the private setting, the repeated use of emergency-only HD was also much lower in proportion, with only 16 persons receiving emergency-only HD more than once in the private hospital setting during the two-year study period.

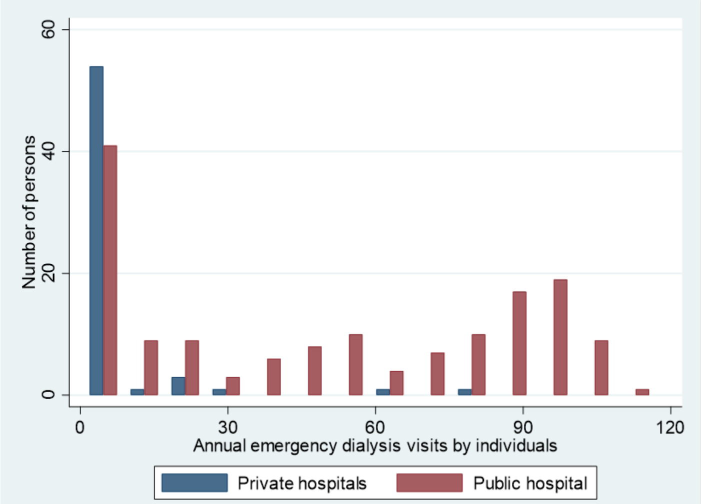

**Figure 1.** Distribution of annual visit frequency for emergency-only hemodialysis by individual persons, by hospital setting.

The public hospital accounted for many more episodes of emergency-only HD for uninsured persons than the private hospitals, and much of this higher volume was due to repeat visits by the same persons. Since public hospital EDs allow much more recurrent HD by individuals, there was disproportionately greater impact by the few frequent visitors in the private EDs, as demonstrated in **Table 2**. The large differences in the apparent role of hospital setting (public vs. private) did not result in much difference in cost per visit, but there was a higher length of stay required in the public hospital. These differences are shown graphically in **Figure 2**. The difference in mean LOS was 4.0 hours (95% CI 3.6-4.4), and the difference in mean cost was $63 (95% CI 22-105).

**Table 2.** Impact of repeated emergency-only hemodialysis by the same patients, by hospital setting.

| | Public hospital | Private hospital | |
|---|---|---|---|
| Most frequent 10% of visitors accounted for... | 20% | 89% | of visits |
| | 22% | 75% | of cost |
| | 22% | 71% | of observation-days |
| Most frequent 20% of visitors accounted for... | 38% | 99% | of visits |
| | 39% | 85% | of cost |
| | 40% | 80% | of observation-days |

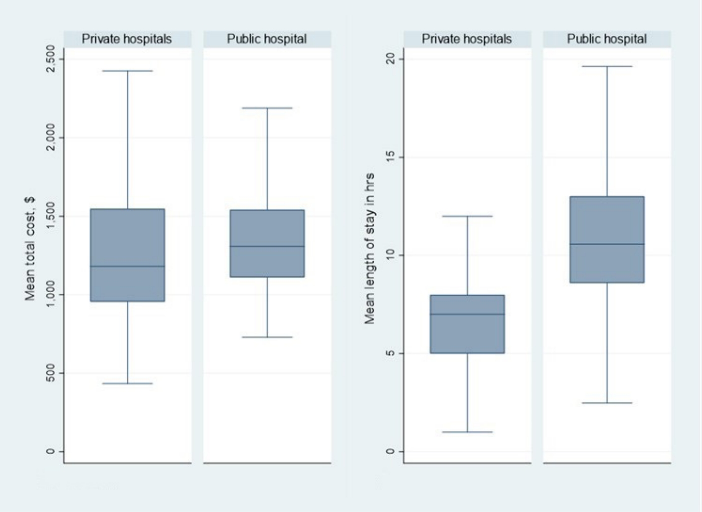

**Figure 2.** Box plots comparing cost and length of stay by hospital setting. Middle line is the median, box height is interquartile range, and whiskers represent Tukey minimum and maximum values.

## DISCUSSION

The results of this study reveal the high healthcare costs due to health policies that restrict HD access for uninsured patients to the ED, and these costs are likely to remain uncompensated. The highest burden of providing HD to these patients falls on the public hospital as shown in this study and similar studies performed in other states.[2,5]

The practice of requiring undocumented or uninsured patients to access HD services through EDs costs more and leads to worse patient outcomes.[4] Patients who rely on emergency-only HD will often qualify for treatment fewer times than thrice weekly.[6] This has been associated with increased inpatient hospital days and mortality.[5] As previously discussed, admitted patients were excluded from this study and only emergency or observation visits were included. Hence, the high healthcare costs from this study do not include inpatient costs for this vulnerable population, and studies have shown that these patients are at increased risk of hospitalizations and intensive care unit stays.[4] Therefore, the total costs of these health policies are much higher than those presented in this study.

Efforts have been made by other states to secure funding for undocumented immigrants to receive standard outpatient dialysis, and they have been shown to reduce cost, mortality, and hospital utilization.[5,7] Approximately 13 states have expanded their emergency Medicaid provisions to reimburse standard outpatient dialysis.[8,9] Currently, Georgia's Emergency Medicaid does not cover outpatient dialysis. To determine possible cost savings if outpatient HD were to be provided to this population, we determined the cost per encounter for outpatient HD at a private HD center in Georgia. The average total expense for one outpatient HD encounter at this center was $309. This would lead to an estimated cost of $48,204 per year per patient for thrice-weekly dialysis. Furthermore, if all the encounters in this study took place in this outpatient setting, the total cost would equal $4,845,738, saving the health system $16,536,546.

This study highlights the healthcare cost and resource burden placed on EDs and the health system by policies restricting access to scheduled, outpatient HD for uninsured/undocumented patients in Georgia. It is imperative that policymakers find alternative solutions to provide regular outpatient HD to this vulnerable population in Georgia. Our team is reaching out to stakeholders to explore solutions and will use this study to help support the initiative.

## LIMITATIONS

This study does have some limitations. The insurance status of "self-pay" was used as a surrogate marker for undocumented patients, as the vast majority of undocumented immigrants with ESRD are uninsured.[10] Chart review for high-frequency users from private and public hospitals was performed to determine the reason why these patients were uninsured. All high-frequency users at the public hospital were uninsured because they were undocumented at the time of the study. Half of the high-frequency users at the private hospitals were undocumented at the time of the study. Furthermore, this study was a retrospective review of cost accounting data, and the public and private hospitals had different data sources.

## CONCLUSION

Health policies that force undocumented/uninsured patients needing HD to visit the ED for emergency-only HD are associated with very high costs, misallocation of limited ED and hospital resources, and worse patient outcomes. Alternative solutions for providing regular outpatient dialysis to this vulnerable population are necessary.

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# Effect of a Home Health and Safety Intervention on Emergency Department Use in the Frail Elderly: A Prospective Observational Study

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**Introduction:** Geriatric patients are often frail and may lose independence through a variety of mechanisms including cognitive decline, reduced mobility, and falls. Our goal was to measure the effect of a multidisciplinary home health program that assessed frailty and safety and then coordinated ongoing delivery of community resources on short-term, all-cause emergency department (ED) utilization across three study arms that attempted to stratify frailty by fall risk.

**Methods:** Subjects became eligible for this prospective observational study via one of three pathways: 1) by visiting the ED after a fall (2,757 patients); 2) by self-identifying as at risk for falling (2,787); or 3) by calling 9-1-1 for a "lift assist" after falling and being unable to get up (121). The intervention consisted of sequential home visits by a research paramedic who used standardized assessments of frailty and risk of falling (including providing home safety guidance), and a home health nurse who aligned resources to address the conditions found. Outcomes of interest were all-cause ED utilization at 30, 60, and 90 days post-intervention compared with subjects who enrolled via the same study pathway but declined the study intervention (controls).

**Results:** Subjects in the fall-related ED visit arm were significantly less likely to have one or more subsequent ED encounters post-intervention than controls at 30 days (18.2% vs 29.2%, P<0.001); 60 days (27.5% vs 39.8%, P<0.001); and 90 days (34.6% vs 46.2%, P<0.001). In contrast, participants in the self-referral arm had no difference in ED encounters post-intervention compared to controls at 30, 60, or 90 days (P=0.30, 0.84, and 0.23, respectively). The size of the 9-1-1 call arm limited statistical power for analysis.

**Conclusion:** A history of a fall requiring ED evaluation appeared to be a useful marker of frailty. Subjects recruited through this pathway experienced less all-cause ED utilization over subsequent months after a coordinated community intervention than without it. The participants who only self-identified as at risk for falling had lower rates of subsequent ED utilization than those recruited in the ED after a fall and did not significantly benefit from the intervention. [West J Emerg Med. 2023;24(5 Supplement)42–50.]

## INTRODUCTION

The preservation of autonomy and the ability to live independently is a major focus of geriatric medicine.[1,2,3] Geriatric patients are often frail and vulnerable and may lose independence through a variety of mechanisms including cognitive decline, depression, functional decline and reduced mobility, and falls.[1,2] Importantly, many of these risk factors are modifiable.[4] A growing body of research surrounding geriatric falls has demonstrated that they are both prevalent, afflicting approximately 30% of community-living persons >65 years, and significant drivers of loss of independence, often triggering nursing home placement.[5,6,7,8]

Approximately three million individuals are treated for falls each year in emergency departments (ED).[9] Fall-related deaths appear to be increasing, with the US Centers for Disease Control and Prevention noting a 30% increase from 2007 to 2016.[9] Falls are also costly both to individuals and to the healthcare system, with a median cost of more than $26,000.[10] In 2015 the total cost associated with falls in the US exceeded $50 billion.[9] From the community and prehospital standpoint, falls also result in significant resource expenditure and call volume to emergency medical services (EMS).[11,12,13,14] Individuals who fall are also likely to have repeat EMS and ED encounters.[15,16]

Multiple significant barriers have limited frail elders' acceptance of home healthcare assessments and delivery. One observed barrier for high-risk populations has been patient reluctance to admit home health personnel into their homes; however, once EMS professionals have been trained in "community paramedicine" techniques, they were able to achieve patient trust and have made significant contributions to various public health aims.[17] A second barrier is finding a reliable marker for frailty that detects individuals likely to benefit without over-enrolling patients who will not. Falls appear to be an indicator of frailty among the elderly, although target populations in the fall-prevention literature range from healthy volunteers in day centers to hospitalized patients, and it is not discernible whether differences in effectiveness of interventions derive from diversity of the study population or the interventions themselves. A final barrier is defining success without patient-valued outcomes; most studies reported recurrent falls as an endpoint, but few measured broader, all-cause morbidity or mortality.

### Importance

Providing the elderly who are frail with the ability to maintain independence and live safely at home is of paramount importance to preserving their quality of life.[18] Multiple interventions have been attempted to target this population with varying effect. Interventions in the ED have had limited success, with few documenting improved outcomes.[19,20,21,22,23] Primary care-based interventions have shown similar results.[24 25] Multifactorial approaches appear to be more successful.[26] Additionally, EMS-based interventions have shown some promise.[27,28,29,30,31,32] Widespread success with home safety assessment interventions in the real world, however, remains limited as they have often not been coupled with ongoing community resources and care. This study introduces a novel approach to address this significant gap in healthcare support of the frail elderly living at home.

*Population Health Research Capsule*

What do we already know about this issue?
*Elderly falls at home requiring EMS response were associated with repeat 9-1-1 calls and transport to an ED over the following 30 days.*

What was the research question?
*Can a coordinated health and safety visit by a paramedic and a home care nurse decrease all-cause ED utilization over 30-90 days?*

What was the major finding of the study?
*Among frail elderly, the intervention reduced the proportion of repeat ED visits significantly at 30, 60, and 90 days (18.2% vs 29.2%, 27.5% vs 39.8%, and 34.6% vs 46.2%, respectively, P<0.001 for all).*

How does this improve population health?
*The complementary skills of EMS and home care nurses can enhance the health and safety of elders, reducing their reliance on emergency medical care.*

### Goals of This Investigation

We sought to measure the effect of a coordinated frailty assessment and home safety intervention by research paramedics with follow-up visits by community-based home health nurses on subsequent, all-cause ED utilization at 30, 60, and 90 days post-intervention. Ultimately, the goal was to improve the safety of enrolled subjects and enhance their ability to live independently.

## METHODS

### Study Design and Setting

The Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly (PRIDE) program was a prospective observational study, conducted between March 2015–April 2018. Subjects resided in the geographic catchment area of 15 towns in south-central Connecticut.

### Selection of Participants

Study subjects were recruited into one of three enrollment populations: 1) those who were seen in the ED after falls; 2) individuals who responded to public messaging and perceived themselves to be at risk for falling; and 3) those referred by EMS agencies after they called 9-1-1 for a "lift assist" or help getting up after a non-injury fall at home. Subjects were recruited into the ED arm by research associates (RA) stationed in the ED of a large, urban, tertiary care hospital with over 100,000 ED visits per year.

On assigned schedules that generally covered day and evening shifts seven days a week, these RAs monitored patient locator boards for chief complaints suggestive of falls by seniors. When appropriate, they approached the patient and/or family, explained the study, and if eligible, invited them to participate. Following informed consent, the participants were enrolled as study subjects. Those who were interested in participating but were admitted to the hospital on that ED visit were contacted again by the RAs near the time of discharge to facilitate entry into the study.

Subjects who perceived themselves as elderly and at risk of falling, were recruited through information events and public messaging. Recruitment efforts included tables at senior centers, senior housing complexes, churches, and other venues, which were staffed by research paramedics wearing PRIDE logos who answered questions and distributed brochures. Radio spots and billboards describing the program and providing contact information were also used.

Subjects were recruited into the EMS referral arm at the time of a "lift assist" call if they or the responsible family member at the scene agreed that a study representative could subsequently call and invite them to participate in the study. If the patient consented to the follow-up call, his or her name and telephone number were forwarded by the EMS responders to study personnel. Following informed consent, all subjects who did not wish to participate in the study intervention were given the option of declining.

In all arms of the study, eligibility was restricted to adults living at home or in assisted living facilities within the geographic catchment area. Participants living in long-term care facilities were not eligible to participate. There was no explicit age requirement, but participants were primarily over 65, likely due to use of the term "elderly" in the program title. We defined the intervention group as those who agreed to participate in the intervention. Participants comprising the control group consented to have their subsequent ED utilization followed but chose not to participate in the intervention. Each participant received a $10 gift card to a local supermarket for enrolling, and a $15 gift card for completing the interventions.

### Intervention

The intervention consisted of a visit by a Connecticut-licensed paramedic serving independently of the EMS system and trained and identified to the public as a research assistant for this project. The research paramedic performed a home safety check (availability of grab bars, working smoke detectors, risks associated with throw rugs, trip hazards, etc), obtained a list of current medications, and employed standard instruments to assess degrees of frailty.[33,34,35,36] The research paramedic also contacted the study subject's primary care clinician, discussed relevant findings from the home assessment, and if the subject consented, facilitated a follow-up visit. Free transportation to the primary care office site was offered as part of the intervention. The precise screening performed, and the field-adapted Fall Risk Inventory, can be found in Appendix 1.

Following the research paramedic's visit, there was a pre-arranged house call by a nurse from one of several participating home health agencies. The nurse reviewed the findings of the research paramedic's assessment, performed medication reconciliation, and confirmed access to currently prescribed medications. The nurse also determined needs for durable equipment and ongoing services such as physical or occupational therapy and arranged for delivery. Research paramedics and visiting nurse staff were formally trained for the intervention, including didactic training and opportunities to ride along with their counterparts in the care team and to shadow case managers and care coordinators in the ED. Further details on the training curriculum for paramedics and nurses can be found in Appendix 2.

Finally, after the interventions were completed, a brief satisfaction survey was mailed to each participant. This survey was adapted for PRIDE from the Centers for Medicare & Medicaid Home Health Care Consumer Assessment of Healthcare Providers and Systems, which was beta-tested on an early subset of subjects representing all three enrollment populations and did not require revision before deployment.

### Measurements

Data obtained from the participants directly at the time of enrollment, during the interventions performed by the research paramedics and visiting nurses during the home visits, and participants' responses to the post-completion satisfaction survey, were collected and maintained using REDCap electronic data capture tools hosted at Yale University.[37] [38] We captured subsequent ED admissions or hospitalizations by matching multiple identifiers in REDCap with participants' electronic health records.

We measured ED utilization that occurred 30, 60, and 90 days after enrollment in the control group, and after the home health nurse visit was completed in the intervention group. Study subjects were considered part of the control group until both visits outlined in the intervention (research paramedic and visiting nurse) were completed. For example, subjects whose study intervention was completed over 60 days following enrollment, had 30-day and 60-day data included in the control group. The date of completion of the second visit was considered day 0 for the intervention group. Any EMS use at 30 days was also measured and published separately.[13]

## Outcomes

Primary outcomes were subsequent all-cause ED utilization.

## Analysis

We conducted a generalized estimating equation (GEE) analysis using SAS analytic software 9.4 (SAS Institute, Inc, Cary, NC) to compare the proportions of participants that had at least one ED visit during the 30, 60, or 90 days following enrollment in the control group or following completion of the visits in the intervention group. The GEE was used to accommodate repeated assessments from the participants, some of whom were sequentially included in control and then intervention groups. We similarly compared data across the three enrollment populations (ie, ED-recruited, self-referred, and EMS-referred) to determine whether the intervention appeared more or less effective among these groups. We also conducted a multivariable analysis with covariate adjustment including age, gender, and insurance type.

Additional supportive analyses were performed on the ED-enrolled subject populations to evaluate sensitivity. First, to further evaluate for any effects related to having some data from the same subjects in both intervention and no-intervention groups, we removed all the data from the crossover subjects from the dataset and only those who had never received the intervention throughout the study were compared by logistic regression with those who did. Second, to address potential bias due to variable delays between the time of enrollment in the ED and the time of the intervention, we looked at our population of crossover subjects (those who had outcomes recorded both before and after the study intervention). We performed paired analysis using GEE to compare the no-intervention phase vs the intervention phase of their study participation. The crossover subjects thus served as their own controls.

We performed person-time analysis using generalized Poisson regression to further evaluate the intervention's effect on healthcare utilization. The statistical significance was defined as $P<0.05$, two-sided.

## RESULTS

There were 5,665 individuals enrolled in the PRIDE study: 121 from 9-1-1 calls; 2,757 from ED visits; and 2,787 via self-referral. Of these, full 90-day follow-up data were available for 5,439 (96%) of enrolled subjects. Figure 1 shows the numbers of subjects and their study participation following enrollment. A few (<10) subjects contacted us requesting to withdraw from the study after initially enrolling. All of these occurred prior to an initial home visit by a PRIDE research paramedic. The records of those individuals were totally deleted from the REDCap database so that none of their personal data or medical records could subsequently be accessed by the investigators. They are not included in the total enrollment shown in the flow chart. There were 146 deaths (2.6%) of study subjects over the course of the interventions and follow-up periods; the number who died at each stage of the study is also shown in the flow chart.

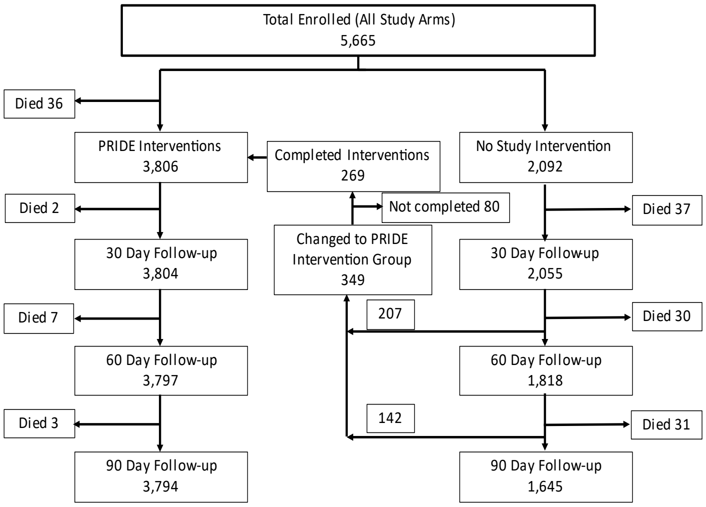


**Figure 1.** Flowchart showing total enrollment and the number of participants at each stage of the PRIDE* study. The subjects who began their 30- or 60-day observation period without the PRIDE intervention but then participated in the PRIDE interventions are shown in the transition area in the middle of the chart.
*_PRIDE,_ Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly.

Table 1 shows demographic statistics by enrollment population. The study population had an average age of 76 years, was 68% female, and 53% urban-dwelling; 81% of the participants had Medicare insurance. At least 32% of PRIDE participants lived in subsidized or public housing (data not shown), and 45% fell below the poverty line, based upon Medicaid enrollment figures. Approximately 53% of participants lived in the city of New Haven, while the rest lived in the surrounding suburbs. The self-referral arm included 73.4% participants over the age of 65 years, whereas the 9-1-1 lift assist and ED referral arms included 88.4% and 89% of subjects over 65, respectively.

Table 2 shows the main outcomes of our intervention. We found that that the PRIDE intervention had the greatest effect among those subjects invited to participate during a fall-related ED visit. In this group, the PRIDE intervention was associated with a 38% relative reduction in subsequent ED visits within 30 days, and a 25% relative reduction at 90 days of follow-up (all *P*-values significant at <0.001). The adjusted *P* value reflects demographic covariates including age, gender and insurance type(s). Individuals who entered this study through the self-referral mechanism did not have significant reductions in subsequent ED encounters (all *P*-values >0.2). Those who enrolled as a result of 9-1-1 referrals also showed no apparent benefit, although the numbers in this arm were too small for reliable comparison.

**Table 1.** PRIDE* participant demographics.

| | 9-1-1 Lift assist (N=121) | | Emergency department (N= 2,757) | | Self-referral (N=2,787) | |
|---|---|---|---|---|---|---|
| Characteristics | Number | Percentage | Number | Percentage | Number | Percentage |
| Age at enrollment | | | | | | |
| Younger than 65 | 14 | 11.6% | 296 | 11% | 743 | 26.6% |
| 65-74 | 25 | 20.6% | 788 | 28.4% | 679 | 24.3% |
| 75-84 | 44 | 36.3% | 877 | 31.8% | 769 | 27.5% |
| 85 and older | 38 | 31.5% | 796 | 28.8% | 596 | 21.3% |
| Gender | | | | | | |
| Female | 76 | 63% | 1834 | 66.6% | 1,931 | 69.3% |
| Male | 45 | 37% | 923 | 33.4% | 856 | 30.7% |
| Race | | | | | | |
| White | 96 | 79% | 1760 | 64% | 1,594 | 57% |
| Black | 18 | 15% | 760 | 27.5% | 716 | 25.5% |
| Hispanic | 4 | 3% | 209 | 7.5% | 432 | 15.5% |
| American Indian, Alaska Native, Asian/ Pacific Island American, or other | 3 | 2% | 28 | 1% | 45 | 2% |
| Insurance* | | | | | | |
| Medicare | 69 | 57% | 1554 | 56% | 1,128 | 40% |
| Medicaid | 4 | 3% | 240 | 10% | 436 | 16% |
| Medicare+ Medicaid | 46 | 38% | 809 | 29% | 1,005 | 36% |
| Private | 2 | 2% | 97 | 3% | 106 | 4% |
| None | 0 | 0 | 57 | 2% | 112 | 4% |

**Table 2.** PRIDE* study outcomes comparing the percentage of study subjects with at least one subsequent, any-cause ED visit 30, 60, and 90 days following completion of the PRIDE intervention or enrollment only “No Intervention” in subjects in the 9-1-1 lift assist, self-referral, or ED enrollment populations.

| Percentage of subjects with ≥1 subsequent ED encounter | | | | |
|---|---|---|---|---|
| Follow-up time | No intervention | PRIDE intervention | Unadjusted P-value | Adjusted P-value |
| | | 9-1-1 lift assist | | |
| 30 days | 3/9 (33.33%) | 22/83 (26.51%) | 0.50 | - |
| 60 days | 4/8 (50.00%) | 28/81(34.57%) | 0.38 | 0.36 |
| 90 days | 2/6 (33.33%) | 35/80(43.75%) | 0.60 | 0.30 |
| | | Self-referral | | |
| 30 days | 54/516 (10.47%) | 198/2,297 (8.62%) | 0.31 | 0.30 |
| 60 days | 62/440 (14.09%) | 342/2,297 (14.89%) | 0.56 | 0.84 |
| 90 days | 75/393 (19.08%) | 431/2,297 (18.76%) | 0.66 | 0.23 |
| | | Emergency department enrollment | | |
| 30 days | 447/1,530 (29.22%) | 259/1,424 (18.19%) | <0.001 | <0.001 |
| 60 days | 545/1,370 (39.78%) | 390/1,419 (27.48%) | <0.001 | <0.001 |
| 90 days | 576/1,246(46.23%) | 491/1,417 (34.65%) | <0.001 | <0.001 |

**PRIDE,* Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly; *ED,* emergency department.

The results of the analysis for the ED-enrolled subjects excluding the intervention crossovers are presented in Table 3. The statistically significant difference between the PRIDE intervention and no intervention groups in terms of subsequent ED utilization was preserved over all three follow-up intervals with adjusted and unadjusted $P$-values $<0.001$.

In analyses of crossover participants only (ie, those observed during both control and intervention periods), all of the subjects had at least 30, and some up to 90 days, of outcomes data prior to receiving the intervention. As the data shown in Table 4 demonstrates, the percentage of these subjects with at least one ED visit following enrollment increased with each month of follow-up both pre- and post-intervention but was comparatively decreased following the PRIDE intervention. The differences between the groups remain statistically significant, with higher $P$-values reflecting the smaller numbers included in these subsets of study participants.

We also performed a person-time analysis to initial ED visit and an event-time analysis for all ED visits. The results are displayed in Tables 5 and 6, respectively. In the group of individuals originally recruited from the ED, the incidence rate was 3.36 per 1,000 follow-up days among intervention subjects vs 4.54 per 1,000 follow-up days in the no-intervention group, a difference that was statistically significant **($P<0.001$).** The incidence rates of first ED visit among the 9-1-1 lift-assist and self-referral groups showed no significant difference between the intervention and no intervention groups. Incidence rates of total overall visits also demonstrated a significant difference among subjects recruited from the ED: 6.27 visits per 1,000 follow-up days in the intervention arm vs 7.16 visits per 1,000 follow-up days in the control arm **($P<0.01$)**, but not among subjects recruited via 9-1-1 lift assist or self-referral.

The following question was asked as part of the participant satisfaction survey that was mailed to every subject who completed both the PRIDE paramedic and nurse visits: "Using any number from 0 to 10, where 0 is the worst healthcare experience possible and 10 is the best healthcare experience possible, what number would you use to rate your experience with the PRIDE program?" The participants were provided self-addressed, stamped envelopes for returning their surveys. A total of 3,806 surveys were mailed to participants and 1,952 were returned, for a response rate of 51%, although 77 individuals (3.9%) left this question blank. Table 7 depicts the distribution of results along the satisfaction scale described above. Of the 1,875 who answered this question, 69% rated participation in the PRIDE program a "10," or the best healthcare experience possible.

## DISCUSSION

To our knowledge, this is the largest study of an intervention aimed at reducing short-term morbidity while maintaining independence among frail, community-dwelling older adults. Based on promising earlier studies, EMS personnel coordinated with home healthcare agency nurses and primary care physicians to address gaps in home support services and to define the individuals who were most likely to benefit from the interventions. [13]

This study demonstrated decreased subsequent all-cause ED utilization at 30, 60, and 90 days after a home assessment

**Table 3.** PRIDE* study outcomes comparing the percentage of study subjects who had been enrolled in the ED and had at least one subsequent, any-cause ED visit 30, 60, and 90 days following completion of the PRIDE intervention vs enrollment only. The crossover patients included in Table 2 who had results in both the no-intervention (by virtue of time passed between enrollment and completion of the intervention) and the intervention groups were excluded in this analysis. Thus, there is no overlap between the control and intervention groups.

| | Percentage of ED-enrolled unique subjects with ≥1 subsequent ED encounter | | | |
|---|---|---|---|---|
| Follow-up time | No intervention | PRIDE intervention | Unadjusted P-value | Adjusted P-value |
| 30 days | 341/1,156 (29.5%) | 259/1,424 (18.19%) | <0.001 | <0.001 |
| 60 days | 438/1,114 (39.32%) | 390/1,419 (27.48%) | <0.001 | <0.001 |
| 90 days | 481/1,075 (45.57%) | 491/1,417 (34.65%) | <0.001 | <0.001 |

**PRIDE,* Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly; *ED,* emergency department.

**Table 4.** PRIDE* study outcomes comparing the percentage of study subjects who had been enrolled in the ED and had at least one subsequent, any-cause ED visit 30, 60, and 90 days prior to (no Intervention) or following completion of the PRIDE intervention.

| | Percentage of crossover ED-enrolled subjects with ≥1 subsequent ED encounter | | | |
|---|---|---|---|---|
| No intervention | PRIDE intervention | Unadjusted P-value | Adjusted | P-value |
| 30 days | 106/374 (28.34%) | 74/374 (19.8%) | 0.003 | 0.002 |
| 60 days | 107/256 (41.8%) | 83/256 (32.42%) | 0.01 | 0.01 |
| 90 days | 85/171 (49.7%) | 69/171 (40.35%) | 0.04 | 0.05 |

**PRIDE,* Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly; *ED,* emergency department.

**Table 5.** Person-time analysis for first healthcare encounter with or without PRIDE* intervention, by enrollment population.

| Enrollment population | No intervention | | | PRIDE intervention | | | |
|---|---|---|---|---|---|---|---|
| | Follow-up days | # of people | # of people per 1,000 follow-up days | Follow-up days | # of people | # of people per 1,000 follow-up days | P-value |
| 9-1-1 Lift assist | 1,670 | 6 | 3.59 | 19,146 | 64 | 3.34 | 0.91 |
| Self-referral | 142,352 | 203 | 1.43 | 695,166 | 1,974 | 1.54 | 0.36 |
| ED visits | 254,595 | 1,156 | 4.54 | 292,016 | 982 | 3.36 | <0.0001 |
| Total overall | 398,617 | 1,365 | 3.42 | 1,006,328 | 2120 | 2.11 | <0.0001 |

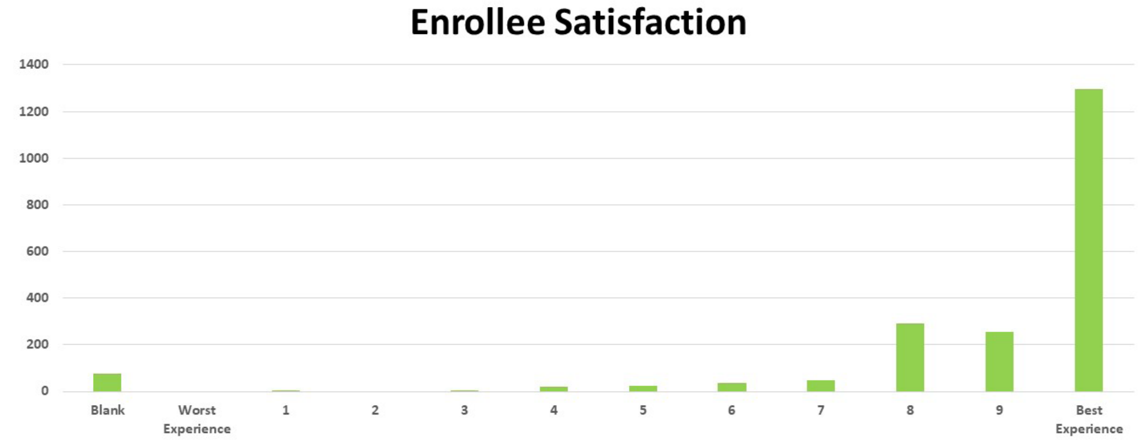
**PRIDE,* Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly; *ED,* emergency department.

**Table 6.** Event-time analysis for all ED visits, with or without PRIDE* intervention, by enrollment population.

| Enrollment population | No intervention | | | PRIDE intervention | | | |
|---|---|---|---|---|---|---|---|
| | Follow-up Days | # ED visits | # ED visits per 1,000 follow-up days | Follow-up days | # ED visits | # ED visits per 1,000 follow-up days | P-value |
| 9-1-1 Lift assist | 3,084 | 11 | 3.57 | 52,753 | 299 | 5.67 | 0.30 |
| Self-referral | 200,107 | 537 | 2.68 | 1,038,001 | 3,327 | 3.21 | 0.044 |
| ED visits | 606,716 | 4,343 | 7.16 | 606,578 | 3,801 | 6.27 | 0.0092 |
| Total overall | 809,907 | 4,891 | 6.04 | 1,697,332 | 7,427 | 4.38 | <0.0001 |

**PRIDE,* Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly; *ED,* emergency department.

**Table 7.** Results of a satisfaction rating question that was part of a survey mailed to study participants after they completed both elements of the PRIDE* intervention. (See text for the wording of the question and the scale used.)



| Scale | Blank | Worst Experience | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Best Experience |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # of Respondents | 77 | 0 | 3 | 0 | 3 | 11 | 26 | 37 | 48 | 190 | 256 | 1,290 |

**PRIDE,* Paramedic Referrals for Increased Independence and Decreased Disability in the Elderly.

intervention among ED patients who presented with falls, but not among individuals who self-referred. There were substantial demographic differences between the self-referred and ED-enrolled arms, as seen in Table 1. The self-referred subject group was younger, included a higher percentage of minorities, and more likely to have Medicaid or no insurance than the ED-enrolled subjects. The baseline rates of ED re-utilization in the fall-related ED visit enrollment population were two to three times the rates seen in the self-referral population. (With no intervention, 29%, 40%, and 46% of the ED subgroup visited the ED at 30, 60, and 90 days, respectively, vs 10%, 14%, and 19% of the self-referral subgroup.) This rate of subsequent ED use suggests that ED presentation by elderly individuals for falls may be a salient indicator for health systems to identify patients at high risk of returning for any reason if no intervention is performed. Based on these group comparisons, older age and falls requiring medical evaluation appeared to be more predictive of benefit from the PRIDE intervention than race or type of insurance coverage.

The significantly lower ED utilization among subjects receiving the PRIDE intervention within the ED-recruited population but not in the self-referral population further suggests that falls are a useful marker for frailty, and that the associated high risk of short-term illness and injury may be modifiable by the right set of interventions. Indeed, for patient populations not specifically restricted to falls, home visit interventions have been found to be more effective on higher risk patients.[39] Interventions such as this are also more effective in patients who have had falls; Cumming et al and Nikolaus et al both found their interventions to be more effective in the subgroups that had previous falls.[40,41]

Recent research has shown that emergency physicians fail to identify risk factors for falls in the ED.[21] Although the ED is a place where high-risk patients are concentrated, the risk mitigation strategies these patients acutely need is difficult to implement onsite, given the competing demands on a clinician's time and the hectic environment. However, this study provides evidence that patients' time in the ED can be harnessed effectively another way, by dedicated enrollment staff to coordinate post-visit, risk-mitigating follow-up.

In contrast, the difficulty enrolling subjects into the 9-1-1 lift-assist arm attests to the regulatory and workflow challenges for EMS personnel to enroll individuals in the same intervention. Several towns within the geographic catchment area were reluctant to allow EMS personnel to perform this enrollment, and unlike in the ED, EMS did not have additional staff helping with patient enrollment. These practical considerations are unlikely to be unique to this study and may represent reasons ED enrollment may be preferable to EMS agencies recruiting subjects on scene.

## LIMITATIONS

This was an observational cohort study that provided participants the choice whether to receive the intervention, rather than being a randomized controlled trial. Without randomization it is unknown whether selection bias is present and a contributor to the differences in outcomes between the control and intervention arms. Nevertheless, analyses of those that were observed during both control and intervention periods (ie, intervention crossovers) provided similar results. Another limitation in analysis of the intervention is that the efficacy of the PRIDE intervention was assessed in aggregate. The effect size or direction of independent components of the multifactorial intervention (research paramedic visit, nurse visit, medication reconciliation, mobility screening, primary care clinician communication, free transportation to follow-up appointments, ongoing visiting nurse services, medical equipment, etc) could not be determined from this study.

Outcomes reporting of ED visits was limited to within the Yale New Haven Health System (YNHHS); therefore, repeat ED visits to other health systems are not reflected in our analysis. However, the vast majority (at least 85%, based on EMS data) of ED visits and 88% of the inpatient beds in the study's catchment area are at YNHHS facilities.

## CONCLUSION

Research paramedic and visiting nurse home visits were associated with lower rates of subsequent all-cause ED utilization among subjects who presented to the ED after falls but not among subjects who self-enrolled by identifying themselves as at risk for falling, nor among subjects who contacted 9-1-1 for lift assists. These findings suggest that individuals who present to the ED after falls can efficiently be enrolled and are likely to benefit from a program involving standardized home assessment of frailty and safety by specially trained paramedics and follow-up visits by home health nurses to arrange for appropriate, ongoing medical and community resources. By targeting this vulnerable group with a focused intervention, the autonomy of these patients and their ability to live independently may be enhanced and potentially preserved.

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# A Cross-sectional Survey to Assess Awareness of Syndromic Surveillance by Clinicians Practicing Emergency Medicine: An Opportunity for Education and Collaboration

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**Introduction**: Syndromic surveillance (SyS) is an important public health tool using de-identified healthcare discharge data from emergency department (ED) and urgent care settings to rapidly identify new health threats and provide insight into current community well-being. While SyS is directly fed by clinical documentation such as chief complaint or discharge diagnosis, the degree to which clinicians are aware their documentation directly influences public health investigations is unknown. The primary objective of this study was to evaluate the degree to which clinicians practicing in Kansas EDs or urgent care settings were aware that certain de-identified aspects of their documentation are used in public health surveillance and to identify barriers to improved data representation.

**Methods:** We distributed an anonymous survey August–November 2021 to clinicians practicing at least part time in emergency or urgent care settings in Kansas. We then compared responses from emergency medicine (EM)-trained physicians to non-EM trained physicians. Descriptive statistics were used for analysis.

**Results:** A total of 189 respondents across 41 Kansas counties responded to the survey. Of those surveyed, 132 (83%) were unaware of SyS. Knowledge did not differ significantly by specialty, practice setting, urban region, age, nor by experience level. Respondents were unaware of which aspects of their documentation were visible to public health entities, or how quickly records were retrievable. When asked about improving documentation for SyS, lack of clinician awareness (71.5%) was perceived as a greater barrier than electronic health record platform usability or time available to document (61% and 59%, respectively).

**Conclusion:** This survey suggests that most practitioners in EM have not heard of SyS and are unaware of the invaluable role certain aspects of their documentation play in public health. Critical information that would be captured and coded into a key syndrome is often missing, but clinicians are unaware of what types of information may be most useful in their documentation, and where to document that information. Lack of knowledge or awareness was identified by clinicians as the single greatest barrier to enhancing surveillance data quality. Increased awareness of this important tool may lead to enhanced utility for timely and impactful surveillance through improved data quality and collaboration between EM practitioners and public health. [West J Emerg Med. 2023;24(5 Supplement)51–57.]

## INTRODUCTION

Syndromic surveillance (SyS) is a data collection strategy that informs public health about concerning trends in near real-time by analyzing patient-reported symptoms and electronic health record (EHR) documentation from clinicians in emergency departments (ED) and urgent care.[1,2] The timely information that SyS can provide about current community well-being, and the ability to query free-text fields (eg, chief complaint, triage notes) in addition to discharge diagnosis, allow for early outbreak detection and active surveillance of a wide variety of public health indicators. Health departments work with hospitals to send de-identified visit data in batches as frequently as every hour, and the data is monitored on a daily basis to alert epidemiologists to potential health-related concerns.

Epidemiologists actively use SyS tools in their day-to-day practice, and there is great opportunity for collaboration with frontline clinicians providing the data input. For example, e-cigarette or vaping-associated lung injury, was initially identified when astute healthcare clinicians alerted public health practitioners to cases of respiratory failure among young adults, prompting widespread SyS queries to further quantify this public health problem and identify cases for investigation.[3] More recently, SyS was used to assess the real-time impact of physical and social distancing rules implemented in the initial phase of the coronavirus coronavirus 2019 pandemic.[4]

Syndromic surveillance has also been used to prove the efficacy of vaccination initiatives by demonstrating a decrease in patients presenting to EDs for target diseases.[6,7] Furthermore, SyS has been used to analyze extreme weather events, providing information to assist in statewide response plans.[8-10] The public health applications of SyS are as vast as the data SyS obtains from EHR-documented symptoms and diagnoses, and the data can be used to more rapidly respond to emerging health threats than traditional sources of public health information.

As SyS systems use data generated from clinician documentation, the strength of the data collected is reliant on clinician awareness of the role of their documentation in SyS.[11] To date, this relationship has not been well examined in public health or medical literature, which is surprising as SyS systems are fed directly by EHR documentation from acute care, urgent care, and ED settings (which in this manuscript we will consider collectively as "ED settings"). To better explore clinician understanding of SyS, we created a survey evaluating their awareness of SyS and perception of EHR data-collection methods. We hypothesized that emergency clinicians in our state are largely unaware of SyS and unaware of the invaluable role their documentation plays in the aggregation of data for public health action. Given that Kansas has a robust SyS system and is leading the way in SyS outreach and application, the state was well situated for an investigation of this hypothesis.

## METHODS

We conducted a cross-sectional survey designed to assess emergency clinician (physician and midlevel practitioner) awareness and understanding of SyS through an electronic survey questionnaire. Twelve of 29 survey questions gathered respondent demographics, training level, primary practice setting, and assessed their understanding of SyS and perceived barriers toward improving documentation for public health purposes. (For full survey template see supplement.) The questionnaire was created by the Kansas Syndromic Surveillance Program. The survey instrument was piloted with nine physicians and underwent three revisions.

Survey subjects were eligible to participate if they identified as practicing in an EM or urgent care (UC) setting in the state of Kansas (eg, EM-trained, and non-urban family medicine [FM], internal medicine [IM] clinicians and rural physician assistants [PA]). In rural counties, the ED did not have to be the primary practice setting provided the clinician identified as practicing in the ED at least part time. We acquired clinicians' emails from the Kansas Board of Healing Arts database, and we contacted potential survey participants via email correspondence and the Kansas Chapter of the American College of Emergency Physicians (KS ACEP). Responses were anonymous. The survey was disseminated and stored with survey software (Qualtrics XM, Provo, UT) from August 1–November 12, 2021, and participants were contacted multiple times. We analyzed qualitative data using survey analytic descriptive statistics (SAS Institute, Inc, Cary, NC). Awareness and perception differences were compared with Pearson chi-square tests.

*Population Health Research Capsule*

What do we already know about this issue?
*Syndromic surveillance (SyS) is a public health tool using de-identified ED visit records to rapidly assess current health threats.*

What was the research question?
*Are clinicians in emergency medicine aware their documentation is important for public health surveillance?*

What was the major finding of the study?
*Of 189 clinicians surveyed, 83% were unfamiliar with SyS or the role their charting plays in public health.*

How does this improve population health?
*Increasing awareness of SyS within emergency medicine will inform public health practice through collaboration to target surveillance and enhance data quality.*

## RESULTS

Of 1,553 EM, FM, IM physicians and PAs queried, 189 responded. Of those queried, 480 were formally trained in EM. There is no existing source to quantify how many clinicians practice in Kansas EDs. Further, not all physicians queried may have been eligible to participate in the survey as outlined by our communication. The response rate for emergency physicians at our state's large academic medical facility reached 38%. Responses were received from clinicians in 41 counties, reflecting excellent Kansas clinician representation given that three-quarters of the state population resides in just six counties.

See Table 1 for responses by practice setting, age range, and level of training. The majority of respondents identified

**Table 1.** Respondent breakdown and calculated P-values to assess whether awareness of syndromic surveillance differed significantly by hospital type, age, role, specialty, or practice setting.

| | All respondents (N=189) | Have you heard of syndromic surveillance?* | | | |
|---|---|---|---|---|---|
| Demographics | % (n) | Yes, % (n) | No, % (n) | Unsure, % (n) | Group P-value (chi-square) |
| | | 17.0% (27/159) | 74.8% (119/159) | 8.2% (13/159) | |
| Hospital type | | | | | |
| Critical access hospital | 14.0% (23/164) | 0% (0/21) | 90.5% (19/21) | 9.5% (2/21) | 0.152 |
| Teaching facility | 37.8% (62/164) | 20.8% (11/53) | 71.7% (38/53) | 7.5% (4/53) | |
| Non-teaching facility | 25.6% (42/164) | 16.7% (6/36) | 80.6% (29/36) | 2.8% (1/36) | |
| Other (Urgent care, ambulatory) | 22.6% (37/164) | 21.9% (7/32) | 62.5% (20/32) | 15.6% (5/32) | |
| Age | | | | | |
| 20-29 | 15.4% (29/188) | 0% (0/25) | 84% (21/25) | 16% (4/25) | 0.173 |
| 30-49 | 54.8% (103/188) | 20.5% (17/83) | 73.5% (61/183) | 6.0% (5/83) | |
| 50-69 | 25.5% (48/188) | 20.9% (9/43) | 69.8% (30/43) | 9.3% (4/43) | |
| 70+ | 4.3% (8/188) | 12.5% (1/8) | 87.5% (⅞) | 0% (0/8) | |
| Level of training | | | | | |
| Resident or fellow | 18.6% (34/183) | 14.8% (4/27) | 74.1% (20/27) | 11.1% (3/27) | 0.468 |
| Attending | 67.8% (124/183) | 18.9% (21/111) | 73.0% (81/111) | 8.1% (9/111) | |
| Mid-level practitioner | 13.7% (25/183) | 9.5% (2/21) | 85.7% (18/21) | 4.8% (1/21) | |
| Practice location | | | | | |
| Urban or semi-urban | 75.5% (143/189) | 20% (23/115) | 72.2% (83/115) | 7.8% (9/115) | 0.347 |
| Rural | 24.3% (46/189) | 10% (4/40) | 80% (32/40) | 10% (4/40) | |
| Primary practice setting | | | | | |
| Emergency department | 48.1% (88/183) | 16.9% (13/77) | 76.6% (59/77) | 6.5% (5/77) | 0.676 |
| Inpatient | 15.3% (28/183) | 14.3% (3/21) | 76.2% (16/21) | 9.5% (2/21) | |
| Urgent care | 4.4% (8/183) | 37.5% (3/8) | 62.5% (5/8) | 0% (0/8) | |
| Other (clinic, tele-medicine) | 32.2% (59/183) | 15.1% (8/53) | 73.6% (39/53) | 11.3% (6/53) | |
| Specialty | | | | | |
| Emergency medicine | 46.7% (86/184) | 21.3% (16/75) | 73.3% (55/75) | 5.3% (4/75) | .806 |
| Family medicine | 24.5% (45/184) | 16.7% (7/42) | 71.4% (30/42) | 11.9% (5/42) | |
| Internal medicine | 20.7% (38/184) | 10.3% (3/29) | 79.3% (23/29) | 10.3% (3/29) | |
| Pediatrics | 3.3% (6/184) | 16.7% (1/6) | 66.7% (4/6) | 16.7% (1/6) | |
| Other (hematology, oncology, occupational medicine, endocrinology, geriatrics, toxicology) | 4.9% (9/184) | 28.6% (2/7) | 57.1% (4/7) | 14.3% (1/7) | |

*Not all respondents answered every question. Total responses to this question may vary from imputed practitioner information.
*SyS*, syndromic surveillance

as EM-specialized (46.7%) followed by FM (24.5%) and IM (20.7%). Primary practice setting was identified as the ED in 48.1%, followed by "other" in 32.2%, inpatient for 15.3%, and 4.4% urgent care. As Kansas is a largely rural state, emergency clinicians in critical access areas are often physicians or mid-level practitioners from a variety of specialty-training backgrounds, practicing acute care primarily in non-traditional EM settings.

The majority of survey respondents indicated they were unfamiliar with SyS, and the role that EHR documentation serves in public health. When discussing public health and SyS, 75% of respondents indicated "no" when asked "Have you heard of a subset of public health surveillance called syndromic surveillance?" Only 17% of respondents indicated they had heard of SyS, although none indicated where they had previously learned of SyS. Awareness of SyS did not significantly differ by practice setting, academic vs non-academic center, age, nor by clinician training (Table 1). For the analysis, we compared the relative difference in responses between EM and non-EM trained physicians and found no significant differences between the responses.

Respondents were unsure which aspects of documentation are visible to public health, how quickly data is received, and what conditions are monitored using SyS (Table 2). When asked what their perceived barriers were to improving clinician documentation as it relates to public health data, the most popular three answers were clinician lack of awareness (most frequently chosen), electronic health systems (second most frequent response), and time (third most frequent response). (These answer choices do not reflect accurate information related to SyS data collection in Kansas.)

## DISCUSSION

The data obtained in this survey supports our hypothesis that emergency physicians and other clinicians who practice in ED settings are unfamiliar with SyS. Respondents were also unclear about the role EHRs serve in capturing public health trends using SyS. Although not all clinicians identified as practicing primarily in an ED setting, the distribution of responses was similar to a 2020 study demonstrating that FM physicians represented nearly half of the overall physician workforce.[12] Additionally, we found that awareness did not differ significantly by primary practice setting or formal training. This near ubiquitous lack of awareness was identified by clinicians as the largest barrier to improving EHR documentation for SyS, ahead of constraints of EHR platforms and the time available to document thoroughly. While there is minimal ability to broadly impact the types of EHR systems

**Table 2.** All analyzed survey questions and their results.

| Awareness | EM Respondents, % (n) | All Respondents, % (n) |
|---|---|---|
| Have you heard of syndromic surveillance? | | |
| yes | 21.3% (16/75) | 17.0% (27/159) |
| no | 73.3% (55/75) | 74.8% (119/159) |
| unsure | 5.3% (4/75) | 8.2% (13/159) |
| Is public health able to monitor de-identified healthcare discharge data for surveillance purposes? | | |
| yes | 36.0% (27/75) | 30.2% (48/159) |
| no** | 4.0% (3/75) | 6.3% (10/159) |
| unsure | 60.0% (45/75) | 53.4% (101/159) |
| Which aspects of documentation can be monitored for public health surveillance? (Select all that apply.) | | |
| unsure | 63.1% (41/64) | 65.4% (85/130) |
| ICD diagnosis codes | 51.6% (33/64) | 50.8% (66/130) |
| patient demographics (e.g. age, county) | 20.3% (13/64) | 23.1% (30/130) |
| procedure codes | 15.6% (10/64) | 16.9% (22/130) |
| chief complaint | 14.1% (9/64) | 13.9% (18/130) |
| identifiable patient data (e.g. name, address)** | 6.3% (4/64) | 26.9% (35/130) |
| vital signs | 4.7% (3/64) | 5.4% (7/130) |
| triage notes | 4.7% (3/64) | 4.6% (6/130) |
| Clinician assessments (e.g. HPI, assessment, and plans)** | 0.0% (0/64) | 10.8% (14/130) |

*ICD*, International Classification of Diseases; *HPI*, history of present illness; *EVALI*, e-cigarette or vaping product use-associated lung injury; *AMI*, acute myocardial infarction; *CC*, chief complaint; *ED*, emergency department; *EHR*, electronic health record.

**Table 2 Continued.** All analyzed survey questions and their results.

| Awareness | EM respondents, % (n) | All respondents, % (n) |
|---|---|---|
| When ED or UC surveillance is possible, how soon is it generally retrievable after ED discharge? | | |
| Unsure | 78.1% (50/64) | 80.8% (105/130) |
| 1-12 hours | 7.8% (5/64) | 4.6% (6/130) |
| 12-48 hours | 6.3% (5/64) | 10.0% (13/130) |
| 2-7 days** | 0% (0/64) | 4.6% (6/130) |
| 1-2 weeks** | 4.7% (3/64) | 3.1% (4/130) |
| Not possible** | 3.1% (2/64) | 1.6% (2/130) |
| Which data is monitored from ED/urgent care EHR systems at the public health level? (Select all that apply.) | | |
| Unsure | 56.3% (36/64) | 56.2% (73/130) |
| Reportable infectious diseases | 34.3% (22/64) | 36.2% (47/130) |
| Critical diseases only by state mandate of importance | 34.3% (22/64) | 34.6% (45/130) |
| Emerging conditions of interest (e.g. EVALI) | 29.7% (19/64) | 29.2% (38/130) |
| Environmental exposures (e.g. weather related) | 28.2% (18/64) | 28.5% (37/130) |
| Visits following a mass gathering or disaster | 26.6% (17/64) | 28.5% (37/130) |
| Adverse events (e.g. vaccine side effects) | 25.0% (16/64) | 26.2% (34/130) |
| Trauma-related (e.g. child abuse, interpersonal violence) | 25.0% (16/64) | 25.4% (33/130) |
| Syndromes (e.g. diarrhea, rash + fever) | 15.6% (10/64) | 18.5% (24/130) |
| Acute conditions (e.g. AMI, appendicitis) | 12.5% (8/64) | 16.9% (22/130) |
| Mental health-related visits | 18.8% (12/64) | 15.4% (20/130) |
| What barriers would you perceive as most affecting your ability to improve documentation for public health surveillance data? (Select your top 3.) | | |
| Clinician lack of awareness (e.g. clinicians do not realize certain documentation is monitored or important for surveillance) | 49/62 (79.0%) | 71.5% (93/130) |
| Electronic health systems (i.e. usability, platforms, and vendors) | 66.1% (41/62) | 60.8% (79/130) |
| Time required to document | 64.5% (40/62) | 59.2% (77/130) |
| Perceived level of importance (e.g. irrelevance of patient history to coding) | 50.0% (31/62) | 43.1% (56/130) |
| Lack of standardization/proper codes | 40.3% (25/62) | 39.2% (51/130) |
| Lack of collaboration between medicine and public health | 35.5% (22/62) | 36.9% (48/130) |
| Nurse or receptionist lack of awareness (e.g. documentation of CC or triage-note data by nurse or receptionist is not perceived as important) | 33.9% (21/62) | 32.3% (42/13) |

*ICD*, International Classification of Diseases; *HPI*, history of present illness; *EVALI*, e-cigarette or vaping product use-associated lung injury; *AMI*, acute myocardial infarction; *CC*, chief complaint; *ED*, emergency department; *EHR*, electronic health record.

used, or the time available for clinicians to document patient encounters, increasing awareness among ED practitioners about SyS is a feasible intervention that could impact the future of SyS practice.

This survey fills a gap in the literature addressing the understanding of SyS by clinicians. Our survey results indicate clinicians are unsure what types of information might be useful and where in the EHR documentation. They are not sure what types of conditions and social determinants of health epidemiologists are attempting to monitor. When asked about what this data is used for, respondents were more likely to select that public health monitors reportable infectious diseases or conditions only via state mandate of importance. In reality, public health is using SyS data to monitor a wide variety of health outcomes.[13] Its use has recently been expanded beyond outbreak detection for real-time monitoring of a wide variety of conditions including mental health-related visits, drug overdose, environmental health impacts, and surveillance of patterns in trauma, violence, and injury.[8,10,14,15,16] Public health can do more to actively inform emergency clinicians about conditions and codes of interest or work directly with them to actively monitor conditions of concern.[13]

From direct conversations with the National Syndromic Surveillance Program and ACEP we suspect awareness of SyS is low nationally, not just in Kansas. In fact, Kansas has been one of the state programs leading the way in SyS outreach and application. Increasing awareness of SyS by clinicians has the potential to unearth many meaningful applications for this data through academic public health partnerships and applied public health research. Physicians in Kansas changed the way they document to include additional contextual diagnosis codes not included prior to knowledge about SyS. Codes or language of interest may be determined in collaboration with local public health agencies for emerging health threats or community events. This is also an opportunity to enhance the feedback loop between public health and medicine to target surveillance efforts and provide useful data back to clinicians. Improving the quality of SyS data at the clinician level through increased awareness has obvious implications for future advances in the way we predict, monitor, and respond to disease on a local and national level.

## LIMITATIONS

Although our overall response rate was typical for e-mail-based survey studies of clinicians without incentives, our study is limited by the number of respondents. While our responses are representative of a wide variety of practice settings and experience levels, we cannot exclude the possibility of non-response bias or bias from the survey instrument itself. The length of the survey was likely a factor, as not all respondents answered every question. Additionally, while we suspect our results are likely generalizable to other states, the survey in this study was only administered to practitioners in Kansas. Many of our responses came from clinicians who are not formally EM trained or may be practicing in ED settings part time. While this could generate concerns about reaching our intended audience, it is also a strength of our study because it demonstrates that we captured responses from non-traditional, rural clinicians who practice in ED settings. Finally, the high response rate of academic practitioners in EM to the survey may introduce bias that makes the results less representative of the statewide ED workforce.

## CONCLUSION

Frontline clinicians practicing in ED settings in the state of Kansas are largely unaware of syndromic surveillance and the critical role their documentation plays within this facet of the public health system. Clinicians reported that a lack of understanding of SyS is a significant barrier to making changes to electronic health record-level documentation that would improve the quality of data collected for SyS. These findings represent an opportunity to increase education and collaboration between EM and public health for surveillance purposes.

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# "That Line Just Kept Moving": Motivations and Experiences of People Who Use Methamphetamine

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**Introduction:** Methamphetamine use is on the rise with increasing emergency department (ED) visits, behavioral health crises, and deaths associated with use and overdose. Emergency clinicians describe methamphetamine use as a significant problem with high resource utilization and violence against staff, but little is known about the patient's perspective. In this study our objective was to identify the motivations for initiation and continued methamphetamine use among people who use methamphetamine and their experiences in the ED to guide future ED-based approaches.

**Methods:** This was a qualitative study of adults residing in the state of Washington in 2020, who used methamphetamine in the prior 30 days, met criteria for moderate- to high-risk use, reported recently receiving care in the ED, and had phone access. Twenty individuals were recruited to complete a brief survey and semi-structured interview, which was recorded and transcribed prior to being coded. Modified grounded theory guided the analysis, and the interview guide and codebook were iteratively refined. Three investigators coded the interviews until consensus was reached. Data was collected until thematic saturation.

**Results:** Participants described a shifting line that separates the positive attributes from the negative consequences of using methamphetamine. Many initially used methamphetamine to enhance social interactions, combat boredom, and escape difficult circumstances by numbing the senses. However, continued use regularly led to isolation, ED visits for the medical and psychological sequelae of methamphetamine use, and engagement in increasingly risky behaviors. Because of their overwhelmingly frustrating experiences in the past, interviewees anticipated difficult interactions with healthcare clinicians, leading to combativeness in the ED, avoidance of the ED at all costs, and downstream medical complications. Participants desired a non-judgmental conversation and linkage to outpatient social resources and addiction treatment.

**Conclusion:** Methamphetamine use can lead patients to seek care in the ED, where they often feel stigmatized and are provided little assistance. Emergency clinicians should acknowledge addiction as a chronic condition, address acute medical and psychiatric symptoms adequately, and provide positive connections to addiction and medical resources. Future work should incorporate the perspectives of people who use methamphetamine into ED-based programs and interventions. [West J Emerg Med. 2023;24(5 Supplement)58–67.]

## INTRODUCTION

Methamphetamine use is on the rise nationwide[1] with an increasing number of emergency department (ED) visits,[2,3] behavioral health crises,[4-7] and deaths associated with use and overdose.[8] Racial inequities related to methamphetamine use are also increasing, with the highest prevalence of methamphetamine use[8] and the greatest increases in overdose deaths among American Indians/Alaska Natives. Non-injection methamphetamine use increased 10-fold among Blacks, a much steeper increase than that among White or Hispanic populations.[9]

Methamphetamine is a leading cause of substance-related ED visits.[10,11] The reasons for seeking ED care when using methamphetamine varies with patients requiring anything from medical evaluation for chest pain to sedation and psychiatric evaluation for agitation and psychosis.[12] In some areas, behavioral crises related to methamphetamine use account for half of psychiatric emergency services visits.[13] Additionally, patients who inject drugs, such as methamphetamine, seek ED care for injection-related medical complications.[2] Emergency department visits related to methamphetamine are also likely to involve trauma and/or interactions with law enforcement officers.[14,15] Along with the increase in methamphetamine-related ED visits for medical and psychiatric reasons, emergency clinicians describe methamphetamine use as a significant problem with high resource utilization and risk of violence against staff.[16,17]

There is limited literature examining the perspectives of people who use methamphetamine on their health, limiting opportunities to provide care based on patients' experiences. Among people who use methamphetamine at syringe-access programs across the state of Washington, many were interested in reducing or stopping their use[18] and wanted assistance addressing their medical and social needs through counseling, treatment, and care navigation.[19] However, there are no known studies exploring the ED experience of people who use methamphetamine.

Given the increasing prevalence of methamphetamine use and the increasing number of ED visits related to methamphetamine use disorder, it is imperative that EDs consider the best way to serve this population. For patients with opioid use disorder (OUD), EDs have expanded lifesaving buprenorphine prescribing and take-home naloxone programs nationwide,[20,21] activities that undoubtedly have improved the care for patients with OUD.[22-24] In contrast, there is currently a paucity of pharmacotherapy, psychosocial interventions, and harm reduction strategies targeting patients with methamphetamine use disorder. In this study our primary objective was to identify the motivations of people who use methamphetamine and their experiences in the ED. Secondary objectives were to inform key stakeholders, address stigmatizing behavior in healthcare settings, and guide future ED-based approaches.

*Population Health Research Capsule*

What do we already know about this issue?
*Methamphetamine use is rising with more emergency department visits, behavioral health crises, and deaths associated with use and overdose.*

What was the research question?
*What are the motivations of people who use methamphetamine and their experiences in the ED?*

What was the major finding of the study?
*Fifty percent of participants reported that their 'main drug' was methamphetamine while 15% preferred methamphetamine and heroin, suggesting that polysubstance use is common.*

How does this improve population health?
*Emergency physicians should recognize the complex motivations for methamphetamine use and provide tools to promote patient wellbeing through trauma-informed care.*

## METHODS

### *Study Design and Setting*

From April–September 2020, we administered close-ended questionnaires and conducted semi-structured interviews with adults residing in the state of Washington who were at moderate to high risk for methamphetamine use disorder, had presented to an ED within the prior three months, and had access to a phone. The study was approved by the University of Washington Institutional Review Board, and a Certificate of Confidentiality was obtained from the National Institutes of Health.

### *Selection of Participants*

Participants were recruited through convenience and snowball sampling. Flyers were sent to community substance use treatment clinics, peer support groups within Seattle, WA, supportive housing facilities, office-based opioid treatment programs, opioid treatment programs, and syringe-access program locations. Interested people called our study phone and were screened for eligibility by a trained research assistant (RA). Inclusion criteria included residence in the state of Washington, access to a phone, self-reported ED visit in the prior three months, methamphetamine use in the prior 30 days, and National Institute of Drug Abuse (NIDA)-modified Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) score consistent with moderate or high risk for methamphetamine use disorder.[25]

Those eligible and interested in completing the study next provided verbal informed consent and completed a baseline survey by phone. The study RA directly entered the participant answers into a database using REDCap[26] electronic data capture tools hosted at the University of Washington. All participants who completed the survey received a $5 gift card. Participants were then invited to be interviewed. We obtained survey data from 25 participants and completed semi-structured interviews with 20 of these participants. The 20 individuals who completed the semi-structured interview provided verbal consent, completed audio recorded interviews over the phone, and received $25 gift cards. After completing an initial set of 10 interviews, we performed purposive sampling of participants who were eligible and completed the baseline survey based upon gender and race for the remaining interview participants to include more diverse perspectives.

*Measurements*

During the survey, participants were asked how often they had used methamphetamine in the prior 30 days before undergoing the NIDA-modified ASSIST[25] to determine risk for methamphetamine use disorder. Participants were next asked to identify their "main drug" to identify their drug of choice. Participants were also asked single-items questions on lifetime intentional fentanyl use and lifetime intentional GHB use. Validated single-item questions about tobacco, vaping, and alcohol were asked. We used the Patient Health Questionnaire-2[27] and the Generalized Anxiety Disorder-2[28] to screen for depression and generalized anxiety disorder in the prior two weeks, respectively. The human immunodeficiency virus (HIV) Risk Behavior Survey was used to determine behaviors related to injection, as well as current HIV and hepatitis C virus status. Demographic information, including age, gender, employment, and housing status, were collected. Qualitative semi-structured interviews focused on methamphetamine use, ranging from the causes behind their initial use to current use patterns, as well as on ED experiences, focusing on the patient's last ED visit related to methamphetamine use, their experiences seeking and accessing care, and their thoughts regarding how the ED could meet their needs. The interview guide was refined iteratively, and the final guide is included as an appendix.

*Analysis*

Using descriptive statistics, we analyzed the survey results for participants who completed the survey and the semi-structured interview. The quantitative analysis was restricted to the 20 participants who completed both the survey and the interview. Semi-structured interviews using a standardized interview guide were recorded, transcribed, deidentified, and uploaded to the qualitative data management software Dedoose (SocioCultural Research Consultants, LLC, Manhattan Beach, CA). We used a modified grounded theory framework[29,30] to continuously collect and analyze the qualitative data. The grounded theory framework[29,30] allows the results to emerge from the data without a preconceived hypothesis. Therefore, coding of the manuscripts proceeded in an iterative fashion allowing data and codes from the initial manuscripts to inform the results codebook.

Specifically, we conducted three initial interviews with an interviewer (LH) who had experience conducting semi-structured interviews and working with the target population. After these initial interviews, three members of the research staff (LH, SM, AZ) each independently reviewed two transcripts and inductively developed and applied codes to the transcript.[31] This process iteratively refined the codebook. These members and the principal investigator (LW) then met as a group until consensus was achieved on the codebook, with LW as the arbitrator. Finally, subsequent semi-structured interviews were conducted by the same trained interviewer (LH) until thematic saturation was reached.

## RESULTS

*Quantitative Results*

Of the 25 participants who completed the survey, we interviewed 20 adults who met inclusion criteria (Tables 1 and 2). The mean age of our participants was 41.5 years (SD 8.7 years), and most participants were White cisgender men. All participants reported experiencing homelessness at some point in

**Table 1.** Demographics, substance use characteristics, and medical characteristics of interviewees.

| | N=20 (%) |
|---|---|
| Demographics | |
| Age (mean) | 41.5+/-8.7 |
| Female | 6 (30) |
| Male | 11 (55) |
| Other gender | 3 (15) |
| Race/ethnicity | |
| White | 12 (60) |
| Black | 6 (30) |
| Hispanic/Latinx | 4 (20) |
| Two or more races | 3 (15) |
| Prefers not to answer | 1 (5) |
| Currently experiencing homelessness | 8 (40) |
| Unemployed | 13 (65) |
| Substance use characteristics | |
| Non-methamphetamine substance use in the prior 30 days | |
| Cigarettes or e-cigarettes | 15 (75) |
| Alcohol | 10 (50) |
| Heroin | 9(45) |

*PHQ-2*, Patient Health Questionnaire-2; *GAD*, General Anxiety Disorder scale; *HIV*, human immunodeficiency virus; *HCV*, hepatitis C virus. *GHB,* gamma hydroxy butyrate

**Table 1 Continued.** Demographics, substance use characteristics, and medical characteristics of interviewees.

| Substance Use Characteristics | |
|---|---|
| Non-methamphetamine substance use in the prior 30 days | |
| Lifetime intentional use of fentanyl | 3 (15) |
| Lifetime intentional use of GHB | 10 (50) |
| Injected any drug more than once per day in the prior month | 8 (40) |
| Lifetime opioid overdose | 6 (30) |
| Depression in last two weeks (PHQ-2 >=3) | 15 (75) |
| Anxiety in past two weeks (GAD>=3) | 18 (90) |
| HIV + (sample size is n=19) | 3 (16) |
| HCV + | 4 (20) |

*PHQ-2*, Patient Health Questionnaire-2; *GAD*, General Anxiety Disorder scale; *HIV*, human immunodeficiency virus; *HCV*, hepatitis C virus. *GHB,* gamma hydroxy butyrate

**Table 2.** Methamphetamine use characteristics of interviewees.

| | N=20 (%) |
|---|---|
| Methamphetamine use in the past 30 days | 20 (100) |
| Injected methamphetamine in the last 30 days | 13 (65) |
| Self-reported "main drug" | |
| Methamphetamine by itself | 10 (50) |
| Methamphetamine combined with: | 8 (40) |
| Heroin | 3 (15) |
| Alcohol | 1 (5) |
| Cannabis | 2 (10) |
| Cocaine | 1 (5) |
| GHB | 1 (5) |
| Other main drug | 2 (10) |
| High risk for methamphetamine use disorder (NM-ASSIST >= 27) | 19 (95) |
| Preferred method of using methamphetamine | |
| Smoking | 11 (55) |
| Injecting | 9 (45) |
| Experiences using methamphetamine | |
| In the last 12 months, have you ever felt like you were having a heart attack, stroke, or seizure while on meth? (yes) | 9 (45) |
| In the last 12 months, have you ever had a time when you felt like you were losing your mind, manic, or psychotic while on meth? (yes) | 14 (70) |
| In the last 12 months, have you been to an emergency room because of medical or psychiatric problems related to meth? (yes) | 13 (65) |

NM-ASSIST, National Institute on Drug Abuse modified Alcohol, Smoking and Substance. Involvement Screening Test. *GHB,* gamma hydroxy butyrate

their lifetime while 40% were unstably housed at the time of the interview. Ninety percent were unemployed. Many participants reported current polysubstance use. Among this sample of 20 people who reported currently using methamphetamine, 10 (50%) reported that methamphetamine was their drug of choice, while 45% reported methamphetamine combined with something else to be their preferred drug. Sixty-five percent had injected methamphetamine in the prior month, and 55% reported that their main route of administration was smoking. Thirty percent had visited the ED because of methamphetamine use in the prior 30 days. Most respondents noted physical and/or psychiatric symptoms associated with methamphetamine overdose, or "overamping," in the prior 12 months.

### *Qualitative Results*

Our study's major theoretical contribution is that participants described a shifting line that separates the positive attributes from the negative consequences of using methamphetamine. This was best summarized by one individual, who explained: "I kept drawing lines of delineation. . . .It was just going to be when I was hooking up, and then it was just going to be on weekends. Then, it was just going to be not on workdays. And then it was going to be I was never going to inject. That line just kept moving." This line also represents interviewees' complex, occasionally paradoxical, and often shifting experiences with methamphetamine, including enhancing function while also inducing crippling paranoia, fostering friendship while also leading to unequal relationships, and addressing untreated trauma while also exacerbating it. Several themes straddled this line: 1) hypervigilance and overamping; (2) socialization and isolation; (3) treatment and withdrawal; and (4) experiences in the ED.

### *Hypervigilance and Overamping*

Many interviewees reported initially using methamphetamine to enhance their function, whether it was cleaning, working, or studying, and to provide protection in harsh conditions like homelessness. However, this hypervigilance often led to "overamping" when a participant might have felt that they were overdosing, "paranoid," and "exhausted" (Table 3).

### *Socialization and Isolation*

Participants described how methamphetamine originally improved their social interactions. They frequently started using with friends in social settings or to enhance sex. However, continued use regularly led to isolation and "stopping participation in life." Individuals experiencing methamphetamine-induced paranoia felt uncomfortable around others, and repeated bingeing (ie, multiple days of consecutive use) often contributed to losing family, friends, jobs, property, and "personality." Others recounted how individuals capitalized on their drug use, preyed on their vulnerabilities, and fostered unequal relationships (Table 4).

### *Treatment and Withdrawal*

Many interviewees used methamphetamine to self-

**Table 3.** Interviewee experiences that describe hypervigilance and overdosing (overamping).

| | |
|---|---|
| Hypervigilance | |
| Enhanced functioning | “It was all really to get through college, and I got my degree. It helped me stay up to study for exams.” (#40)<br>“With the meth I’m functional. [Without it] I might miss being able to make a list of five things to do and actually accomplishing four or five of them.” (#46) |
| Provide protection | “Being hypervigilant also puts me in a place where I don’t put myself into situations that I can be jailed or fucked up by cops.” (#25)<br>“I wanted to be aware and coherent of what was going on around me. I didn’t like the nodding and falling just anywhere.” (#40) |
| Overamping | |
| Paranoia | “Lots of paranoia is involved and just confusion, like I get caught in a loop and I can’t stop doing, digging for something, trying to fix something. I just get stuck on a path that I can’t stop doing.” (#7) |
| Exhausted | “We don’t recognize where we’re at and recognize where our limits are. We don’t sleep, we don’t eat for days. We don’t really recognize that our bodies haven’t rested.” (#4) |

**Table 4.** Interviewee experiences that describe socialization and isolation.

| | |
|---|---|
| Socialization | |
| Friendship | “There was a long period of time it was actually fairly fun. . . . There were lots of social circles that we’d use and have fun, but that quickly faded.” (#7)<br>“The social aspect of it got me doing it again. And shooting is just a fun way to do it compared with smoking for me, so other people got me back into it.” (#29) |
| Sexual augmentation | “Sex would be the trigger for the longest time. . . . It was like a whole different animal, the intensity, the rush, the sexual feelings related to it are totally different.” (#7)<br>“When you’re with someone that’s not on it and you are really, really on it, you just don’t have like the same goals in mind or just the same urgency to get done what you want to get done.” (#33) |
| Isolation | |
| Uncomfortable around others | “Meth is a drug that causes you to socially isolate and social distance. People are paranoid.” (#4) |
| Loss | “I only participate in getting high. I’ve got a whole bunch other things I could participate with. I got kids and grandkids and family. . . . I don’t want to do nothing but get high.” (#7)<br>“I lost all my friends, all my surroundings around me, all my coworkers. I lost communication with relatives and people that I had in my life. . . . I don’t know why we even continue criminalizing [drugs] because I’m already a prisoner.” (#41) |
| Unequal relationships | “Living on the road, being homeless off and on, and now it’s like total dependency, so there are places I’ll get housed at because like a guy or an older guy would help me out for a little bit . . . but then they’re very manipulative.” (#26) |

medicate, stabilizing their mental health, numbing their senses to escape difficult circumstances, and counteracting the negative effects of other drugs. However, the increasing need to use methamphetamine to combat withdrawal symptoms led participants to “hustle” and engage in increasingly risky behaviors, like sex work, to obtain the resources to purchase enough to avoid feeling sick (Table 5).

### *Experiences in the Emergency Department*

Interviewees often experience stigmatizing healthcare interactions because of their methamphetamine use. Many described undertreatment of pain, difficulty obtaining intravenous access, unhelpful referrals, and traumatizing experiences, particularly while intoxicated with methamphetamine. Because of these overwhelmingly frustrating experiences, participants anticipated difficult interactions with healthcare clinicians, frequently leading to combativeness, avoidance of the ED, and downstream medical complications (Table 6). Nevertheless, methamphetamine use often drives patients to EDs, where they would like to receive resources, shelter, and treatment (Table 7).

## DISCUSSION

Experiences with overamping, isolation, and withdrawal mirror the current literature describing the negative consequences of use,[32] but participants also explored how methamphetamine can enhance function and strengthen relationships. This “moving” line between methamphetamine’s risks and benefits highlights the need for nuanced conversations about substance use in medical settings. People who use methamphetamine often want to reduce their use, but their motivation and goals are fluid.[19]

**Table 5.** Interviewee experiences that describe treatment and withdrawal.

| | |
|---|---|
| Treatment | |
| Mental health | "It maybe relates to a specific disorder . . . maybe like ADD or ADHD . . . I want to say that using meth . . . putting the hyperactive mind with the hyperactive drug to stimulate kind of almost reduces . . . that hyperactivity." (#19)<br>"It's more than just for fun because it stabilizes my mood disorder." (#40) |
| Escape | "I had lost my job, my partner. . . . We were in a kind of a low and violent point, and it was an escape. . . . I really think the whole reason I started was self-medicating." (#15)<br>"Definitely coping and also helps me drown out . . . Memories or emotions. . . . It's a ritual routine now." (#26) |
| Negative effects of other drugs | "You get the meth rush over the black. . . It goes back and forth, like you'll feel the numbing effect from heroin, the slow effect, and then it'll switch over to the meth high, the racy, euphoric kind of feeling that you get from meth." (#29) |
| Withdrawal | |
| Symptoms | "Now, unfortunately, when I do stop, it makes me horribly sick. . . I don't really have the luxury of just choosing not to do it anymore." (#12) |
| Hustling | "A typical day, like I wake up, I do a shot of heroin, smoke some meth, go hustle, smoke some more meth, do another shot, go hustle, and do the same thing, then go to sleep." (#10)<br>"Usually, I'll panhandle most days and get enough money to maintain not being sick throughout the day. . . . My day revolves around having the shots to do." (#29)<br>"I have kind of a boyfriend, and he does leave meth for me when he leaves." (#46) |

**Table 6.** Interviewees' negative experiences in the emergency department.

| | |
|---|---|
| Stigmatizing care | "As soon as they find out that, yes, it was 100 percent drug-related, I get treated differently." (#29)<br>"Maybe after some work with this population, maybe people give some sort of a numbness . . . like they don't see you are regular [person] or they see [you as], 'She's already overdosed and so why should we care about you?'" (#41) |
| Undertreatment of pain | "We'll go through these procedures with absolutely no pain med at all. . . . And they feel like I'm asking to be sent home with pain meds, [thinking] I'd obviously abuse them. So I never ask to bring any home." (#29) |
| Difficulty obtain IV access | "I'm terrified of needles when someone else is doing it, and, then, with not having very many veins to poke . . . They have to get an ultrasound, so it's a really big ordeal when I go [to] a hospital and have to have blood taken from me." (#12) |
| Unhelpful referrals | "The doctor said I need to follow up with this [a community help line]. [But I'm thinking,] 'How can I follow up with this if you're not giving me no more information that I already had before I came in here?'" (#46) |
| Traumatizing experiences | "When I was walking to the emergency room, fire trucks and shit like that . . . fucking irritate my goddamn brain cells. I come out and certain sound effects and shit like that, paranoia. (#34)<br>"I don't know how many times I've gone to the hospital, scared out of my mind, and I was high, and they treated me unfairly because I was high." (#39) |
| Combativeness | "And then they find out that I'm an addict, and it all goes downhill. . . . Maybe I get like a little bit of like a bad attitude. . . If I know that this person's going to be mean to me because everybody else has been, then I'm going to be mean initially anyway." (#10) |

*IV*, intravenous.

**Table 7.** Interviewees' positive experiences in the emergency department.

| | |
|---|---|
| Resources | "Give them some resources, whether or not they said yes or no." (#26)<br>"About places to get into rehab, places for wound care, like a place to heal up afterwards if you're homeless. Like maybe the needle exchange. Just like information of things that addicts and homeless people could really use." (#43) |
| Shelter | "When I have done treatment, it was when I was homeless, so after the treatment [I'd] get released right back to the same situation. No place to go, no home. You can refer me to all these outpatient places and tell me I need X amount of meetings, but once I go to my classes and go to my meeting, now where do I go?" (#46) |
| Treatment | "I think ERs are probably overwhelmed, and they don't need a bunch of people coming in saying, 'Where can I go to rehab?' But if they don't have anywhere else to go . . ." (#15)<br>"The one thing that I've found that helped me when I was trying to quit was my doctor prescribed me methylphenidate . . . And I don't understand why that's not utilized more often because for opiates they use like Suboxone and methadone." (#20) |

Emergency physicians should recognize the complexity of patients' motivations and provide tools to promote wellbeing. They should aspire to provide trauma-informed care[33] to those who use drugs by better understanding each patient's unique history and recognizing the health effects of stigma.[34]

Participants frequently acknowledged the dangers of methamphetamine and wanted help but purposefully avoided medical care because of the perceived discrimination from healthcare staff. Many cited disrespectful interactions, undertreatment of pain, difficulty obtaining intravenous access, unhelpful referrals, and traumatic experiences in the ED related to their methamphetamine use. Interviewees hoped for, but rarely encountered, clinicians who acknowledged addiction as a chronic condition, addressed symptoms adequately, and provided positive connections to outpatient resources. This stigma experienced by people who use methamphetamine mirrors stigma experienced by people who use opioids.[35] Moreover, many methamphetamine-related ED visits for behavioral health concerns include chemical and/or physical restraints, which can feel dehumanizing to patients.

Emergency physicians can learn from community harm reductionists at syringe service programs and safe consumption sites about how to change this culture and create a protected space for people who use methamphetamine.[36] The distribution of safer use supplies, such as syringes and pipes, decreases risky behaviors and the spread of infectious diseases while promoting more collaborative medical interactions.[37-45] Because methamphetamine use is associated with high-risk sexual practices, clinicians can also consider sexually transmitted infection testing, treatment, and prevention services. Whether or not these services could be expanded to emergency care settings should be further explored.

Although not widespread, harm reduction principles have been successfully integrated as pilot programs into traditional clinical settings, which could be used as models in other environments. One hospital system created a multidisciplinary and interprofessional care conference to expand treatment options for patients with substance use disorders needing prolonged antibiotic treatment for conditions like endocarditis and osteomyelitis.[46] As part of their efforts to improve access to addiction care in emergency departments, CA Bridge, a program of the Public Health Institute in Oakland, California, has created adaptable materials on harm reduction kits, discharge instructions, strategies for hospital settings, and order sets based upon the experiences of selected clinical partners.[47-50]

Lastly, as in other published work,[51] participants expressed interest in accessing treatment and reducing their methamphetamine use. Although an effective pharmacotherapy for methamphetamine use has not yet been developed, there are several effective, yet underutilized, psychosocial treatments for methamphetamine use disorder. Contingency management[52] reinforces positive behavioral change with rewards. Examples of incentivized behaviors include abstinence, engagement in therapy sessions,[53] and harm reduction.[54] Rewards typically include prize draws in cash or gift cards of escalating value. Although contingency management can be effective on its own, it can also be paired with the community reinforcement approach,[55] which uses social, recreational, familial, and vocational reinforcers to help patients engage in non-substance-use related activities and communities, so they can find meaning in a lifestyle that does not revolve around substance use.[56] A recent meta-analysis showed that contingency management coupled with the community reinforcement approach was the only evaluated treatment associated with decreased substance use at the longest follow-up time and increased engagement in treatment for individuals with stimulant use disorder.[57] Contingency management has been successfully implemented in homeless shelters,[58] community centers,[54] primary and specialized care clinics,[59,60] and sober living arrangements.[61] Emergency physicians should consider creating referral pathways for patients who use methamphetamine in partnership with agencies providing these evidence-based interventions.

## LIMITATIONS

The objective of this study was to identify the motivations of people who use methamphetamine and their experiences in the ED to guide future ED-based approaches. However, the results may only be applicable to the geographic location of the study population, which only included residents of the state of Washington. We used a convenience sampling frame to recruit participants, which may have introduced bias. Specifically, recruitment and interviews did not take place in person; therefore, this study may not have captured the voices of those with high social needs without access to a phone. Additionally, questionnaire data, including recent ED visits and substance use history, were self-reported and could not be confirmed with the patient's electronic health record or through drug testing. Lastly, the study was conducted at the beginning of the coronavirus disease 2019 pandemic, while the "stay home, stay healthy" order was in place,[62] which may have influenced participants' perceptions of their medical care.

## CONCLUSION

Methamphetamine use drives patients to EDs, where they often feel stigmatized and are provided little assistance. Emergency physicians can use trauma-informed care to change this culture and create a healing space for people who use methamphetamine. They can offer ultrasound-assisted peripheral line placement and treat symptoms of overdose, withdrawal, and pain. Using harm reduction principles, EDs can provide HIV and hepatitis C testing and distribute safer use supplies. Physicians can partner with a multidisciplinary team to improve access to social services and transitions of care to addiction treatment in the community. Future work should incorporate the perspectives of people who use drugs into ED-based programs and interventions.

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# A Case of Human Trafficking in Appalachia and What Emergency Physicians Can Learn from It

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Human trafficking is an ongoing, global human rights crisis and one of the largest illicit industries worldwide. Although there are thousands of victims identified each year within the United States, the true extent of this problem remains unknown due to the paucity of data. Many victims seek care in the emergency department (ED) while being trafficked but are often not identified by clinicians due to lack of knowledge or misconceptions about trafficking. We present a case of an ED patient being trafficked in Appalachia as an educational stimulus and discuss several unique aspects of trafficking in rural communities, including lack of awareness, prevalence of familial trafficking, high rates of poverty and substance use, cultural differences, and a complex highway network system. The lack of data, appropriate resources, and training for healthcare professionals also poses distinct issues. We propose an approach to identify and treat victims of human trafficking in the ED, with a focus on rural EDs. This approach includes improving data collection and availability on local patterns of trafficking, improving clinician training in identification, and care of victims using trauma-informed techniques. While this case illustrates unique features of human trafficking in the Appalachian region, many of these themes are common to rural areas across the US. Our recommendations emphasize strategies to adapt evidence-based protocols, largely designed in and for urban EDs, to rural settings where clinicians may be less familiar with human trafficking. [West J Emerg Med. 2023;24(5 Supplement)68–73.]

## INTRODUCTION

Victims of human trafficking are likely to interact with the healthcare system at some point while they are being trafficked, particularly in the emergency department (ED). One study noted that up to 60-88% of trafficked persons surveyed had visited an ED while actively being trafficked.[1,2] The frequency of ED visits by victims places emergency physicians in a unique position to intervene. Unfortunately, many clinicians lack familiarity and confidence with identifying and caring for victims of trafficking.[3] In fact, one study showed that less than 5% of emergency physicians felt confident identifying trafficked persons who present to the ED.[4]

This uncertainty may be especially prevalent in rural areas where clinicians perceive trafficking as an urban problem and may lack dedicated training in screening and emergency care of victims of human trafficking. In this article we sought to examine human trafficking in Appalachia to highlight common themes in the emergency care of victims of trafficking, spotlight important issues in rural trafficking including familial trafficking, and explore the vulnerability of the region and marginalized groups living in Appalachia, a region made up of 423 counties across 13 states that spans 205,000 square miles from southern New York to northern Mississippi (Figure). We begin by presenting a real ED case as a stimulus for learning about human trafficking. Then we present realities

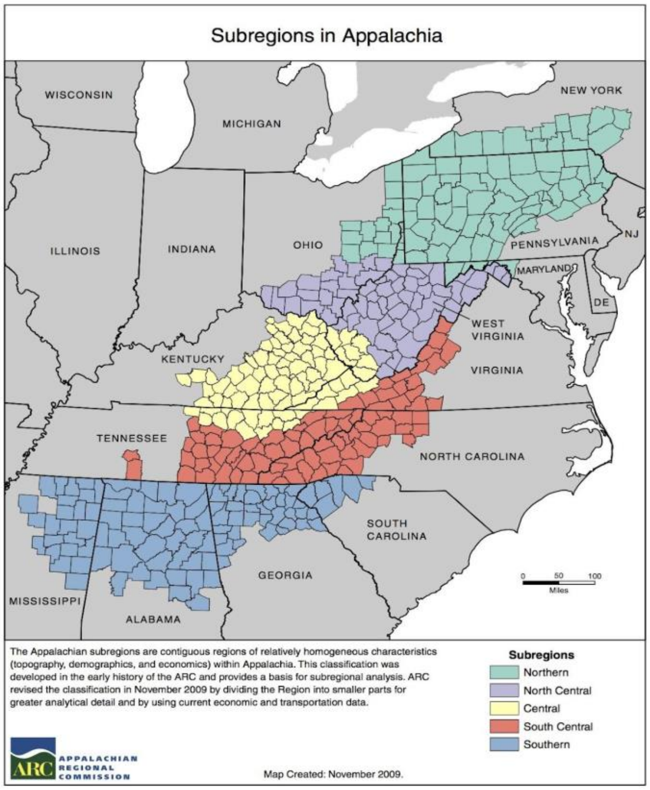

**Figure.** "Appalachia" most commonly refers to the 423-county region designated by the Appalachian Regional Commission (ARC) in 1965, which is divided into 5 subregions. It is important to note that the counties designated by the ARC were included for a variety of reasons, some geographic, some economic, and some political. However, given that lines were not drawn by social ethnographers, there may be persons in areas near the region who identify as Appalachian and whose lived experiences mirror those within the region.[14,21] Map produced by the Appalachian Regional Commission. Used with permission from the ARC.

of Appalachian human trafficking as opposed to common misperceptions. Finally, we conclude with an approach to identifying and treating victims of human trafficking in the ED.

Case:

A 30-year-old female presented to the ED accompanied by police for altered mental status. Per police report, the patient was running in the woods. Her behavior was erratic, and she was unable to provide a succinct history. She endorsed visual hallucinations and lacked focus during the interview. Her vital signs were within normal limits. She appeared anxious but did not have any focal physical exam abnormalities. The patient revealed that she was forced to perform commercial sex acts by her dealer after a recent relapse, had been forced to take illicit drugs, and alluded to physical and sexual assault.

"You'll meet somebody who will act like some kind of Prince Charming, and they wind up selling you."
— "Marie," former sex worker, Charleston, WV.[5]

Human trafficking is defined as the "the act of compelling or coercing a person's labor, services, or commercial sex acts."[6] There are more victims today than at any other time in history, with an estimated 40.3 million victims of human trafficking globally and 24.9 million people trapped in forced labor.[2] While 16,658 victims were identified in the United States in 2020, it is estimated that 199,000 incidents of trafficking occur in the US every year.[7,8] The US Department of Justice (DOJ) estimates that trafficking generates nearly $150 billion in profits annually.[9] It is the second largest and fastest growing organized crime trade in the world, recently surpassing the illegal arms trade, and is anticipated to surpass the illegal sale of drugs in the next few years.[10] Human trafficking occurs in all 50 states and the District of Columbia. There is no typical victim, although marginalized individuals such as homeless youth and those in extreme poverty are at especially high risk.[11,12] Traffickers exploit vulnerabilities such as poverty, addiction, or lack of agency to compel victims into forced labor, commercial sex work, or other activities against their will.[13,14]

Appalachia is home to over 26 million residents.[15] Appalachia's history is characterized by economic depression, generational poverty, geographic isolation and, more recently, by the devastating impact of the opioid epidemic, all of which are risk factors for human trafficking[5,16] (Table 1). Contrary to common perception among Appalachian residents, human trafficking is not only an urban issue.[16,17] Appalachian states comprise three of the top 10 states for human trafficking with Mississippi, Georgia, and Ohio ranking second, fourth, and fifth, respectively.[8] Since Appalachia became a battleground for the "war on poverty" in 1965, the region has seen economic gains, although it still lags behind other areas of the country. Between 2015–2019, the median income in Appalachia was 85% the national median. In the same period, the overall poverty rate in Appalachia was 15.2% compared to 13.4% for the US overall; however, the poverty rate in the central subregion was 23.5%.[16,18] Amidst the opioid crisis, which has been responsible for the greatest loss of life of any

**Table 1.** Intersectional challenges in Appalachia.

| |
|---|
| Lack of awareness among the community |
| Lack of training among healthcare and law enforcement personnel |
| Lack of resources, including lack of transportation and inadequate funding |
| Familial trafficking |
| Poverty |
| Substance abuse and the opioid epidemic |
| Cultural differences including traditional gender roles |
| Truck stop proximity and large network of highways |

overdose epidemic, the Appalachian region stands above all others. In this highly rural 13-state region, overdose deaths among those aged 25-44 are over 70% higher than the rest of the US.[19,20]

**Trafficking in Appalachia**

A common misperception in the region is that human trafficking occurs only in urban areas and is perpetuated by strangers. In contrast, much of the trafficking in Appalachia is familial, meaning that victims are trafficked by family members, often in exchange for drugs or money.[22,23] In 2013, a survey was conducted to assess professionals who work with minors who were victims of sex trafficking in Kentucky. Most professionals surveyed found that at least one of the victims they had worked with were recruited or lived in Kentucky while being trafficked.[21] Furthermore, victims who are recruited in Appalachian states may be transported and trafficked in larger, urban areas outside the region. In the same study, two in five professionals stated that at least one of the victims with whom they had worked had been trafficked in states other than Kentucky.[24] In the case presented above, the victim was both recruited and trafficked within Appalachia prior to her ED presentation.

Based on these studies, it is important for emergency clinicians to stay vigilant and maintain a high suspicion for human trafficking regardless of the patient's place of origin or current location. Law enforcement personnel in Appalachia note that much of the trafficking is familial and that the practice is very likely severely under-reported.[24] In one study, up to 44% of data samples included survivors who had been sex trafficked by family members, mainly parents, and most often mothers. Younger girls in rural areas are more likely to be sex trafficked by their parents than those in urban areas, and at younger ages.[25] From the limited existing data, familial trafficking is more common in rural areas. In a study of 40 adjudicated juvenile females in a southern, rural state, of those trafficked all the rural victims were trafficked by family members; in urban areas, none were trafficked by family members.[25] In the study from Kentucky, the most mentioned trafficker-victim relationship was family (61.9%).[24] [It is unknown whether the victim in this case was ever trafficked by family members.] Therefore, a patient who presents with their family should not be assumed to be safe from trafficking and should be screened privately and offered intervention if there is concern for trafficking.[26]

The geography of Appalachia makes it particularly vulnerable to trafficking as well as movement of victims across long distances in a short time. In addition to its rurality, major interstate highways connecting large cities crisscross the region. These highways, thoroughfares of cross-national shipping, bring drugs and buyers into the region and ship men and women out into the commercial sex and labor market. Victims are trafficked along the nation's highways at truck stops, gas stations, and rest areas.[27,28] In the case we discuss, the victim presented to an ED over 90 miles from her most recent known address within days of being trafficked.

Marginalization and discrimination compound existing vulnerabilities, and those who identify with multiple vulnerable groups are subject to higher risk. Sexual and gender minorities are especially vulnerable in Appalachia where there is an overall lack of LGBTQIA+ specific resources. This is especially true for transgender individuals who are particularly vulnerable to exploitation.[29] Persons from these groups often struggle to maintain stable employment due to discrimination in the workplace and rely almost exclusively on family and community networks for support.[30] Unfortunately, as noted above, familial trafficking may compound this exploitation risk. Housing insecurity is also often exploited by traffickers, making homeless persons even more vulnerable. Transgender individuals are more likely to be homeless than their cisgender counterparts. Transgender individuals in the commercial sex industry also face higher rates of violence, with trans women of color facing the highest rates of any group.[29,30] Children who have experienced trauma are also more likely to be trafficked, making those in the foster care system particularly vulnerable. Furthermore, children in foster care may have unmet basic needs.[31] The opioid epidemic has increased the number of children in foster care nationwide and especially in Appalachia, a problem further exacerbated by the COVID-19 pandemic.[32,33]

The overall paucity of data is one of the primary challenges in combating human trafficking worldwide. The data from Appalachia is even less robust than from other areas of the country. In Appalachia, the lack of data means that perhaps even fewer victims than is typical are being identified.[14] Overall, the DOJ reports that fewer than 1% of victims of human trafficking are identified because of the frequent movement of victims, victims' inability to escape, and knowledge deficit among healthcare professionals related to the red flags of trafficking.[6] Up to 88% of victims report accessing healthcare at some point during their trafficking situation, with many presenting to the ED.[2] Given this, emergency physicians should be extensively trained in identification and intervention for victims of human trafficking (Table 2). Below, we propose recommendations on these practices with particular emphasis on rural settings where clinicians may be less familiar with human trafficking.

***Case (continued):***

In our case, the clinicians were familiar with the signs and symptoms of human trafficking and recognized how these played a significant role in our patient's clinical presentation. They were able to gain the patient's trust and reconnect her with resources and a safe house. Unfortunately, despite all efforts from healthcare professionals and ancillary staff, our patient still did not get fully connected to the resources she needed. On chart review, it appears that she presented to another local hospital three days after discharge for medical clearance for jail

**Table 2.** Recommendations for emergency clinicians.

| |
|---|
| 1. Emergency physicians should become familiar with patterns of human trafficking in their area.[34] |
| 2. Clinicians should recognize that victims may present after being trafficked from a different geographical area and may face unique challenges related to the area from which they were trafficked. |
| 3. Healthcare professionals should advocate for the collection of quantitative data on human trafficking to advance research efforts. This may include multidisciplinary approaches with involvement of health departments, law enforcement, government officials, and other community advocates to add to the fund of available knowledge. |
| 4. Despite the paucity of available data, emergency physicians should strive to create standardized protocols to identify and treat victims of human trafficking in the emergency department. These protocols should be tailored to account for regional differences in trafficking patterns. |
| 5. Clinicians should employ the principles of trauma-informed care when caring for victims of trafficking.[37] Considerations for care include 1) not having the victim repeat the story so many times; 2) establishing a code word if they feel uncomfortable and want to stop at any point of the exam; and 3) not undressing the patient unless absolutely necessary.[37] See NHATTC website for further recommendations and suggestions.[39] |
| 6. Special considerations for rural emergency clinicians are to become familiar with mandatory reporting laws in their area[40] and consider transfer if a safe discharge plan cannot be established (i.e., resources unavailable). |

*NHATTC,* National Human Trafficking and Technical Assistance Center.

for methamphetamine use and "engaging in prostitution." The patient was seen again one month later for medical clearance for a human trafficking program; however, it does not appear that she was directly reconnected with the program and was ultimately discharged and told to follow up as an outpatient. This was her last known encounter with the healthcare system to date.

## RECOMMENDATIONS

A recently published article aptly noted that emergency physicians must educate themselves on the unique aspects of human trafficking in their local area and the resources available to victims.[34] This is especially pertinent in the Appalachian region given the prevalence of familial trafficking, which is more common than in other regions of the US. Tools such as the HEAL Trafficking Toolkit and Rapid Appraisal for Trafficking (RAFT) screening tool are excellent starting points for developing an ED screening and response protocol; however, protocols must be adjusted to accommodate regional differences[35,26] (Table 3). Ideally, protocols would be evidence-based, but as we have seen with the COVID-19 pandemic, it is not always possible to wait to develop a response until more information becomes available, especially given the overall dearth of data in Appalachia. Furthermore, much of the existing evidence and recommendations come from large urban EDs and are not tailored for rural emergency clinicians. Therefore, improving national and regional data collection on human trafficking must occur in tandem with developing locally tailored systems and protocols for screening and response.

**Table 3.** Resources for clinicians in the emergency department.

| |
|---|
| HEAL protocol toolkit[35] |
| National Human Trafficking Hotline Awareness materials[38] |
| HEAL: Legal requirements for reporting[40] |
| RAFT screening tool[26] |
| National Human Trafficking Resource Center: Framework for a human trafficking protocol in healthcare settings[36] |

Clinicians looking to create a screening and response protocol in their ED would benefit from collaboration with social work to identify community partners working to combat human trafficking. These partners can help to build a local database of relevant resources for patient referrals and linkage to care. Use of the National Human Trafficking Hotline's "Framework for a Human Trafficking Protocol in Healthcare Settings" is a useful resource when creating a protocol.[36] Their website can also be a helpful resource in identifying relevant federal and local laws, as well as potential community partners. Additionally, their website provides educational materials regarding recognition of human trafficking, which can be used for clinician training. While the toolkits mentioned above provide evidence-based screening questions, clinicians implementing these toolkits will still want to ensure that their colleagues have been provided with the education to recognize common signs of human trafficking, such as patients being accompanied by someone who does not let them speak for themselves, patients not being in control of their own legal and financial documents, or tattoos that the patient does not wish to discuss, among others.

Rural clinicians may encounter pediatric and adult victims of human trafficking but have fewer resources to support care of these patients. Mandatory reporting laws for human trafficking vary by state; therefore, clinicians should familiarize themselves with their local policy.[37] Social workers can assist in providing appropriate care and resources to these patients. In rural areas where resources, including social work, may not be available, clinicians should have a low threshold to discuss with and potentially transfer patients to the nearest referral center where forensic nursing and/or social work support are available. This is especially true for pediatric patients, as dedicated pediatric hospitals may offer significantly more resources for follow-up and ongoing support than rural or critical access hospitals.

Healthcare professionals should be educated on trauma-informed care, as well as on trafficking patterns in their region.[38] While training ideally begins in undergraduate medical education, it is important that it be consistently accessible to clinicians in various practice environments and throughout the spectrum of practice. The National Human Trafficking Training and Technical Assistance Center (NHTTAC) offers resources for continuing education in trauma-informed care for healthcare professionals.[39] Furthermore, there is significant variability in the background and training among clinicians, particularly among those working in rural EDs, and those who trained in the era before human trafficking was regularly incorporated in medical education curricula. Therefore, there are likely differences in the degree of formal training regarding identification and care of victims of human trafficking. Additionally, clinicians should have an awareness that due to the fluid nature of human trafficking, they may encounter a patient who does not fit the typical or expected pattern of trafficking within their local community. All clinicians should be educated on resources that are available at their facilities and in their communities, as well as how to connect patients to these services.

## CONCLUSION

Human trafficking victims in Appalachia remain a particularly vulnerable population for which there is little accurate data. Educational strategies can dispel myths and help accurately identify victims. Leveraging and strengthening networks of existing community resources is paramount to combating human trafficking. Finally, improving the availability of data about trafficking from the Appalachian region is crucial to understanding the extent of the problem. Understanding is the first step to identifying, supporting, and protecting the victims and potential victims of trafficking in the Appalachian region.

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# Improving Accessibility in the Emergency Department for Patients with Disabilities: A Qualitative Study

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**Introduction:** The emergency department (ED) is a critical service area for patients living with disabilities in the United States. Despite this, there is limited research on best practices from the patient experience regarding accommodation and accessibility for those with disabilities. In this study we investigate the ED experience from the perspective of patients living with physical and cognitive disability, as well as visual impairment and blindness, to better understand the barriers to accessibility in the ED for these populations.

**Methods:** Twelve individuals with either physical or cognitive disabilities, visual impairments or blindness were interviewed regarding their ED experiences, particularly related to accessibility. Interviews were transcribed and coded for qualitative analysis with generation of significant themes relating to accessibility in the ED.

**Results:** Major themes from coded analysis were as follows: 1) inadequate communication between staff and patients with visual impairments and physical disabilities; 2) the need for electronic delivery for after-visit summaries for individuals with cognitive and visual disabilities; 3) the importance of mindful listening and patience by healthcare staff; 4) the role of increased hospital support including greeters and volunteers; and 5) comprehensive training with both prehospital and hospital staff around assistive devices and services.

**Conclusion:** This study serves as an important first step toward improving the ED environment to ensure accessibility and inclusivity for patients presenting with various types of disabilities. Implementing specific training, policies, and infrastructure changes may improve the experiences and healthcare of this population. [West J Emerg Med. 2023;24(5 Supplement)74–80.]

## INTRODUCTION

An estimated 61 million adults in the United States live with disability.[1] Data from the 2006-2008 Medical Expenditure Panel Survey, a US health survey representative of community-dwelling civilians, demonstrated that people living with a disability accounted for roughly 40% of annual ED visits despite representing less than a quarter of the adult population.[2] Factors such as complex medical profiles, poor access to medical care, and urgency of medical needs play important roles in contributing to the need for higher utilization among patients living with disabilities (PWD).[2] Deaf/American Sign Language users and individuals living with autism are at a higher risk of using the emergency department (ED) than the general population,[3,4] and adults of working age living with disabilities have higher rates of ED usage than individuals without disabilities.[1]

While some studies have explored the experiences of PWD in other healthcare settings such as primary care,[5] Medicaid-managed care,[6] general access to healthcare,[7] hospital admissions and hospital care, and even as standardized patients,[8-13] no studies to our knowledge have investigated experiences specific to the ED for these patients. Additionally, the majority of qualitative studies in alternate healthcare environments were performed in other Western countries with different healthcare systems compared to the US. The lack of research investigating the ED experiences of those living with disabilities represents a large gap in understanding between ED staff and these patient populations, which comprise a significant number of ED visits each year nationwide. In this study our goal was to understand the perspectives of patients living with various forms of disability as they access care in the ED, specifically identifying barriers and potential solutions to create an inclusive, accessible, patient-centered care environment.

*Population Health Research Capsule*

What do we already know about this issue?
*Little is known about how people with disabilities (PWD experience care in the ED. Research in other clinical contexts suggests a need for more inclusive environments.*

What was the research question?
*What are the experiences of PWD who have received care in the ED, and what barriers to inclusive care exist in this space?"*

What was the major finding of the study?
*Subjects described 1) inadequate communication between staff and patients; 2) the need for electronic delivery for after-visit summaries 3) the importance of mindful listening and patience by healthcare staff; 4) the need for increased hospital support including greeters and volunteers; and 5) comprehensive training with staff about assistive devices and services.*

How does this improve population health?
*We describe actionable changes that can be made to improve ED accessibility, with suggestions derived from the recommendations of PWD.*

## METHODS

### Study Criteria and Recruitment

From July 2021–July 2022, patients with disabilities were recruited through patient advocacy groups, advertisements on social media, contacts with local clinicians, or through word of mouth. Inclusion criteria included adults who had visited local EDs in the prior 18 months and were living with a disability including the following: significant visual impairment or vision loss; significant hearing impairment or deafness; mobility impairments; and autism or other intellectual and developmental disability. Participants were required to have access to the technology necessary for remote interviewing, such as a phone or laptop with video call capabilities. Exclusion criteria included those without the capacity to give informed consent or without the technology needed to conduct the interview. All potential participants were screened using a REDCap electronic data capture survey hosted at the University of Massachusetts to verify eligibility before scheduling an interview. This study was approved by the university's institutional review board.

### Interviews and Analysis

Semi-structured interviews were conducted by study staff via video call using Zoom (Zoom Video Communications, San Jose, CA) or a telehealth platform (Caregility. Eatontown, NJ). Interviews lasted approximately 45-60 minutes each. Participants were mailed a $50 Visa gift card for their participation.

Each interview was audio recorded with consent from the participant and transcribed by the lead author. Each transcription was then deidentified and entered into qualitative data analysis software (Dedoose, Manhattan Beach, CA),[14] for storage of the data, labeling of codes, and analysis of each transcript. In the initial coding phase, we reviewed transcripts using a grounded theory framework,[15] which permitted the generation of codes informed by reviewing the available data to establish the initial codebook. After this initial phase, each interview transcript was then coded independently by two researchers. Throughout this process the codebook was continually updated with emerging codes derived from the data as similarities and differences between the transcript data were identified. Coding of the transcripts continued until analysis yielded no newly emerging codes, at which point it was determined that theoretical saturation had been reached. We then grouped the final codes into themes, which were refined through team discussions until the final five themes were determined.

## RESULTS

### Participants

Twelve participants were interviewed for this study. Participants had a mean age of 62 years, with 10 participants (83%) identifying as female. Four participants (33%) identified as Black and eight participants (66%) identified as White (Table 1). All participants were English-speaking. Six participants reported living with physical disability (50%), six reported visual impairment or blindness (50%), and two reported living with cognitive disability (16%). Several participants reported living with more than one disability and were encouraged to speak about the entirety of their experience.

**Table 1.** Participant demographics

| Characteristic | Subjects n (%) |
|---|---|
| Age (years) | |
| 40-49 | 2 (16) |
| 50-59 | 2 (16) |
| 60-69 | 5 (41) |
| 70-79 | 3 (25) |
| Gender | |
| Male | 2 (16) |
| Female | 10 (83) |
| Race | |
| White | 8 (66) |
| Black | 4 (33) |
| Asian | 0 |
| Other | 0 |
| Type of Disability | |
| Physical disability | 6 (50) |
| Visual impairment | 6 (50) |
| Cognitive impairment | 2 (16) |
| Total | 12 (100) |

## Themes

Five emergent themes were derived from the data. These included the following: 1) inadequate communication between staff and patients with visual impairments and physical disabilities; 2) the need for electronic delivery for after-visit summaries (AVS) for individuals with cognitive and visual disabilities; 3) the importance of mindful listening and patience by healthcare staff; 4) the role of increased hospital support services including greeters and volunteers; and 5) comprehensive training with both prehospital and hospital staff around assistive devices and services. Each of these themes is described in detail below, with specific quotes chosen that were deemed to be representative of the study results.

### *Inadequate communication between staff and patients with visual impairments and physical disabilities*

Participants identified multiple communication gaps where staff lacked consideration when communicating with someone with a disability/impairment. Participants emphasized the importance of being properly addressed by name to help them navigate the healthcare system.

> V06 – "... It was very challenging. And it's kind of embarrassing because I'm like, 'What? Who are you talking to?' And they're like, 'Miss!' You know like other than the person who initially brought me to the back, or put me in a stretcher or something, [she] doesn't know that I'm blind. It gets back to what's helpful."

Additionally, introductions and identification are important for situational awareness for these patients to ensure their safety and basic needs are being addressed.

> V01 – "At one point some food was left for me, but I didn't know that it had been left there… you can't see a person's uniform or see their little badge that identifies them as an employee or what their name is so… if it could just be part of the training and part of the culture to say 'Hi, my name is Mary. I'm from food service. I'm leaving your tray over here to the right' or something, that would be really helpful."

> V06 – "… 'Are you here to harm me or help me or what?' You know, everybody from the doctor down to the essential floor sweeper, I'd like to know who they are and what they are intending to do."

Participants also expressed discomfort when staff did not explain a procedure or task, especially if there was intrusive physical contact without preparation. Others went on to discuss the importance of clear instructions and descriptions prior to and during imaging procedures.

> V01 – "Like if someone is going to give me a shot for instance. I can't see it coming. So, I like for the doctor to say, 'I'm going to give you an injection; this is what it's for. It's going to be in your left arm. I'm going to put some alcohol on you now.' Otherwise, it just sort of happens out of the blue without warning because I'm not seeing the doctor doing the prep work in advance… before you do anything, just tell me what it is that you're going to do, and that's helpful… I think that just goes to the communications piece, knowing that a patient isn't able to see any lights or read any signs; it really has to be verbal direction from staff members."

Furthermore, participants emphasized the importance of respecting the patient's autonomy and asking whether a patient wants assistance before offering it or touching them.

> V04 – "Very rarely do people know to say, 'I've noticed that you seem to be vision impaired,' or 'I've noticed that you're using a cane; would you like a human guide?' You know, they either take my arm or start guiding me by pushing my shoulder along or something like that."

Participants repeatedly expressed the need for increased staff and volunteer training around sighted-guide (or human-guide) technique. The basis of the sighted-guide technique is to enable a person who is blind or has low vision to move through an environment safely with the assistance of a guide.[16]

> V05 – "I would suggest that everyone, all the staff of the ED be trained [in sighted guide]… … And what [sighted guide] means is I would hold their elbow and then they would guide me and if there's a step they'd say 'step' or 'there's a doorway over here.' And not everyone is trained in that, but certainly a medical professional should be."

For those with mobility challenges, patients face an additional barrier of navigating hallways with multiple obstructions, such as stretchers and hospital equipment that are designed for able-bodied personnel.

> M14 – "When I'm having to walk with people they forget and they just keep walking and I might not be with them because I'm stuck. Like, transport often is unaware of the obstructions I'm dealing with."

*The need for electronic delivery of after-visit summaries for individuals with cognitive and visual disabilities*

Participants expressed concern about the accessibility of documents they would receive in the ED, particularly related to discharge instructions or summaries.

> V01 – "I think that the more forethought that a hospital can put into not only information, any information that a doctor would be distributing to a patient in the ER as a handout to take home, but also any kind of follow-up communication, it needs to be done in an accessible format."

> V05 – "My suggestion would be along with the normal whatever [after-visit summary] is given… if the instructions can be emailed… if the instructions were sent to me by email I could read them, no problem."

Several participants shared the idea that larger print forms would be helpful for some patients with visual impairments.

> V04 – [referring to discharge papers] ".. But in terms of what you go home with, it's always pulling teeth. 'Can you put this in large print for me?' … And then it's always 10 minutes of guiding them. 'OK, you extract it and then you put it into a Word document and then you increase it to 32- point font… Stop looking at me like I'm a monster."

*The importance of mindful listening and patience by healthcare staff*

Participants felt that patience was paramount when caring for PWD and appreciated more humanism in medicine. Participants emphasized human connection and keen listening.

> M13 – "Sometimes I wish people would stop and take a breath and slow down and listen to the person more. Sometimes they're so stressed and in a hurry. I don't know. It's very important to me to establish a human connection and sometimes people only have, you know, 'Get these people in and out. Move fast, move fast.' But you're not servicing cattle; these are humans."

Others spoke about how their disability impacts communication, or their ability to comply with medical directions, during an encounter.

> M07 – "I know everybody is busy, but patience. Because I still lose my words. So sometimes you can't get everything out, and before you can actually answer sometimes, they're asking you another question… maybe they think you didn't understand. I understood what you said, I just can't get the words out!"

> M09 – "One time where I had to get in a weird position, I did get in that position, but I was limited in how fast I could get into that position. And [staff] got a little irritated that it was taking me a little longer than some of you [able-bodied people]."

Others participants requested recognition of their autonomy and lived experience as a person with a disability.

> M14 – "But it's like we need… to be listened to because we are the ones who know our equipment. We know our bodies, we know our needs. We know our overlapping medical issues. We might be there for one problem, but you're going to end up causing a different problem if you don't listen to me and you don't give me my regular meds that I need at this time. So I think from that standpoint, listening to those that are disabled, especially those with complex needs, we know ourselves the best. And that's often under-recognized in medicine. Everybody wants to talk about us without us."

*The role of increased hospital support services including greeters and volunteers*

Most participants recommended more volunteer services, specifically for navigation to and from the ED.

> V05 – " I think having somebody in the ED, if I didn't have the family member there, if I had taken a Lyft [ride-share app], then the important thing would be for someone in the ED to see that you have some disability or can't see… If I was alone, I would hope that somebody, some member of the ED staff, could help me kind of navigate the physical ED in order to get to the point where I could call the Lyft and kind of get me to the right place."

Others noted volunteers would be helpful in meeting their basic needs such as going to the bathroom or getting comfort care items like a drink of water or warm blanket.

> M07 – "So, I think that in situations like that, that's an issue of dignity… I'm not just going to the bathroom to look in the mirror or something, I need to use the restroom, you know?... I've had it happen twice. Even though I was in bed the first time, I still couldn't get anybody to take me to the restroom. So, it's an issue of dignity?"

*Comprehensive training with both prehospital and hospital staff around assistive devices and services*

Participants shared that healthcare workers need to have increased training specifically around the proper use of assistive devices and services, such as wheelchairs, canes, and service animals.

> M10 – "They told me to leave my cane folded up in the bag, like 'don't use that in [the ED]'… So they didn't want me to use my cane or any of my devices, they didn't want me to bring the rollator to the hospital, they didn't want me to open the cane there, and they weren't offering me like any other supplementary device or help, if I requested help, to get up!"

> M14 – "It's just always a technicality about everything. Automatically bring the stretcher. There's no way to just know on a chart that goes to transport automatically to let somebody know that they're a wheelchair user, and there's a wheelchair to be used in some capacity … Or they would have to find a staff member willing to drive it from one building to the other. Which was always a nerve-wracking thing, in that I've got valuables on the chair, I don't want to lose my chair."

## DISCUSSION

This study highlights the experience of individuals living with disabilities to understand the barriers they face in the ED. We identified five key patient-centered areas for change that are actionable and feasible for any ED to implement. Prior research on healthcare access for individuals living with disabilities used a framework centered on seven core dimensions of accessibility.[17] Our qualitative study revealed the dimensions of accommodation, acceptability, and awareness to be most applicable to understanding accessibility in the ED.

Accommodation remains the central tenet to many of the barriers and challenges facing patients living with disability when they visit the ED. Areas of improvement include sighted-guide training for all staff, electronic delivery of AVS, changes to patient transport policies to accommodate those with assistive devices and wheelchairs, and verbal descriptions of procedures and consent when working with visually impaired patients. Some participants reflected that when they requested accommodations from the healthcare staff, they felt ostracized or insulted. This finding is not unique to the ED, as prior research has found that even when accessible medical equipment is available, healthcare personnel are still hesitant to use it.[18] Thus, it is important that any equipment or technology provided to improve accessibility be paired with healthcare worker training that enables personnel to feel comfortable using the equipment. Furthermore, prior studies have found that PWD desire improved accommodations for communication, navigating unfamiliar environments, and for completion of paperwork,[19] all of which were concepts identified by participants in this study.

Acceptability and awareness also emerged as critical dimensions of healthcare accessibility for PWD, and analysis of these dimensions yielded results that we found to be unique to the ED. Suggestions for improving awareness and acceptability included the following: more consistent staff introductions when entering an exam room; visual reminders and signage to indicate a patient has a visual impairment; and assistance with entry, exit, and general navigation of the ED. It is our belief that improving global awareness of the needs of PWD is a unique challenge to the ED, where patients are being seen by unfamiliar clinicians and staff in an urgent context. Results of studies investigating the experiences of PWD in other fields, such as obstetrics and gynecology or primary care, have not highlighted the importance of staff introductions or signage to indicate disability.[5, 20]

It is likely that the pace of the ED, including rapid turnover of both patients and staff, influences the need for an improved communication infrastructure in this setting. Outside the hospital, interventions consisting of disability awareness training to improve disability awareness among members of the community have resulted in more positive emotional and cognitive attitudes toward individuals with disabilities.[21] It is reasonable to believe that similar interventions conducted with hospital staff could help improve the emotional and cognitive awareness of PWD in ways that would engender a more caring and accepting environment.

The role of the ED as the catchment area that is open 24/7 has allowed it to remain accessible under other framework dimensions, including availability, geography, affordability, and timeliness. Additionally, healthcare facilities under the American Disability Act Standards for Accessible Design have created physical accommodations to ensure facilities are accessible to patients. However, this study highlights the need for more investment in staff training and expectations to ensure personnel are continuing to create an inclusive, accommodating environment for PWD.

## LIMITATIONS

This study had several limitations including its lack of generalizability, as patients were recruited locally. Additionally, the interviews were conducted remotely due to the COVID-19 pandemic, which limited our ability to access PWD, especially with the additional requirement of access to video call technology. We believe this also contributed to the small sample size and to challenges recruiting participants who were deaf or living with autism or intellectual disability. Our study was limited in scope as all of our participants had a physical disability, cognitive disability, or had blindness/visual impairment with limited engagement from other communities with disability. Future study should pursue understanding the perspectives of individuals from patients with deafness/hard of hearing and autism to understand the unique barriers to care for their populations.

## CONCLUSION

We investigated the experiences of individuals living with physical, cognitive, and visual impairments to better understand the barriers they face when receiving care in the ED. Common themes from interviews emerged, touching on many aspects of care that present challenges for patients living with disabilities. Improvements made to aspects of the ED relevant to these themes may lead to improved patient comfort and satisfaction, improved communication between ED staff and patients, and improved outcomes for patients living with disabilities.

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# Feasibility of a Multifaceted Social Emergency Medicine Curriculum for Emergency Medicine Residents

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**Introduction:** Emergency physicians are in a unique position to impact both individual and population health needs. Despite this, emergency medicine (EM) residency training lacks formalized education n the social determinants of health (SDoH) and integration of patient social risk and need, which are core components of social EM (SEM). The need for such a SEM-based residency curriculum has been previously recognized; however, there is a gap in the literature related to demonstration and feasibility. In this study we sought to address this need by implementing and evaluating a replicable, multifaceted introductory SEM curriculum for EM residents. This curriculum is designed to increase general awareness related to SEM and to increase ability to identify and intervene upon SDoH in clinical practice.

**Methods:** A taskforce of EM clinician-educators with expertise in SEM developed a 4.5-hour educational curriculum for use during a single, half-day didactic session for EM residents. The curriculum consisted of asynchronous learning via a podcast, four SEM subtopic lecture didactics, guest speakers from the emergency department (ED) social work team and a community outreach partner, and a poverty simulation with interdisciplinary debrief. We obtained pre- and post- intervention surveys.

**Results:** A total of 35 residents and faculty attended the conference day, with 18 participants completing the immediate post-conference survey and 10 participants completing the two-month delayed, post-conference survey. Post-survey results demonstrated improved awareness of SEM concepts and increased confidence in participants' knowledge of community resources and ability to connect patients to these resources following the curricular intervention (25% pre-conference to 83% post-conference). In addition, post-survey assessment demonstrated significantly heightened awareness and clinical consideration of SDoH among participants (31% pre-conference to 78% post-conference) and increased comfort in identifying social risk in the ED (75% pre-conference to 94% post-conference). Overall, all components of the curriculum were evaluated as meaningful and specifically beneficial for EM training. The ED care coordination, poverty simulation, and the subtopic lectures were rated most meaningful.

**Conclusion:** This pilot curricular integration study demonstrates feasibility and the perceived participant value of incorporating a social EM curriculum into EM residency training. [West J Emerg Med. 2023;24(5 Supplement)81–87.]

## BACKGROUND

The importance of addressing social determinants of health (SDoH) as a part of patient care is widely recognized. The World Health Organization's Commission on SDoH emphasized the importance of increased awareness as well as education and training specifically related to SDoH as a way to improve health equity.[1] There is growing interest in incorporating SDoH into the undergraduate medical education curriculum, although this education is not standardized and is not yet available to every medical student.[2] Within graduate medical education, the emphasis on SDoH education has predominantly been within primary care specialties (ie, internal medicine, family medicine, and pediatrics) due to the longitudinal patient relationships typically present in these specialties. However, primary care residency training programs still lack uniform and standardized SDoH curriculum content, implementation, and evaluation.[3]

Although emergency medicine (EM) is not considered a primary care specialty, emergency physicians are routinely confronted with SDoH, social needs, and the reality of health disparities. The emergency department (ED) has been described as "the social barometer of its community."[4] Given the unique relationship between SDoH and acute care in the ED, the field of social emergency medicine (SEM) has emerged, in which both individual and population health needs are considered.[5] Research in this field has led to the implementation of many effective ED-based interventions to address population health needs in domains including access to care, exposure to violence/crime, language/literacy/healthcare literacy, and poverty.[6]

Despite this recognized overlap between SDoH and EM, medical training, specifically EM residency training, often lacks a formalized curriculum related to SEM. A need has now developed for training in SDoH and application of this knowledge to practice.[4] Existing literature demonstrates the feasibility of integrating SDoH-specific education as a part of an EM clerkship.[7] The need for a SEM curriculum adapted specifically for EM residency training has been described and called for in previous literature,[8] and objectives for such a curricular addition have been proposed.[9] However, there is a gap in the literature related to the feasibility of such a curriculum addition. In this study we sought to address this need as we evaluated the feasibility of a multifaceted, immersive, introductory SEM curriculum for use in EM resident education.

## OBJECTIVES

**Our study goals were as follows:**

1) To design, implement, and evaluate the feasibility of a replicable, multifaceted SEM curriculum for EM residents.

2) To increase EM residents' level of awareness related to SEM and to improve their ability to identify and intervene in SDoH in clinical practice.

## CURRICULAR DESIGN

### Study Design and Protocol

We developed this curriculum using the six-step approach for curriculum development by Kern et al.[10] The overall need for a SEM curriculum was established in the literature as previously discussed and was confirmed in a needs assessment conducted among EM residents. Next, following Kern's framework, we established goals, objectives, and educational strategies to meet these objectives. The curriculum was then implemented and subsequently evaluated by the learners.[10]

A task force comprised of EM clinician-educators, including a SEM fellowship director and fellow, an EM residency program director, and an EM resident and senior medical student with specific interest in SEM, was assembled at the University of Alabama at Birmingham (UAB). The pilot "SEM curriculum" was designed as a single didactic and experiential learning block. It included four continuous hours of resident education time plus 30 minutes of asynchronous pre-learning with debrief, for a total of 4.5 hours of didactic time. This study was reviewed and subsequently determined to be exempt by the UAB Institutional Review Board.

The final curriculum (Table 1) included asynchronous flipped learning via a podcast,[11] four subtopic lecture didactics, guest speakers from the ED social work team and a community representative, and a poverty simulation and debrief.[12, 13] The material for the subtopic lectures was chosen considering the patient population frequently encountered by the resident learners and, when replicated, can be adjusted to meet the needs of the learners and their surrounding community. The curriculum was delivered by members of the curriculum development task force along with simulation faculty in April 2021 via videoconferencing due to COVID-19 restrictions.

### Study Setting and Population

The UAB Emergency Medicine Residency Program is a three-year ACGME-accredited residency program in Birmingham, Alabama with 32 residents as of July 2020. The program is accredited by the Accreditation Council for Graduate Medical Education. Residents are allotted protected time from clinical duties to attend weekly didactics for a 4-5 hour block.

### Key Outcome Measures

We developed two participant surveys, including a "pre-intervention" and "post-intervention" survey, and distributed the survey by email to UAB EM residents and participating faculty to evaluate the effect and impact of the virtual curriculum as well as generate general feedback. Survey responses were kept anonymous, but pre- and post-intervention surveys were matched using a unique identifier. Surveys included general demographic information (eg, gender, race) and subjective information measured by a Likert scale including self-perceived attitude and comfort level regarding identifying and addressing SDoH in the ED setting. The pre-conference survey also incorporated the "Medical Condition Regard Scale" (MCRS) to assess participants' general attitude toward patients with social needs. The MCRS has prior evidence of validity in a similar population and measures "the degree to which the respondents find patients with a given medical condition

**Table 1.** Components of a social emergency medicine curriculum.

| Component | Description | Time allotted | To replicate |
|---|---|---|---|
| 1. Pre-didactic asynchronous learning | Announce Podcast "Episode 4 – Social Determinants of Health and Unmet Needs in the Emergency Department"[11] | 30 minutes | See Reference 11 for podcast |
| 2. Subtopic lectures | PowerPoint slide presentations<br>1. Intro to SEM/Asynchronous Debrief<br>2. Incarceration<br>3. Firearm Violence<br>4. Homelessness | 60 minutes (10-15 minutes each) | Tailor topics to local community need.<br>Specific materials used here can be provided upon request to corresponding author |
| 3. Guest speaker from community resource | The executive director of a local homeless shelter spoke about the many resources provided by this shelter, as well as about the population that the shelter serves and the interaction between this population and the medical community. | 30 minutes | Contact local community partner to present |
| 4. ED care coordination presentation | Members from the ED Care Coordination and Social Services team spoke about available resources for ED patients and how clinicians can connect patients with these resources. | 30 minutes | Contact ED social services to present |
| 5. Poverty simulation | Led by the UAB Office of Interprofessional Simulation, the "Poverty Simulation" is an interactive experience "designed to raise awareness of the challenges that individuals may face when living in low-income situations."[12] While this simulation is typically an in-person event, given COVID-19 restrictions an online interactive simulation, SPENT, was used and the interprofessional debriefing took place by video conferencing.[13] | 2 hours | See Reference 13 for virtual poverty simulation |

*SEM,* social emergency medicine; *ED,* emergency department; *UAB,* University of Alabama at Birmingham; *COVID-19,* coronavirus disease 2019.

enjoyable, treatable, and worthy of medical resources."[14] The surveys focused on the Kirkpatrick Model of Evaluation levels 1 and 2, evaluating learner reaction to and satisfaction with the curriculum as well as measuring learner attitude change as a result of the curriculum.[15]

### Data Analysis

We used JotForm (Jotform, Inc, San Francisco, CA) to create the survey and collect all survey data. Descriptive statistics were conducted using frequencies and percentages for categorical data. We performed paired sample *t*-test analysis to assess whether there was a difference between matched pre- and post- survey responses from residents and other participants. *P*-values <0.05 were considered to be statistically significant. We performed all statistical analyses using JMP Pro 14 (JMP Statistical Discovery, LLC, Cary, NC).[16]

## IMPACT/EFFECTIVENESS

### Results

A total of 23 residents (71.9%) along with 12 other participants including EM faculty and a medical student attended the conference day. Eighteen people (51.4% of total participants) including 14 residents (60.9% of participating residents) completed the immediate post-conference survey, and 10 people (28.6% of total participants) including seven residents (30.4% of participating residents) completed the two-month delayed, post-conference survey.

Participant pre- and immediate post-survey results are displayed in Table 2. Before the conference, only 31.3% of responding participants reported prior training on identifying and intervening on SDoH. After the conference, participants were significantly more likely to report being aware of and familiar with local community resources to address SDoH and were also more confident in their knowledge of these community resources and their ability to connect patients to them. In addition, the post-conference data indicated that participants were significantly more likely to consider SDoH when providing treatment to ED patients and were significantly more comfortable with identifying social risk in the ED.

A majority of the participants reported caring for greater than 15 patients with social needs in the ED in the previous

**Table 2.** Survey results, [n (%)].

| Survey question | Pre-survey response (n=32) | Post-survey response (n=18) |
|---|---|---|
| The emergency department (ED) is an appropriate venue to connect patients with community resources. | | |
| Strongly agree/Agree | 30 (93.8) | 17 (94.4) |
| Strongly disagree/Disagree | 2 (6.3) | 1 (5.6) |
| I feel comfortable identifying social need (ex: homelessness, food insecurity) in the ED. | | |
| Strongly agree/Agree | 28 (87.5) | 17 (94.5) |
| Strongly disagree/Disagree | 4 (12.5) | 1 (5.6) |
| I feel comfortable identifying social risk (ex: risk of worse health outcome for certain races) in the ED.* | | |
| Strongly agree/Agree | 24 (75.0) | 17 (94.5) |
| Strongly disagree/Disagree | 8 (25.0) | 1 (5.6) |
| I have been trained to identify and intervene on social determinants of health (SDoH).* | | |
| Strongly agree/Agree | 10 (31.3) | 14 (77.8) |
| Strongly disagree/Disagree | 22 (68.8) | 4 (22.2) |
| I am aware of and familiar with local community resources to address social determinants of health.* | | |
| Strongly agree/Agree | 18 (56.3) | 16 (88.9) |
| Strongly disagree/Disagree | 14 (43.8) | 2 (11.1) |
| I feel confident in my knowledge about community resources and ability to connect patients to them.* | | |
| Strongly agree/Agree | 8 (25.0) | 15 (83.3) |
| Strongly disagree/Disagree | 24 (75.0) | 3 (16.7) |
| I frequently encounter patients in the ED with social need that impacts their health. | | |
| Strongly agree/Agree | 31 (96.9) | 18 (100.0) |
| Strongly disagree/Disagree | 1 (3.1) | 0 (0.0) |
| I frequently encounter patients in the ED with social risk that impacts their health. | | |
| Strongly agree/Agree | 31 (96.9) | 18 (100.0) |
| Strongly disagree/Disagree | 1 (3.1) | 0 (0.0) |
| I frequently consider SDoH when providing treatment for my patients in the ED. | | |
| Strongly agree/Agree | 21 (65.6) | 17 (94.5) |
| Strongly disagree/Disagree | 11 (34.4) | 1 (5.6) |

*Paired samples, P<.05

*ED,* emergency department; *SDoH,* social determinants of health.

month, with 44% of the participants reporting caring for greater than 30 patients with social needs. The most commonly encountered or anticipated barriers to addressing SDoH in the ED setting were thought to be emergency physician (EP) time constraints, lack of knowledge of resources, and availability of resources.

As demonstrated in Table 3, respondents reported overall positive attitude toward patients experiencing social needs (eg, homelessness, food insecurity). However, a majority of participants (59%) disagreed with the statement that they enjoy giving extra time to patients like this. As resident postgraduate (PGY) year increased, respondents became more likely to disagree with the following statement: "I feel especially compassionate toward patients like this," with zero percent of PGY-1 participants, 27% of PGY-2 participants, and 57% of PGY-3 participants disagreeing with this statement. The MCRS survey was repeated in the two-month delayed, post-conference survey. Unfortunately, only four participants could be matched to their pre-survey responses; therefore, we did not analyze this data for trends.

Feedback received following completion of the course was positive. Seventeen of eighteen (94.4%) of the respondents reported an improved understanding of the topic. Sixteen of eighteen (88.9%) respondents would recommend this curriculum to other EM residents. Similarly, 83% of respondents reported that this training increased their confidence in caring for patients with social needs. Overall, all components of the curriculum were felt to be beneficial and meaningful to the training. The ED care coordination, poverty simulation, and the subtopic lectures were rated most meaningful (Appendix 1).

## DISCUSSION

Emergency physicians encounter patients with both acute and chronic medical and social needs on a daily basis. Just as we expect every practicing EP to be trained and ready to appropriately respond to a patient presenting with stroke

**Table 3.** MCRS* survey results, stratified by training year [n(%)].

| | Pre-survey response | | | | |
|---|---|---|---|---|---|
| Survey question | Total (n=32) | PGY-1 (n=7) | PGY-2 (n=11) | PGY-3 (n=7) | Attending (n=5) |
| I prefer not to work with patients like this. | | | | | |
| Agree | 4 (12.5) | 1 (14.3) | 2 (18.2) | 0 (0.0) | 1 (20.0) |
| Disagree | 28 (87.5) | 6 (85.7) | 9 (81.8) | 7 (100.0) | 4 (80.0) |
| Patients like this irritate me. | | | | | |
| Agree | 4 (12.5) | 1 (14.3) | 3 (27.3) | 0 (0.0) | 0 (0.0) |
| Disagree | 28 (87.5) | 6 (85.7) | 8 (72.7) | 7 (100.0) | 5 (100.0) |
| I enjoy giving extra time to patients like this. | | | | | |
| Agree | 13 (40.6) | 3 (42.9) | 5 (45.5) | 1 (14.3) | 2 (40.0) |
| Disagree | 19 (59.4) | 4 (57.1) | 6 (54.6) | 6 (85.7) | 3 (60.0) |
| Patients like this are particularly difficult for me to work with. | | | | | |
| Agree | 10 (31.3) | 2 (28.6) | 5 (45.5) | 1 (14.3) | 1 (20.0) |
| Disagree | 22 (68.8) | 5 (71.4) | 6 (54.6) | 6 (85.7) | 4 (80.0) |
| Working with patients like this is satisfying. | | | | | |
| Agree | 20 (62.5) | 5 (71.4) | 7 (63.6) | 3 (42.9) | 3 (60.0) |
| Disagree | 12 (37.5) | 2 (28.6) | 4 (36.4) | 4 (57.1) | 2 (40.0) |
| I feel especially compassionate toward patients like this. | | | | | |
| Agree | 23 (71.9) | 7 (100.0) | 8 (72.7) | 3 (42.9) | 3 (60.0) |
| Disagree | 9 (28.1) | 0 (0.0) | 3 (27.3) | 4 (57.1) | 2 (40.0) |
| I can usually find something that helps patients like this feel better. | | | | | |
| Agree | 20 (62.5) | 5 (71.4) | 7 (63.6) | 5 (71.4) | 1 (20.0) |
| Disagree | 12 (37.5) | 2 (28.6) | 4 (36.4) | 2 (28.6) | 4 (80.0) |
| There is little I can do to help patients like this. | | | | | |
| Agree | 15 (46.9) | 3 (42.9) | 5 (45.5) | 3 (42.9) | 3 (60.0) |
| Disagree | 17 (53.1) | 4 (57.1) | 6 (54.6) | 4 (57.1) | 2 (40.0) |
| Treating patients like this is a waste of medical dollars. | | | 2 (18.2) | | |
| Agree | 3 (9.4) | 1 (14.3) | 9 (81.8) | 0 (0.0) | 0 (0.0) |
| Disagree | 29 (90.6) | 6 (85.7) | | 7 (100.0) | 5 (100.0) |

**MCRS,* Medical Condition Regard Scale; PGY, postgraduate year.

symptoms, we should also expect every EP to be trained and ready to appropriately respond to a patient presenting with social need. This requires appropriate education and training. There is exciting work being done in the realm of education related to SDoH in EM. The feasibility of integrating SDoH-specific education into undergraduate medical education was described in 2019 when a three-part curriculum was integrated into an EM clerkship.[7] The concepts of SEM have also recently been incorporated into resident education at one institution using simulation with eight cases focusing on health equity.[17] Despite these recent advances, a formalized, standardized residency training on SDoH and SEM is missing from most required curricula. Less than one-third of our participants reported receiving previous training on how to identify and intervene on SDoH.

This study demonstrates that the implementation of an introductory virtual SEM curriculum for EM residents is feasible and effective. Given the multifaceted approach, we anticipate that other institutions may be able to use or incorporate some or all of this framework, modifying it to fit the needs of their learners and local SDoH. The curriculum is intended to be locally relevant but can be easily replicated using the same model. Some components of the curriculum can be used directly (asynchronous podcast and poverty simulation), while other didactic components should be tailored to the specific needs of the local community (Table 1**)**.

Ideally, EM training programs will be able to implement a longitudinal, integrated, SDoH-focused curriculum to better equip EPs to care for the social needs of their patients.[9] However, this half-day curriculum serves as a demonstration of a focused didactic block that can be used either as an introduction to a longitudinal curriculum or as the first step in integrating SEM education into the resident curriculum. While this initial curriculum took only four hours of allotted resident conference time, participant surveys indicate that implementation of a single conference day was effective. We anticipate a longitudinal SEM curriculum would be just as effective and comprehensive, if not more so.

In the specialty of EM, burnout rates are high, and successful mechanisms to reduce burnout are needed.[18] One component of burnout is emotional erosion, or "the transition of enthusiasm and compassion at the beginning of practice to anger, cynicism, and bitterness."[19] An interesting finding of the pre-survey MCRS was that participants' feelings of compassion toward patients with social needs decreased with each year of residency training. While the significance of this should be interpreted with caution as the sample size was small, this trend warrants further consideration.

Axelson et al. proposed that an under-recognized contributor to burnout is a sense of futility in the daily practice of EM due to lack of training to identify and intervene on SDoH.[8] This makes sense, as it could be frustrating to consistently be confronted with an issue that you have not been adequately trained to address. It is reasonable to consider that increasing SDoH education for EPs could be a useful tool for reducing burnout in the specialty. Perhaps including this education early in residency, even as early as during intern orientation, could mitigate this contributor to burnout if EM trainees felt more equipped to provide this compassionate, effective care and address patients' social needs from the start of training. The impact of SDoH education on markers of EP burnout is an important factor to consider with future educational interventions.

## LIMITATIONS

This was a single-center, pilot study involving one EM residency program and, therefore, participant numbers were small. Further implementation at other sites as a multicenter study will be necessary to further investigate the generalizability of the results of this pilot study to all EM residency programs. Additionally, this curriculum was implemented during the COVID-19 pandemic. For the safety of all participants and guest speakers, the entire curriculum including the simulation took place virtually using online video conferencing. This virtual learning platform introduces limitations including technical difficulties and reduced learner engagement.[20] The response rate fell with each subsequent survey despite multiple email reminders to complete the surveys, increasing the possibility of nonresponse bias.

Future in-person course delivery should attempt to increase immediate post-survey response rates by offering participants a variety of options for survey completion (eg, web-based survey, written survey). We were also unable to supplement the classroom and simulation experience with an in-person community experience (eg, service activity, touring community resources) given these restrictions. When planning future curriculum innovation, we will seek to expand this SEM resident curriculum with the addition of a community engagement component.

## CONCLUSION

Emergency physicians are in a unique position to impact both individual as well as community and population health. Despite this, formalized resident training in the social determinants of health is lacking. This single pilot study demonstrates the feasibility and perceived participant value of incorporating a social emergency medicine curriculum into residency training.

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# Safe Discharge Needs Following Emergency Care for Intimate Partner Violence, Sexual Assault, and Sex Trafficking

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**Introduction:** For survivors of gender-based violence (GBV) seeking care in hospital emergency departments (ED) the need for medical care and safe discharge is acute.

**Methods:** In this study we evaluated safe discharge needs of GBV survivors following hospital-based care at a public hospital in Atlanta, GA, in 2019 and between April 1, 2020–September 30, 2021, using both retrospective chart review and evaluation of a novel clinical observation protocol for safe discharge planning.

**Results:** Of 245 unique encounters, only 60% of patients experiencing intimate partner violence (IPV) were discharged with a safe plan and only 6% were discharged to shelters. This hospital instituted an ED observation unit (EDOU) to support GBV survivors with safe disposition. Then, through the EDOU protocol, 70.7% were able to achieve safe disposition, with 33% discharged to a family/friend and 31% discharged to a shelter.

**Conclusion:** Safe disposition following experience or disclosure of IPV and GBV in the ED is difficult, and social work staff have limited bandwidth to assist with navigation of accessing community-based resources. Through an average 24.3 hours of an extended ED observation protocol, 70% of patients were able to achieve a safe disposition. The EDOU supportive protocol substantially increased the proportion of the GBV survivors who experienced a safe discharge.
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## INTRODUCTION

Intimate partner violence (IPV), sexual assault, and sex trafficking are forms of gender-based violence (GBV), which results in preventable morbidity and mortality. In the US, one in five women experience severe physical violence from an intimate partner during their lifetime; likewise, one in five women have experienced rape with even more experiencing any form of sexual violence.[1] While human trafficking is especially hard to measure it is known to share the same risk and consequences as IPV and sexual violence.[2] Since the onset of the coronavirus 2019 (COVID-19) pandemic, GBV has increased in the US and globally.[3–8] Gender-based violence describes violence toward an individual based on their gender; for our purposes we use the term to reference three forms of GBV—IPV, sexual violence, and sex trafficking—as these were the specific forms of violence measured within our study setting.

With GBV survivors seeking care in hospital emergency departments (ED) the need for survivor identification, medical care, and safe discharge is acute. Many studies have sought to measure the presence of GBV cases in hospital EDs, but even before the pandemic accurate quantitative estimates were challenging to gather given stigma and survivor hesitancy to disclose experiences of abuse, violence, and exploitation.[11–13] In addition to the barriers faced by survivors in seeking care, ED staff often face significant challenges in assessment and treatment of patients experiencing violence due to time constraints, insufficient training, and lack of systematic processes, including a process for referral to further services.[13,14]

Constraints on time in a fast-paced ED setting are barriers to the identification of GBV survivors.[14,16] While screening can lead to survivor identification and help to reduce recurrent hospital visits, it also has a number of limitations, namely that it does not necessarily promote referral or linkage to community services.[14,17–19] There is an urgent need to develop models for referral and community support services after survivors leave the ED. One study that examined the patterns of abuse reoccurrence after severe injury presence in the ED due to IPV found that only 19% of patients were referred to “advocacy,” regardless of severity of injury or likelihood of IPV reoccurrence.[20] Additionally, these same patients were likely to have experienced severe violence and were at high risk for IPV reoccurrence and/or death. Successful efforts to improve GBV care and referral to services in EDs have included standardizing forms/assessment tools, funding specialized nurses, staff training, and building electronic health records systems (EHR) to detect previous incidences of IPV.[13,21]

Social conditions and well-intended pandemic mitigation tactics exacerbated GBV including increased likelihood of abuse and exploitation, and loss of access to social supports and community resources.[7,9,10] As the pandemic began in Spring 2020 ED clinicians at a large, safety net hospital in Atlanta GA, observed increased difficulty attaining safe discharge plans, including connections to community resources, for survivors of GBV. Our goal in this study was to assess the needs of survivors of IPV, sexual assault, and sex trafficking to secure a safe discharge plan following hospital-based care.

*Population Health Research Capsule*

What do we already know about this issue?
*Gender-based violence (GBV) such as intimate partner violence and sex trafficking is prevalent; emergency department (ED) patients often require assistance to access a safe discharge plan.*

What was the research question?
*How frequently are ED patients unable to access a safe discharge, and does a novel ED observation protocol improve safe discharge*

What was the major finding of the study?
*Through a novel ED observation protocol, 70% of the patients who did not have a safe discharge plan were able to achieve one.*

How does this improve population health?
*Understanding facilitators of safe discharge plans such as an ED observation protocol allows EDs to support secondary prevention of re-injury or another form of GBV.*

## METHODS

### Design

After receiving medical care, individuals who are clinically assessed as having experienced violence, have disclosed experiences of violence, or screen positively for IPV or sex trafficking are routinely referred to ED-based social worker to identify their need for social support services. Survivors of GBV presenting to EDs often rely on social workers to help identify a safe disposition plan. We examined the hospital’s ED social work encounters during 2019. This included both review of a social work patient log and associated EHR charts. After assessing the distribution of social work encounters, we conducted a chart review on patients presenting to the ED in 2019 who reported IPV, sexual assault, or sex trafficking to determine disposition after their ED encounter.

In addition, beginning in April 2020, patients identified as survivors of IPV or sex trafficking with no safe discharge location and a desire for placement were assisted by an ED social worker to contact local shelters. If no bed was available, the patient was placed in the emergency department observation unit (EDOU) for assistance in further contacting local shelters, arranging transport to out-of-state family, and/or contacting supportive family or friends. A separate chart review was performed for the patients placed on the EDOU supportive care protocol over the first 18 months (April 1, 2020-September 30, 2021) to understand the feasibility of implementation and any barriers experienced in safe patient disposition.

### Ethics

We obtained social work data through the hospital quality/performance improvement data request form process in compliance with the hospital data-use agreement. The Emory University Institutional Review Board determined that based on its nature as quality improvement this study did not meet the criteria for human subjects research and was exempt from review.

### Data Management and Analysis

*Social Worker Chart Review*

Social workers in the ED record daily patient encounters in a shared Excel file (Microsoft Corporation, Redmond, WA) that is organized by month. The monthly ED social work records were combined into a single Excel file collating data from January 1–December 31, 2019. To assess the distribution of social work effort, we first sorted data based on the "problem" variable, an open-ended variable without coding or preset categorization. The entire dataset was categorized to the greatest extent based on the open-ended variable entry. Of the entries, we were able to categorize 69% into 11 service issues: traumatic injury resuscitation; medical resuscitation; transportation; family contact; housing/shelter; substance use disorder; IPV; sexual assault; human trafficking; non-partner abuse (violence perpetrated by someone who is not identified as a "partner" of the victim); and physical assault. The remaining 31% did not fall into one of these predetermined categories and were thus marked as "other."

To identify and verify all 2019 encounters related to GBV, data cleaning began with an examination of the "problem" field. Encounters unrelated to IPV, sexual assault, or sex trafficking were excluded; some unspecified encounters that remained as the recorded problems were non-specific in nature. Next, we deleted duplicate entries (entries for the same patient encounter on the same date), leaving 2,201 charts for comprehensive review.

All EHR chart clinical notes were reviewed to confirm the "problem" category, resources provided, and ultimate disposition from the ED. We chose problem categories (domestic violence, sexual assault, human trafficking, shelter, financial resource counseling, manage police contact, other, unknown, unable to review) and disposition categories from standardized options (discharge to self, discharge to friend/family, discharge to home, discharge to domestic violence/human trafficking shelter, discharge to homeless shelter, admit, psychiatric admission, eloped), respectively. "Discharge to self" reflected being discharged without an identified home or shelter and typically reflected a patient being undomiciled without an available shelter bed identified; eloped referred to those individuals who left of their own accord without receiving further care. After chart review, identifiable information was removed and a unique identifier assigned to each entry. We ran basic descriptive statistics using Excel to assess the social work "problem" and disposition across survivors of IPV, sexual assault and sex trafficking.

*ED Observation Unit Protocol Chart Review*

We reviewed EDOU patient records for the "general observation" protocol between April 1, 2020– September 30, 2021, and found that 17 patients had received the observation protocol for safe disposition support related to IPV, sex trafficking, or sexual assault. We performed a chart review for the related clinical encounter for each patient identified and reviewed clinician and social work notes from the encounter. Patient demographics, length of stay, barriers to discharge, and whether the encounter occurred on a weekend were recorded. Dispositions were chosen from standardized options (discharge to self, discharge to friend/family, discharge to home, discharge to domestic violence/human trafficking shelter, discharge to homeless shelter, admit, psychiatric admission, eloped). After chart review, we used Excel to run basic descriptive statistics to assess barriers to discharge and disposition across survivors of IPV, sexual assault, and sex trafficking.

## RESULTS

In the ED, social workers were staffed 24 hours per day, seven days per week, and provided support in 24,522 patient encounters in 2019. Nearly 50% (12,164) of entries were related to arranging transportation, demonstrating the overwhelming burden of transportation logistics that is borne by the social work team in this ED. These tasks include checking insurance coverage, contacting medical transportation, and arranging transportation with hospital-based transportation services. Other problem areas of note included responding to traumatic injury resuscitations (10.3%) and medical resuscitations (3.3%), assisting with family contact (2.0%;), and responding to housing needs (1.6%398). Notably, 138 of the ED social worker encounters were explicitly related to IPV (0.6%), 50 to sexual assault (0.2%), and 47 to sex trafficking (0.2%) (See Figure 1).

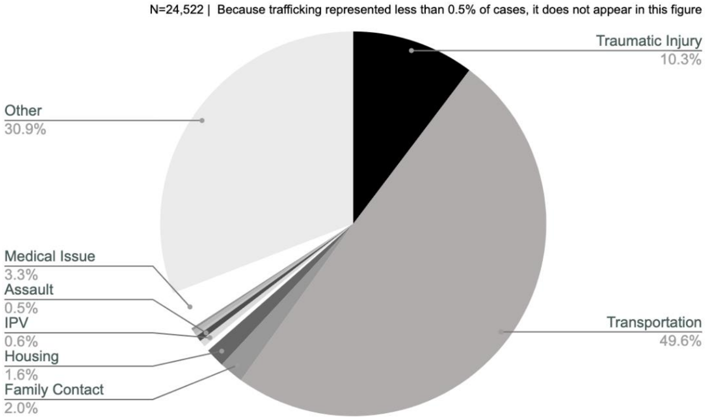

**Figure 1.** Social work effort by problem at a public hospital emergency department in Atlanta, Georgia (2019).

Through chart review we identified 245 unique social worker encounters for IPV in 2019. Almost all the entries reflect separate individuals, although 24 individuals were treated for IPV more than once in the year. We found that 97 IPV patients (40%) were discharged with no identified safe shelter, essentially being discharged to the street (Table 1). The proportion of patients discharged without a safe

**Table 1.** Disposition survivors of intimate partner violence after hospital-based care at a public hospital in Atlanta, Georgia (2019).

| Disposition | N (%) |
|---|---|
| Discharge to self | 97 (39.59%) |
| Discharge to family/friend | 69 (28.16%) |
| Discharge to home (safe disposition) | 49 (20.00%) |
| Discharge to domestic violence/ human trafficking shelter | 14 (5.7%) |
| Admitted to hospital | 13 (5.3%) |
| Discharge to homeless shelter | 2 (0.82%) |
| Eloped | 1 (0.41%) |
| Psychiatric admission | 0 (0%) |
| Total | 245 |

plan or shelter increased across later shifts (37% between 7 AM–3 PM; 40% from 3 PM -11 PM; and 44% from 11 PM -7 AM). We found that 69 patients (≈28%) were discharged to a family member or friend with whom they felt safe, and 49 (20%) felt safe returning to their own home with notes often reflecting the assailant had been arrested or was not living in the same home. Only 14 patients (6%) were discharged to a domestic violence shelter. Social work notes typically reflected assisting the patient in calling one or more of the local domestic violence shelters and being told there were no beds available. Thirteen patients (≈5%) were admitted to the hospital for additional medical care.

During 2019, 45 recorded social work encounters followed a positive screen for sex trafficking, of which 19 (42%) were identified as likely having experience of sex trafficking. Nine patients (≈50%) who were identified with likely experience of trafficking were "discharged to self" with no safe shelter or community organization assistance (Table 2**)**. Four patients (≈20%) were discharged either to home (two) or with family or friends (two) who were reported to be safe. Two patients (≈10%) were discharged to a human trafficking or domestic violence shelter, and two (10%) were discharged to a general homeless shelter.

**Table 2.** Disposition of survivors identified with a likely experience of sex trafficking after hospital-based care in a public hospital in Atlanta, Georgia (2019).

| Disposition | N (%) |
|---|---|
| Discharge to self | 9 (47.40%) |
| Discharge to domestic violence/ human trafficking shelter | 2 (10.50%) |
| Discharge to family/friend | 2 (10.50%) |
| Discharge to home (Safe disposition) | 2 (10.50%) |
| Discharge to homeless shelter | 2 (10.50%) |
| Psychiatric admission | 2 (10.53%) |
| Total | 19 (100%) |

There were 94 social work encounters for sexual assault in 2019 (Table 3). A total of 53 (56%) sexual assault survivors were recorded as discharged to self; however, the disposition was less reliably recorded for victims of sexual assault, likely reflecting lack of explicit disposition planning unless sexual assault occurred in their residence. Among sexual assault survivors, 30 (32%)were experiencing homelessness in a way that was associated with the assault. This included individuals who accepted invitations for shelter or use of amenities due to experiencing homelessness and subsequently being sexually assaulted, as well as individuals who were victimized while homeless and traveling or sleeping in a public space.

In response to the COVID-19 pandemic, a protocol for extended observation in the EDOU was established to assist with the safe discharge for survivors of GBV. Over 18 months (April 1, 2020–September 30, 2021) 35 survivors of IPV (58%)**,** 10 survivors of sex trafficking, and 10 of non-partner violence were placed on the EDOU supportive care protocol. All identified as female, except for one who identified as transgender female and one male. The average length of stay in the EDOU was 24.3 hours. Among cases placed on the EDOU supportive care protocol 41 patients (70.7%) were able to achieve safe disposition. Of those on the protocol for IPV, 29% had been previously treated for IPV within the prior year.

Eighteen patients (≈31%) who participated in the EDOU supportive care protocol were ultimately discharged to a shelter and 19 (33%) were discharged to a family or friend they were able to contact during the extended observation, while 17 (29%) were ultimately "discharged to self" with recommendations to pursue local homeless shelter services (Table 4). Patients were relatively less likely to be discharged to a shelter bed on a weekend (40% weekday; 25% weekend). The primary barrier to safe disposition for 28 survivors of IPV and sex trafficking (62.2%) was shelter bed availability, but for four patients (9%)

**Table 3.** Disposition of sexual assault survivors after hospital-based care in a public hospital in Atlanta, Georgia (2019).

| Disposition | N (%) |
|---|---|
| Discharge to self | 53 (56.38%) |
| Discharge to home (safe disposition) | 20 (21.28%) |
| Discharge to family/friend | 10 (10.64%) |
| Psychiatric admission | 4 (4.26%) |
| Discharge to homeless shelter | 3 (3.19%) |
| Admit | 2 (2.13%) |
| Discharge to domestic violence/human trafficking shelter | 1 (1.06%) |
| Eloped | 1 (1.06%) |
| Total | 94 |

**Table 4.** Safe disposition location for survivors of gender-based violence after participation in a hospital-based extended care protocol in a public hospital in Atlanta, Georgia (2020-2021).

| Disposition location | N (%) |
|---|---|
| Discharged to family/friend | 19 (32.75%) |
| Discharged to shelter | 18 (31.03%) |
| Discharge to self | 17 (29.31%) |
| Other | 4 (6.89%) |
| Safe disposition total | 41 (70.68%) |

transportation to shelter and for one patient (2%) substance use disorder were also noted as barriers to disposition.

## DISCUSSION

We examined social work encounters at a large, safety-net hospital in metropolitan Atlanta during 2019 to understand the safe discharge needs of survivors of IPV, sexual assault and sex trafficking. Our finding that over 50% of recorded encounters were related to arranging transportation demonstrates the overwhelming burden of transportation logistics that is borne by the ED social work team. These appear to be tasks that may be undertaken by a clerk rather than licensed social workers with specialized clinical skills. Health systems could consider task-shifting logistical responsibilities from clinicians to clerical or support staff and partnering with municipal transit authorities as well as private ride-share organizations to provide vouchers to those in need.

Safe housing was a major unmet need among GBV survivors. We found that 40% of IPV survivors and 47% of sex trafficking survivors were discharged without confirmed safe housing. One third (32%) of sexual assaults in this analysis were directly related to the experience of homelessness. All survivors of violence would benefit from safe dispositions planning; for survivors of sexual assault, the hospital may leverage standard Sexual Assault Forensic Exam protocols so that all survivors are evaluated for a safe discharge plan. Survivors of sex trafficking would benefit from increased coordination between hospital-based care and community-based anti-trafficking organizations that could provide early wraparound services and emergency shelter. Survivors of IPV would benefit from increased bed capacity at IPV-specific shelters, while all survivors would benefit from increased temporary shelter access.

The EDOU supportive care protocol was created in response to the spike in domestic crimes in Atlanta at the outset of the COVID-19 pandemic during the time when stay-at-home orders were in effect and domestic violence crimes increased weekly while local shelters operated with limited capacity.[22] The EDOU supportive care protocol was designed to support the most isolated patients experiencing violence who do not have an immediate support network to offer safe shelter; the protocol allows for up to 48 hours of social work assistance in shelter placement for victims of IPV and sex trafficking and included collaboration with a local IPV shelter manager to build the capacity and enhance contacts for ED social work staff. While the EDOU supportive care protocol was borne out of the pandemic, it has continued to serve as a critical bridge between the most isolated patients experiencing IPV and sex trafficking and needed shelter and support resources. The EDOU supportive protocol substantially increased the proportion of GBV survivors who experienced safe discharge through increased time to access community- and personal-support networks. In the future this program should be more rigorously evaluated to determine its effect on improved hospital-based care and uptake of community-based social services.

This initial review of the EDOU supportive care protocol raises specific concerns for the safe-discharge needs of chronically undomiciled survivors. For undomiciled IPV survivors, traditional IPV social support services may be especially challenging to access. In such cases, while IPV may not displace an undomiciled individual from their home, it may disrupt a relationship that is protective against other forms of violence, or it may otherwise be difficult to remain safe when discharged.

Likewise, a significant proportion of sexual assault survivors also experienced homelessness in a way that was related to the assault (such as being coerced into sex and assaulted in exchange for shelter or being assaulted while sleeping in a public space). This highlights the vulnerabilities to violence created by a lack of shelter as well as the importance of securing shelter after receiving hospital-based care in the wake of experiencing violence. Shelter resources for individuals who are chronically undomiciled, have psychiatric medical conditions, or substance use disorder are needed as these populations are likely simultaneously more at risk for abuse or coercion and more difficult to engage in services. Individuals experiencing both violence and substance use disorder likely need specialized intersectional resources such as treatment with buprenorphine and toxicology clinic support services while in shelters or programs.

The EDOU supportive care protocol demonstrated that safe disposition for survivors of violence is more possible with additional dedicated time and supportive effort. While provided by ED social workers in this model, such supportive care is also an integral component of patient navigation programs, which could be a complement to an EDOU supportive care protocol. With the intention of providing a patient-centered and holistic model of care, patient navigation aims to make the transition to care easier for patients by removing barriers.[23] Patient navigation programs have shown improved health outcomes for patients, reduced unmet needs, increased self-efficacy, increased access to care, and heightened patient satisfaction. Additionally, patient navigation services improved patients' satisfaction with healthcare clinicians, increased their communication with community services, and led to stronger care coordination.[23]

## LIMITATIONS

Efforts to improve safe disposition for IPV survivors require increased social work effort, including repeated calls to community service partners and follow-up evaluations to reassess patients. The analysis of social worker tasks did not account for the time burden that different tasks or problems require.

Because the study site serves as a rape crisis center, survivors of sexual assault routinely receive care from designated Sexual Assault Nurse Examiners with evidence collection, crisis counselor assistance, and post- exposure prophylaxis treatment for sexually transmitted disease. On occasional shifts when there is no rape crisis counselor on call, social workers provide counseling and education regarding support services. Thus, social worker encounters related to sexual assault only represent a subset of the patients evaluated at this study site following such experience. Likewise, during the review period there were also specific nurse leaders who assisted victims of sex trafficking to contact partner organizations and assist with shelter. Those who were helped by nursing did not require social work evaluation and therefore were not included in this analysis. Other patients who eloped or left before social work evaluation were also not likely recorded in the social work encounters.

This review included encounters with patients who overwhelmingly identified as female, although some male survivors were identified. This may reflect a clinical failure to adequately screen for or recognize IPV or sex trafficking in the male population. The 2020-2021 portion of this study took place during the COVID-19 pandemic. The limitations associated with this context include the strain on public resources during the pandemic, as well as the observed increase in GBV that occurred during the pandemic. This context may limit the applicability and usefulness of the proposed protocol in a non-pandemic time. Finally, this study took place in a single hospital setting; while the results are not generalizable they may inform efforts in other hospital locations.

## CONCLUSION

Survivors of gender-based violence seeking hospital-based care often have acute social support needs. In our study site social worker time was largely spent on transportation logistics with a very small proportion of encounters being explicitly tied to experiences of IPV, sexual assault or sex trafficking. A significant proportion of GBV survivors required safe housing but were unable to obtain it, placing them at risk for further violence, abuse, and exploitation. The supportive protocol of the emergency department observation unit substantially increased the proportion of GBV survivors who experienced a safe discharge.

## ACKNOWLEDGMENTS

**Summary of findings:**
- ED social work staff experience limited bandwidth to assist with navigation of accessing community-based resources for safe disposition from the emergency department following experience or disclosure of IPV and GBV.
- 40% of patients who experienced IPV and 47% who experienced sex trafficking were discharged with no safe shelter identified.
- Experience of homelessness was associated with 32% of the patients treated for sexual assault.
- Through an average 24.3 hours of an extended ED observation protocol, 70% of patients were able to achieve a safe disposition.

**Implications for practice, policy, and research:**
- Survivors of GBV who are treated in the ED have immediate need for additional safe disposition resources including additional shelter capacity.
- Enhanced services such as extended observation protocol and patient navigators would likely improve survivors' experience of successfully accessing available community resources.
- Shelter availability would also protect survivors from further risk of GBV associated with the experience of homelessness.

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# Violence and Abuse: A Pandemic Within a Pandemic

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**Introduction:** During the COVID-19 pandemic, as society struggled with increasing disease burden, economic hardships, and with disease morbidity and mortality, governments and institutions began implementing stay-at-home or shelter-in-place orders to help stop the spread of the virus. Although well-intentioned, one unintended adverse consequence was an increase in violence, abuse, and neglect.

**Methods:** We reviewed the literature on the effect the pandemic had on domestic violence, child and elder abuse and neglect, human trafficking, and gun violence. In this paper we explore common themes and causes of this violence and offer suggestions to help mitigate risk during ongoing and future pandemics. Just as these forms of violence primarily target at-risk, vulnerable populations, so did pandemic-related violence target marginalized populations including women, children, Blacks, and those with lower socioeconomic status. This became, and remains, a public health crisis within a crisis. In early 2021, the American College of Emergency Physicians (ACEP) Public Health and Injury Committee was tasked with reviewing the impact the pandemic had on violence and abuse as the result of a resolution passed at the 2020 ACEP Council meeting.

**Conclusion:** Measures meant to help control the spread of the COVID-19 pandemic had many unintended consequences and placed people at risk for violence. Emergency departments (ED), although stressed and strained during the pandemic, remain a safety net for survivors of violence. As we move out of this pandemic, hospitals and EDs need to focus on steps that can be taken to ensure they preserve and expand their ability to assist victims should another pandemic or global health crisis develop. [West J Emerg Med. 2023;24(5 Supplement)95–102.]

**Keywords:** *pandemic; elder abuse; human trafficking; COVID-19; gun violence; intimate partner violence; child abuse; fear.*

## INTRODUCTION

In early 2020, as the world was thrust into the COVID-19 pandemic, countries struggled with increasing disease burden, economic hardships, and disease morbidity and mortality, which led to the implementation of stay-at-home orders to help stop viral spread. This led to increased stress, anxiety, and work/school absence.[1] Unintended adverse consequences included increases in violence, domestic violence (DV), child and elder abuse and neglect, human trafficking, and gun violence. In this article we look at the impact of the COVID-19 pandemic on violence and its relationship to DV, child and elder abuse and neglect, human trafficking, and gun violence, and we offer suggestions to help mitigate violence and better manage our response in the face of this uncertainty.

## METHODS

A group of experts in the topics of DV, child abuse and neglect, human trafficking, elder abuse and neglect, and gun violence came together to summarize the literature available regarding the COVID-19 pandemic and its impact on these topics.

## DOMESTIC VIOLENCE

Soon after the implementation of pandemic mitigation measures, reports of DV surged globally. This led to United Nations Secretary Guterres' ominous warning: "We know lockdowns and quarantines are essential to suppressing COVID-19, but they can trap women with abusive partners . . . Over the past weeks, as the economic and social pressures have grown, we have seen a horrifying surge in domestic violence."[2] Media reports quickly called attention to links between pandemic lockdown orders and worldwide increases in intimate partner violence.[3] While anyone can be a victim of DV, women are disproportionately affected; thus, for this paper we refer to female victims.

Researchers in New Zealand previously showed that all forms of family violence (DV, child abuse, and elder abuse) increase during and after large-scale crises.[4] Examples of the widespread impact of pandemic lockdowns are abundant. In 2020 the *Guardian* reported a global surge in reports of DV.[5] Brazil experienced a 40–50% increase in DV, and Spain had a 20% increase in the number of helpline calls in the first few days of lockdown.[5] In Cyprus, the number of hotline calls rose 30% within one week of its first COVID-19 case.[6] In the United Kingdom (UK), Refuge—one of the leading domestic abuse organizations—reported a 25% increase in helpline calls in the seven days following UK lockdown measures.[6] During the same period, Refuge noted a 150% increase in website visits.[7] In China's Hubei province, DV tripled when comparing February 2020 to February 2019.[6] In France reports of DV increased 30% and in Argentina 25%.[6]

In March 2020 reports of DV within the United Sates followed a similar trajectory: the Portland [Oregon] Police Bureau recorded a 22% increase in family violence calls[8]; the San Antonio [Texas] Police Department saw an 18% increase[9]; in Alabama the Jefferson County Sheriff's Office reported a 27% increase in March 2020 compared to March 2019[11]; and the New York City Police Department responded to a 10% increase in DV calls in March 2020 compared to March 2019.[11] In February 2021, the National Commission on COVID-19 and Criminal Justice (NCCCJ) reported that DV incidents in the US increased by 8.1% after lockdown orders were issued.[12] The NCCCJ report included police call logs, DV crime reports, emergency line registries, and health records. Despite these increases in reports and hotline calls, US emergency departments (ED) saw a significant decrease in visits related to intimate partner violence (442 vs 484) and suspected child abuse and neglect (884 vs. 1,038) during March 15-October 10, 2020, compared to the same period in 2019.[13]

Hotline and helpline calls surged in the US, with the National DV Hotline reporting a contact volume increase of 9% and ≈10% of callers citing COVID-19 as a factor.[15] Between March-May 2020, 90% of callers reported experiencing emotional/verbal abuse, 61% physical abuse, 16% digital abuse (use of technology to bully, harass, stalk, or intimidate), and 11% sexual abuse.[15] Some hotlines noted decreased call volumes as survivors were unable to access hotlines due to isolation and abuser contact.

Homicides related to DV increased. In 2020 more than 2,000 people were killed in the US in DV-related shootings, an increase of 4% from 2019, with disproportionate increases in Texas (69%), Maryland (93%), Missouri (67%), and Utah (160%).[16] In a survey of law enforcement personnel focused on DV response, 33% reported an increase in DV homicides in their communities and half reported abusers threatening to shoot survivors.[17] Spain's first DV fatality occurred five days after lockdown. The UK as well saw an increase in DV-related homicides.[18]

Cases of DV rose during the pandemic as lockdown placed those vulnerable populations in close proximity to their abusers.[19–22] Social isolation of survivors made them more susceptible to abuse with few resources for help. Unemployment, economic/financial strain, disease fears, childcare stress and homeschooling, depression, and drug and alcohol use all increased DV risk in the home, resulting in an increase in all forms of violence. Those victims in pre-existing violent relationships as well as in previously non-violent relationships had difficulty reaching out to DV hotlines; while some hotlines had dramatic increases in call volume, others experienced fewer calls. Without in-person access to family, friends, and co-workers, visible injuries go unnoticed and subtle clues may have been missed with face masks hiding visible facial trauma. Video-conferencing platforms allow cameras to be off or adjusted, blocking physical signs of the abuse or the abuser off-screen.

Aid from social service agencies, DV agencies, shelters, and rape crisis centers was limited with some organizations deemed non-essential. Infrastructure, technology, and financial limitations curtailed the transition to remote response. Remotely staffed hotlines and helplines stayed open. Shelters faced losses of volunteers and workers and difficulty implementing social distancing and personal protective equipment (PPE) protocols and cleaning/disinfecting measures in the face of supply shortages.

Many EDs and hospitals severely restricted visitors, including DV and sexual assault advocates, crisis workers, and shelter staff, leaving victims without adequate support while being evaluated for injuries or following sexual assault. When allowed into the ED or hospital, agencies were required to provide their own PPE, despite supply shortages. Going forward, hospitals should establish policies allowing social service agencies access to survivors and to provide those workers with appropriate PPE during a pandemic. Emergency departments need to ensure they screen ALL patients for violence at the time of the visit/hospitalization and provide appropriate agency referrals. Given the unprecedented access abusers have to victims, resources need to be compact, easily concealable, and non-discoverable. Hospitals should work with local agencies to ensure access to services, personnel, and resources. State governments need to re-classify social service agencies as essential, allowing them to continue their important work.

Agencies need to do the following: 1) develop protocols and policies that allow for easy transition to work from home; 2) enhance information technology infrastructure in anticipation of future pandemics or lockdowns with staff education; and 3) institute routine, camera-on employee checks to ensure their well-being.

## CHILD ABUSE AND NEGLECT

The World Health Organization, United Nations Women, and UNICEF released a joint statement calling for the protection of children from violence including maltreatment, gender-based violence, and sexual exploitation.[23] A report from the US Centers for Disease Control and Prevention found that despite a dramatic decrease in total pediatric ED visits during lockdown, the number of hospitalizations from child abuse and neglect remained stable, representing a dramatic increase in the yearly percentage of ED visits related to child abuse and neglect among all age groups.[24] The National Child Abuse Hotline allows anyone, including children, to call in or report. In 2018 and 2019 the hotline received 93,000 and 90,000 calls, respectively.[25,26] By contrast, in fiscal year 2020 there were over 112,000 calls, representing a 23% increase.[27]

The same COVID-19 lockdown measures affecting DV survivors affected children as well. This includes social isolation, virtual education, and financial and housing insecurities. The presence of children at home continuously instead of away at school or daycare led to added stress, with parents and caregivers denied respite from direct childcare duties. Home life became private. Without visitors to the home and children barred from attending school and extracurricular activities, there was no direct interaction with potential, mandated reporters or concerned citizens. Children had less opportunity to privately confide in or ask for help from teachers, counselors, friends, and healthcare personnel who would otherwise recognize signs of abuse.

If an individual doesn't already live in a safe environment, then lockdown becomes more dangerous to them. Sheltering in place may lead to child neglect as supervising adults engage in other necessary tasks. Abusers having unlimited access to new household members, both related and non-related, in shared living space, potentially placed children at further risk.

Without the in-person supervision of teachers or other school-based mandated reporters, virtual learning limits assessment of children for abuse or neglect, especially as virtual learning via cameras only shows part of the child or their environment. The actual household environment was potentially obscured with preloaded backgrounds or children being outside the home to access better Wi-Fi.

Similarly, case workers conducting virtual visits were not able to fully assess home-life situations. Food insecurity may have been missed. Children who relied on school breakfast and lunch programs as their source of healthy nutritious meals lacked adequate nutritious food during lockdown, negatively affecting health and learning. Mandated reporters did not have the same level of pre-pandemic contact with children, given the implementation of virtual learning and telemedicine visits. Abusers had greater ability to cover up or limit visualization of telltale signs of abuse. Official reports to child protective services decreased significantly by about 20-70%, possibly attributable to fewer in-person contacts with mandated reporters.[27]

Child abuse and neglect is preventable. Pandemic and disasters require heightened methods of surveillance, reporting, and investigation of cases. Prevention strategies include the following: offering economic support; allowing parents flexible work schedules to balance childcare and work responsibilities; and implementing mechanisms to get children safely back in school for their mental health and physical well-being. Schools need flexibility for in-person services for children, including access to nutritious meals with community support to help with these efforts.

A visit to the ED may be a child's only access to help. Emergency physicians should conduct thorough history and physical exams of children, paying attention to emotional well-being, signs of physical injury, neglect, and other red flags of child abuse. Consults to social services and child protective services (CPS) should not be restricted due to a pandemic or limited access to PPE. The CPS agencies must have mechanisms to continue to conduct in-person and in-hospital evaluations and have processes for virtual home visits with the ability to provide other needed services.

## EXPLOITATION AND HUMAN TRAFFICKING

Societal safety measures meant to protect against COVID-19 transmission further isolated at-risk, exploited, and trafficked individuals, posing added barriers to potential victim identification and assistance. Vulnerability to exploitation and trafficking has been exacerbated by both the rise in family violence and household financial insecurity. Widespread school closures unique to the COVID-19 pandemic resulted in children spending more time online, possibly unsupervised, as parents or legal guardians who were essential workers had to juggle work and homelife.

The remote digital era ushered in by the COVID-19 pandemic led to exponential growth in predatory cyber activity including the targeted solicitation of minors through social media, chat rooms, and gaming platforms. As early as the first quarter of 2020, cybersecurity groups began to detect chatter within child sexual abuse material (CSAM) subscription forums and other parts of the darknet describing the pandemic as a unique opportunity to entice children online and including instructions on how to access children to produce and share CSAM.[28–30] The National Center for Missing and Exploited Children (NCMEC) experienced “an explosion in reporting” to their *CyberTipline* early on.[28,29] In May 2020, during the first wave of shutdowns, reports to the NCMEC tipline numbered almost 1.7 million, as compared to ≈745,000 reports in May 2019.[29]

According to NCMEC, reports involving at-risk children from across the country increased by 28% from an average of ≈326,680 per week in 2019 to a weekly average of ≈418,290 reports during 2020.[28] Reports of online enticements experienced an exponential growth of 97.5% from 19,174 total reports in 2019 to 37,872 in 2020.[28] The dramatic rise in criminal cyber activity and the concomitant risk to children are thought to be related to increased time online while socially distancing, adult boredom, and preoccupation with sexual thoughts, and a doubling in the number of chatters on CSAM forums since the start of the COVID-19 pandemic.[30]

Survivors of trafficking in recovery, already struggling to establish themselves socially and financially, have had to endure food and housing insecurity and lack of employment opportunities during the general economic downturn. While some benefited from eviction moratoriums, many others were left homeless due to job loss and inability to pay rent. Socioeconomic stressors associated with the pandemic increased the risk of survivors being re-trafficked and of at-risk individuals being newly trafficked. The pressures for money to pay for food, housing, and other necessities may lead individuals to accept exploitative work, engage in commercial sex work, and commercially sexually exploit children.

To compound the problem, frontline health and social service organizations—and the precarious local mechanisms for referral—experienced severe disruptions of their everyday outreach and service activities. Any legal or immigration proceedings in progress prior to the start of the pandemic likely were unexpectedly suspended resulting in prolonged states of abeyance, uncertainty, and non-closure for victims and survivors. Consequently, the COVID-19 pandemic may have exacted a heavier toll on the physical, mental, emotional, and financial health of victims and survivors than is currently understood.

## ELDER ABUSE AND NEGLECT

Elder abuse and neglect is “an intentional act, or failure to act, by a caregiver or another person in a relationship involving an expectation of trust that causes or creates a risk of harm to an older adult.”[31] Types of abuse include physical, sexual, emotional or psychological, as well as financial abuse, and neglect. Before COVID-19, an estimated one in six older persons were subject to abuse globally with one in 10 US residents ≥60 years subject to abuse. Post-COVID-19 increases in elder abuse were reported worldwide.[32] Previously mentioned risk factors may be exacerbated in elderly populations.

There are associated risk factors of elder abuse that can be assessed and managed by medical and public health professionals such as diagnoses of mental illness, alcohol use disorder, and greater degrees of financial and emotional dependence experienced by a vulnerable elder. Risk factors vary among individuals, relationships, communities, and cultures. Identified protective factors include high levels of community cohesion and coordination of resources and services for older people. With early recognition of risk factors and implementation of protective strategies, elder abuse can be prevented.

There was an increase in mental health issues for persons of all ages in part due to implementation of mandatory public health and social measures such as physical distancing, isolation, and restrictions on movement. One study reported that elder abuse increased to one in five older people in the US during the COVID-19 pandemic.[33] Reports include those living in long-term care facilities or other community settings, as well as those living with caregivers.

Those living away from caregivers were further isolated, with less direct access to services and a decrease in available communication methods. Older people often have less technologic access and literacy, making it difficult to navigate without in-person support. Given their social isolation, older adults have become more dependent on caregivers, risking abuser exploitation. Caregivers had their own health and safety to worry about, as well as concerns about financial and other resources needed to care for the older persons in their life, leading to increased stress and burden on all involved, and further risk of exploitation of resources such as Social Security benefits designated for older people. Increased stigma was placed on older people, as those most severely affected by COVID-19 were sometimes given priority medical resources over younger people with a greater chance of survival.

Governments and public health professionals must acknowledge that elder abuse exists. Emergency clinicians should screen all older people for possible abuse and consider risk factors and protective factors during every encounter. Especially on the ED frontline and primary care offices, healthcare professionals must be aware of local/state reporting mandates. Any suspected mistreatment should be reported according to local/state mandates (usually via Adult Protective Services).

An impactful way to prevent mistreatment is to increase social connectedness with older people and their caregivers in our communities. With persistent physical distancing, we need to try harder to stay close socially—via phone and video calls, messaging, or outside meeting—to stay connected and check in with others to reduce isolation.

## GUN VIOLENCE

The pandemic has been associated with increased firearms purchasing both by experienced owners and first-time buyers. With the start of the pandemic, a surge in US gun sales was tied to stay-at-home orders and the first wave of pandemic-related unemployment.[35,36] As the year progressed and political polarization increased, people continued to arm themselves; 40 million background checks for gun purchases were recorded in 2020.[35,36] Almost one-quarter of those seeking guns had not previously owned a firearm. Woman and Blacks showed the greatest increases in firearm purchasing. Historically, increases in firearm purchases have been linked with elections or restrictive policy worries. But the COVID-19 pandemic diverged from this trend and was linked to fear associated with the pandemic, lockdown, racism, elections, and the police.

Both firearm assault and DV incidents in the US increased by 8.1% in the first months following the imposition of stay-at-home orders.[18] People at risk of DV are at high risk of being killed by a firearm with over one half of all intimate partner homicides committed with guns.[37] In a study conducted at Level I trauma centers across Philadelphia, Abdallah et al found that intentional or violent trauma, such as firearm violence, stabbings, and assaults, significantly increased when comparing six weeks prior to and 10 weeks after implementation of stay-at-home orders; other studies reported greater increases in shootings after lockdown was lifted.[38] Recognizing the synergistic epidemic, or syndemic, of racism, COVID-19, and firearm injury is important. Preliminary data showed Blacks were twice as likely as Whites to die from COVID-19.[38] Blacks are also eight times more likely to be killed by a firearm than Whites.[34] Preliminary statistics from 2020 suggest that the COVID-19 pandemic compounded racial inequities in firearm violence. In a study conducted using the Philadelphia Police Department data registry of shooting victims, researchers noted that a spike in the number of people shot per week depended on a temporal relationship to Philadelphia's first COVID-19 lockdown.[40]

Finally, more than half of deaths from firearms occur from suicide. Although preliminary data suggests suicide deaths dropped in 2020 compared with 2019, it is anticipated that the mental health burden of the pandemic will peak later than the actual pandemic. The 1918 Spanish Flu pandemic, for example, was associated with an increase in death by suicide, suggesting the social isolation link.[41] Firearms were shown to reduce the time period of first suicidal thoughts and attempts, as well as to significantly increase the lethality of those attempts.[42] With increased access to firearms, numbers of first-time buyers, and feelings of social isolation, there is a high risk of future increases in suicides related to firearm injury.

While the summative effect of the COVID-10 pandemic and the gun violence pandemic, and their relationship to each other, has not yet been studied, there is cause for concern. Recognition of risk is the first step toward improved prevention of firearm injury. Emergency clinicians are uniquely positioned to intervene as we care for vulnerable patients who may be facing DV, racial violence, or depressive symptoms. Screening of *all* ED patients may make a difference.

## COVID-19 FEAR AND NEGLECT

During the pandemic, there was a documented decrease in ED visits for medical and traumatic conditions, myocardial infarctions, stroke, and hyperglycemic crises.[43–46] Forty percent of adults deferred care for fear of catching COVID-19, leading to serious morbidity and mortality.[47] An ACEP study found that 80% of those surveyed were concerned about contracting COVID-19 from other ED patients or visitors, and 29% actively delayed or avoided seeking medical care due to these concerns.[48] Another survey regarding non-COVID-19-related complaints found 59% were unlikely to use the ED and another 20% "didn't know."[49]

Emergency physicians have countless stories of patients delaying medical care due to fear of contracting disease. Many of these patients presented very late into the course of their disease, suffering unnecessary complications and potentially permanent consequences. Such instances raise the question of when does fear of disease turn into actual neglect, and complicate the assessment of abuse and neglect, particularly of dependent populations.

Patients exercise their autonomy when deciding whether to seek care due to fear of COVID-19. What if that decision were made for the patient by someone else? Are parents neglectful when choosing not to take their child to the doctor or ED for care because of fears surrounding COVID-19? Is it child neglect if parents delay seeking care for their 9-year-old with right lower quadrant abdominal pain for a week resulting in perforated appendicitis requiring percutaneous drainage, prolonged parenteral antibiotics, and delayed appendectomy? Is this reportable to CPS?

Conversely, there is the example of an elderly woman who falls with immediate hip pain and inability to walk and whose refusal of family members' offer to take her to the ED leaves her bedbound for a week. Family bought diapers for toileting and gave her meals in bed. Finally, when the pain escalated, she agreed to present to the ED where she was diagnosed with an intertrochanteric hip fracture with associated deep vein thrombosis. Is this self-neglect or elder neglect? Nursing home staff assume a resident with fever, body aches, abdominal pain, and nausea/vomiting/diarrhea has COVID-19 during an outbreak in their facility and don't send her to the ED for three days despite a negative COVID-19 test. She was found to have incarcerated bowel with sepsis. Was the nursing home neglectful for anchoring on COVID-19 because of their facility's concomitant outbreak? Are these events reportable to Adult Protective Services?

Child neglect is defined as the failure of a parent or other person with responsibility for the child to provide needed food, clothing, shelter, medical care, or supervision to the degree that the child's health, safety, and well-being are threatened with harm.[50] Similarly, elder neglect is defined as failure by a caregiver or other person in a trust relationship to protect an elder from harm or the failure to meet needs for essential medical care, nutrition, hydration, hygiene, clothing, and basic activities of daily needs or shelter, which results in a serious risk of compromised health and/or safety relative to age, health status, and cultural norms.[31] Self-neglect is the behavior of an elderly person that threatens his/her own health and safety.[31]

During non-pandemic times, most clinicians would believe that these questions posed above were proof of neglect. However, pandemic fears, especially during surges, made this judgment difficult. In assessing situations, several factors must be considered, including intent, expectation of trust, risk, and harm. The key question to consider is "what was the intent or intentionality of the decision?" Was delaying care malicious or honoring the patient's wishes? In cases of self-neglect, the competence and decision-making capacity of the patient must be considered. It is not self-neglect if the patient has competence and decision-making capacity.[31]

Classifying actions as neglect requires thought. One does not want to wrongfully accuse or, conversely, miss red flags and possibly subject the patient to more serious abuse. Emergency physicians should employ ED social workers to help with difficult cases. With regard to COVID-19 fear, local and national organizations needed to educate the public about seeking appropriate medical care and the true risk of disease transmission in healthcare settings. Patient education is key to ensure timely and appropriate medical care. With the advent of vaccination, hopefully these fears were lessened.

## LIMITATIONS

The authors who performed the literature search and review were not blinded. The true extent of pandemic-related violence remains, and will likely remain, incompletely reported and understood. As a result, the available quantitative data is limited. Anecdotal evidence suggests that pandemics require increased vigilance for signs of interpersonal abuse and violence. Moreover, and perhaps more pressing, a thorough risk-benefit analysis of universal lockdowns as a mitigation strategy must be conducted to further our understanding and ensure adequate emergency preparedness during future respiratory pandemics, given a much earlier prediction that lockdowns would be of little help and would increase violence. Finally, we did not focus on specific prevention techniques related to COVID-19, as research on this subject was sparse.

## CONCLUSION

It is evident that measures meant to help control the spread of the COVID-19 pandemic had many unintended consequences and placed people at risk for violence. The pandemic left abuse and violence victims feeling isolated with fewer options for help and decreased opportunities for recognition. Hospitals and violence prevention programs need to start planning for the next pandemic with a focus on preserving or expanding access to services, strengthening social service agency partnerships, and ensuring these agencies have access to the ED with proper PPE.

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# A National Snapshot of Social Determinants of Health Documentation in Emergency Departments

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**Introduction:** Documentation and measurement of social determinants of health (SDoH) are critical to clinical care and to healthcare delivery system reforms targeting health equity. The SDoH are codified in the *International Classification of Disease 10th Rev* (ICD-10) Z codes. However, Z codes are listed in only 1-2% of inpatient charts. Little is known about the frequency of Z code utilization specifically among emergency department (ED) patient populations nationally.

**Methods:** This was a repeated cross-sectional analysis of ED visit data in the United States from the Nationwide Emergency Department Sample from 2016–2019. We characterized the use of Z codes and described associations between Z code use and patient- and hospital-level factors including the following: age; gender; race; insurance status; ED disposition; ED size; hospital urban-rural status; ownership; and clinical conditions. We calculated unadjusted odds ratios for likelihood of Z code reporting for each ED visit.

**Results:** Of approximately 140 million ED visits per year, 0.65% had an associated Z code in 2016, rising to 1.17% by 2019. Visits were more likely to have an associated Z code for adults age <65, male, Black, Medicaid or self-pay patients, and patients admitted to the hospital. Larger EDs, those in metropolitan areas, academic centers, and government-run hospitals were more likely to report Z codes. The most commonly associated clinical conditions were as follows: schizophrenia spectrum and other psychotic disorders; depressive disorder; and alcohol-related disorders.

**Conclusion:** There is a paucity of Z code documentation in the health records of ED patients, although use is uptrending. Further research is warranted to better understand the drivers of clinicians' use of Z codes and to improve on their utility. [West J Emerg Med. 2023;24(5.1)103–107.]

## INTRODUCTION

Documentation and measurement of social determinants of health (SDoH) are critical to high-quality clinical care, population health research, and to healthcare delivery system reforms targeting health equity. In 2014, the Institute of Medicine recommended that social and behavioral domains be incorporated into patients' electronic health records. In 2015, these domains were codified in the *International Classification of Disease, Tenth Rev* (ICD-10) Z codes, designating "health hazards related to socioeconomic and psychosocial circumstance" inclusive of inadequate housing, unemployment, education and literacy, social environment, and financial instability. The ICD-10, which is used by all member nations of the World Health Organization, is translated into 43 languages and serves as the basis for reporting health status, mortality, and medical reimbursements.[1] The ubiquitous use of ICD-10 codes makes the Z codes a logical mechanism for documentation and data collection on SDoH.[2]

Documentation of Z codes has increased since their introduction in October 2015.[3] However, despite this increase, prior studies have shown that Z codes are listed in only 1–2% of inpatient charts—identifying a much smaller population than in corresponding population-level statistics for homelessness, unemployment, and low educational attainment.[3]

A high prevalence of social vulnerability among emergency department (ED) patients[4] demands accurate documentation of SDoH. The existing literature has focused primarily on inpatient samples, single healthcare systems, or states. The frequency of Z code use specifically among ED patient populations in a national sample has not been examined. In this work, we describe the frequency of ICD-10 Z code documentation in ED charts using the Nationwide Emergency Department Sample (NEDS).[5] We examine patient- and hospital-level characteristics associated with documentation of Z codes in EDs in the United States from 2016–2019.

*Population Health Research Capsule*

*What do we already know about this issue?*
Z codes for social determinants of health (SDoH) are documented in only 1–2% of charts—identifying a much smaller population than in corresponding population-level statistics.

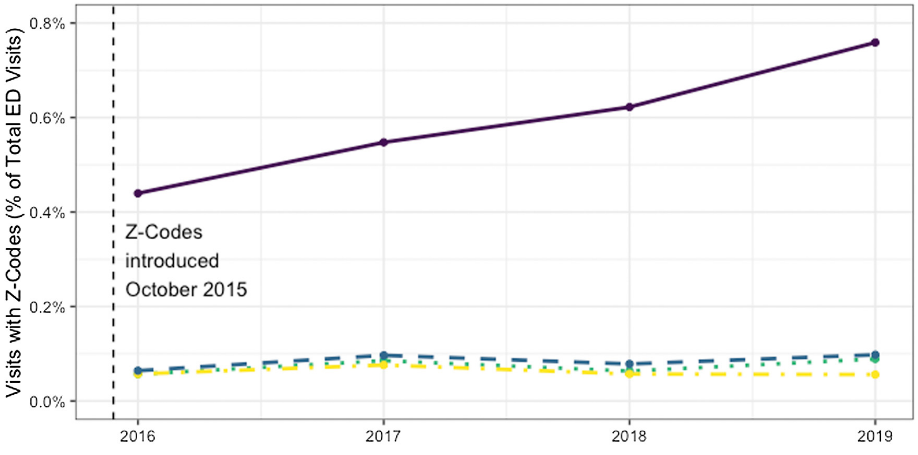
*What was the research question?*
How frequently are Z codes documented in ED visits? What characteristics are associated with their use?

*What was the major finding of the study?*
While documentation of Z codes for ED visits is infrequent, it has increased from 0.65% of ED visits in 2016 to 1.17% by 2019.

*How does this improve population health?*
The high prevalence of social vulnerability among ED patients demands accurate documentation of SDoH to address drivers of health inequity.

## METHODS

This was a repeated cross-sectional analysis of ED visit data in the US from NEDS from 2016–2019.[5] The NEDS, which is the largest all-payers claims dataset representing 900+ EDs across the US, employs complex survey weights designed to provide reliable estimates for nationwide ED visit trends. We characterized Z code use and described associations between the use of Z codes and patient- and hospital-level factors. Variables included were age, gender, race, insurance status, ED disposition, ED size, hospital urban-rural status, ownership, and US Census Region. We calculated unadjusted odds ratios for likelihood of Z code reporting for each ED visit. Additionally, we examined the most common clinical conditions, according to Clinical Classifications Software Refined (CCSR) codes, associated with patient encounters that had at least one Z code documented. The CCSR aggregates ICD-10 diagnosis codes into 530 categories for clinical conditions. Survey weights were implemented for nationally representative estimates,



Source: Healthcare Cost and Utilization Project

**Figure 1.** Documentation of social determinants of health among emergency department visits nationwide.

and standard errors were adjusted for complex sampling design. All analyses were performed in R 4.0.2 (R Foundation for Statistical Computing, Vienna, Austria).

## RESULTS

Of the approximately 140 million ED visits in each year, 0.65% had an associated Z code in 2016, rising to 1.17% by 2019. The most reported category was "problems with housing and economic circumstances," and use of this code grew precipitously from 2016 to 2019 (from 0.44% to 0.78%) (Figure 1).

Visits were more likely to have an associated Z code for adults aged 41–64 compared to aged 19–25, male compared to female patients, those who identified their race as Black or Native American compared to those who identified White, those with Medicaid or self-pay compared to private insurance, and those who were admitted to the hospital (Table 1). Examination of hospital-level characteristics showed the Z codes were more likely to be used at larger EDs with more than 80,000 annual visits compared to smaller EDs with fewer than 20,000 visits, and academic compared to non-teaching hospitals. Z codes were less likely to be used at hospitals in micropolitan and small metropolitan areas compared to large metropolitan areas, and not-for-profit and investor-owned hospitals compared to government-run hospitals (Table 1). The most commonly associated clinical conditions were as follows: schizophrenia spectrum and other psychotic disorders (3,747; 7.4%); depressive disorder (3,521; 6.9%); and alcohol-related disorders (,479, 6.9%) (Table 2).

## DISCUSSION

Our findings demonstrate the paucity of Z code documentation[3] specifically among ED patients, although the use of Z codes is generally uptrending. Nearly all the growth in Z code use is attributable to "issues related to housing and economic circumstances." Z codes are more likely to be used in EDs at larger, urban, teaching hospitals and among adults age <65, male, Black, Medicaid recipient, or uninsured. Previous studies on inpatient samples have similarly found that hospitals that use Z codes are more likely to be larger, private, not-for profit, urban, teaching hospitals and that patients are more likely to be male, Medicaid recipients, or uninsured.[6,7] The clinical conditions most associated with Z code use in EDs were psychiatric- and substance use-related codes. This is similar to previous work on inpatient samples that showed admissions for mental health and substance use disorders are more likely to include Z codes.[3,6,7] Despite the uniquely high prevalence of social vulnerability among ED patients, the documentation of Z codes in the ED appears to follow a pattern similar to inpatient Z code documentation.

**Table 1.** Factors associated with use of Z codes.

| | **Unadjusted ORs** |
|---|---|
| Visit-level characteristics | |
| *Primary payer (insurance status)* | |
| Private insurance | (ref) |
| Medicaid | 4.23 [3.79–4.72] |
| Medicare | 2.53 [2.28–2.81] |
| Self-pay | 3.83 [3.38–4.34] |
| Other | 3.86 [2.49–5.99] |
| *Gender* | |
| Female | (ref) |
| Male | 2.21 [2.09–2.33] |
| *Race* | |
| White | (ref) |
| Black | 1.26 [1.11–1.44] |
| Hispanic | 0.72 [0.63–0.82] |
| Native American | 1.53 [1.11–2.10] |
| Asian/Pacific Islander | 0.60 [0.50–0.72] |
| Other | 0.98 [0.78–1.23] |
| *Age* | |
| 0–18 | 0.39 [0.34–0.45] |
| 19–25 | (ref) |
| 26–32 | 1.55 [1.47–1.64] |
| 33–40 | 1.91 [1.79–2.03] |
| 41–64 | 2.20 [2.05–2.37] |
| 65- | 0.69 [0.62–0.76] |
| *Admission* | 3.89 [3.48–4.35] |
| Hospital-level characteristics | |
| *Region* | |
| Northeast | 1.17 [0.87–1.59] |
| Midwest | (ref) |
| South | 1.03 [0.75–1.41] |
| West | 2.29 [1.72–3.04] |
| *Urban/Rural Designation* | |
| Large metropolitan | (ref) |
| Small metropolitan | 0.79 [0.64–0.98] |
| Micropolitan | 0.33 [0.26–0.42] |
| *Hospital control* | |
| Government* | – |
| Private, not-for-profit | 0.56 [0.41–0.78] |
| Private, investor-owned | 0.57 [0.38–0.85] |
| *Teaching status* | |
| Metropolitan teaching | 1.69 [1.39–2.06] |
| Metropolitan non-teaching | (ref) |

(*Continued on next page*)

**Table 1.** Continued.

| | Unadjusted ORs |
|---|---|
| *Total ED visits* | |
| <20,000 | (ref) |
| 20–40,000 | 1.44 [0.92–2.24] |
| 40–60,000 | 1.72 [1.09–2.72] |
| 60–80,000 | 1.75 [1.10–2.77] |
| 80,000+ | 2.06 [1.30–3.24] |

Binary logistic regression models were estimated using the Nationwide Emergency Department Sample 2019 data with adjustment for weighting and complex sample design and with standard errors clustered by hospital.
*ORs*, odds ratios; *ref*, reference category; *ED*, emergency department.

**Table 2.** Most commonly associated primary Clinical Classifications Software Refined codes among patients with any code for social determinants of health.

| | Count | Percent | Cumulative |
|---|---|---|---|
| Schizophrenia spectrum and other psychotic disorders | 3,747 | 7.4% | 7.4% |
| Depressive disorders | 3,521 | 6.9% | 14.3% |
| Alcohol-use related disorders | 3,479 | 6.9% | 21.2% |
| Suicidal ideation/attempt/ intentional self-harm | 1,944 | 3.8% | 25.0% |
| Bipolar and related disorders | 1,538 | 3.0% | 28.0% |
| Musculoskeletal pain, not low back pain | 1,477 | 2.9% | 30.9% |
| Skin and subcutaneous tissue infections | 1,462 | 2.9% | 33.8% |
| Septicemia | 1,318 | 2.6% | 36.4% |
| Nonspecific chest pain | 1,212 | 2.4% | 38.8% |
| Diabetes mellitus with complication | 1,048 | 2.1% | 40.9% |
| Trauma- and stressor-related disorders | 975 | 1.9% | 42.8% |
| Stimulant-use related disorders | 972 | 1.9% | 44.7% |

Prior studies have proposed that low rates of Z code use are related to clinician uncertainty on Z code relevance to a given medical encounter, ambiguity in Z codes themselves, and a lack of systematized connections to clinical screening instruments and activities.[8] Connecting SDoH to billing structures and payment models may address some of these barriers to documentation and more substantively address the needs of patients with high social acuity.[8] Future implementation must also be sensitive to the risk of incorporating stigmatizing language or codifying stereotypes within the medical record.[9]

## LIMITATIONS

This repeated cross-sectional analysis of NEDS has multiple limitations. First, the absence of a documented Z code for a patient encounter does not necessarily mean there was no documentation of SDoH elsewhere in the patient's health record. However, such granular data was unavailable. Furthermore, in this analysis we were unable to characterize how strongly the medical decision-making for the clinical encounter was related to the SDoH documented in the Z codes. Finally, as there were no clinical or patient-oriented outcomes, we were unable to comment of the associations among documenting SDoH, clinical care, and outcomes.

## CONCLUSION

The ED should play a critical role in monitoring and responding to evolving health disparities by serving as a bellwether for shifts in local socioeconomic landscapes, analogous to syndromic surveillance systems where ED documentation is used to track shifting infectious disease burden.[10] In this study we found that documentation of Z codes for ED visits is infrequent but has increased from 0.65% of ED visits in 2016 to 1.17% by 2019. Further research is warranted to better understand the drivers of clinicians' use of Z codes and to improve on their utility. Emergency departments are uniquely positioned within the house of medicine and the social safety net to identify and address social determinants of health. Only by improved measurement can we begin to craft policy solutions to address these important drivers of health inequity.

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REVIEW

# Race, Healthcare, and Health Disparities: A Critical Review and Recommendations for Advancing Health Equity

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An overwhelming body of evidence points to an inextricable link between race and health disparities in the United States. Although race is best understood as a social construct, its role in health outcomes has historically been attributed to increasingly debunked theories of underlying biological and genetic differences across races. Recently, growing calls for health equity and social justice have raised awareness of the impact of implicit bias and structural racism on social determinants of health, healthcare quality, and ultimately, health outcomes. This more nuanced recognition of the role of race in health disparities has, in turn, facilitated introspective racial disparities research, root cause analyses, and changes in practice within the medical community. Examining the complex interplay between race, social determinants of health, and health outcomes allows systems of health to create mechanisms for checks and balances that mitigate unfair and avoidable health inequalities As one of the specialties most intertwined with social medicine, emergency medicine (EM) is ideally positioned to address racism in medicine, develop health equity metrics, monitor disparities in clinical performance data, identify research gaps, implement processes and policies to eliminate racial health inequities, and promote anti-racist ideals as advocates for structural change. In this critical review our aim was to (a) provide a synopsis of racial disparities across a broad scope of clinical pathology interests addressed in emergency departments—communicable diseases, non-communicable conditions, and injuries—and (b) through a race-conscious analysis, develop EM practice recommendations for advancing a culture of equity with the potential for measurable impact on healthcare quality and health outcomes. [West J Emerg Med. 2023;24(5 Supplement)108–120.]

## INTRODUCTION

Social determinants of health (SDoH) as defined by the US Centers for Disease Control and Prevention (CDC) are the conditions in which people live, learn, work, and play that are determined by the distribution of money, power, and resources and that affect a wide range of health and quality-of-life risks and outcomes.[1] Influenced by the social construct of race, SDoH exert disparate impacts on the health of subpopulations. Economic disparities disproportionately place Black, indigenous, and people of color (BIPOC) within zones marked by substandard health promotion and excessive health risks. The compounding nature of adverse SDoH, such as housing instability, food insecurity, poor healthcare access, and hazardous exposures, has serious health implications. Health disparities are the profound downstream effect of the socioeconomic disadvantages that BIPOC endure under the moniker *structural racism*.

In addition to structural racism, *implicit bias*—defined as unconscious attitudes, positive or negative, toward a person, group, or idea—often leads to differential treatment based on perceived race.[2,3] Implicit bias further restricts quality healthcare as a separate factor above and beyond inequities of structural racism. Emergency department (ED) data indicates that Black (vs White) patients have longer treatment wait times,[4] longer lengths of stay,[5] and lower triage acuity levels.[6] Additionally, Black ED patients have a 10% lower likelihood of admission and 1.26 times higher odds of ED or hospital death than White patients.[7] Research also suggests that physicians' own implicit racial biases may contribute to disparities in healthcare quality and delivery.[8–10]

In this critical review we explore the complex effects of race, implicit bias, and structural racism on SDoH, healthcare quality and, ultimately, health outcomes. Although not intended as a comprehensive literature review on health disparities, this exercise informs a conceptual framework through which actionable steps and practice recommendations for emergency medicine (EM) are proposed as one part of a larger systemwide effort that requires thoughtful action and transformative policy to dismantle the hard-wired inequities of structural racism and advance health equity.

## METHODS

### Critical Review Methodology

We conducted a broad-scope critical review of the extant health disparities literature across three areas of clinical pathology interest: communicable diseases; non-communicable conditions; and injuries. The review was conducted through a race-conscious lens to examine the impact of race on health outcomes and inform a conceptual framework for the development of actionable steps and practice recommendations.

Critical reviews include "a degree of analysis and conceptual innovation" resulting in a product capable of launching a new phase of evaluation.[11] According to Grant and Booth, the critical review does not call for a systematic evaluation of all the literature related to a topic, but rather the emphasis is on the contribution of each piece of evidence included to the review's conceptual product.[11] As described by the Search, Appraisal, Synthesis, and Analysis framework, critical reviews are designed to identify key findings in the field of interest (health disparities literature), evaluate the evidence in accordance with its contribution (racial health disparities attributable to SDoH), synthesize the evidence in organized fashion (clinical pathology interests relevant to EM), and provide a conceptual output of analysis that contributes to the literature (actionable steps and practice recommendations).[11]

In this review we aimed to examine racial health disparities through the SDoH model and apply socioenvironmental theory[12] and resource deprivation theory[13] as race-conscious filters through which racial disparities data is analyzed and synthesized (Table 1). The analysis informed the conceptual framework through

**Table 1.** Race-conscious analysis tools employed in critical review.

| Socioenvironmental theory[12] | Resource deprivation theory[13] |
|---|---|
| *Socioenvironmental theory* holds that racial residential segregation is central to racial and ethnic health disparities. According to this theory, racial/ethnic minority groups have considerably different levels of health risk due to the multiple social and environmental factors that detrimentally impact their health within the context of longstanding residential segregation and its deeply rooted socioeconomic disadvantages. | *Resource deprivation theory* holds that the longstanding deprivation of resources experienced by racial/ethnic minority groups is central to racial and ethnic disparities. Due to chronic deprivation, racial/ethnic minority groups lack the necessary infrastructure to support health. Resources are not restricted to material possessions; they include education, employment, housing, neighborhood safety, and psychological wellbeing. According to evidence-based interpretations of this theory, gap closure cannot be achieved through equal distribution of resources, but rather targeted differential distribution of resources that levels the playing field for racial/ethnic minority groups. |

which we developed and propose actionable steps and practice recommendations.

## RESULTS

### Communicable Diseases

*HIV/AIDS*

Racial and ethnic disparities in the incidence and prevalence of HIV infection and AIDS have been documented in the US since the 1980s.[14] Despite prevention, identification, and treatment advances, Black-White and Hispanic-White disease incidence disparities have increased since 1984. In 2013, Blacks and Hispanics accounted for 46% and 21% of new HIV infections and 49% and 20% of new AIDS diagnoses despite representing 12% and 16% of the total US population, respectively.[14] Although HIV incidence rates have improved in recent decades, Blacks and Hispanics have benefitted less from antiretroviral therapy advancements.[15] Incidence rates (IR) have declined with the advent of pre-exposure prophylaxis (PrEP); however, PrEP usage remains disparately low among Black (5.9%) and Hispanic (10.9%) adults with an indication as compared to Whites (42.1%).[16,17]

*ED Actionable Steps:* Increase access to HIV testing and referrals to PrEP and post-exposure prophylaxis.

*Viral Hepatitis*

Hepatitis C virus (HCV) is the leading cause of liver disease-related death in the US.[18] Racial disparities in disease prevalence exist at a rate greater than twice that of Whites; Blacks in the US have the highest prevalence ratio (PR) of disease (PR 2.29, 95% confidence interval [CI] 1.94–2.70).[18] Rates of treatment for chronic hepatitis C are also higher among Whites as compared to Black, Hispanic, and Asian individuals.[19] Direct-acting antivirals (DAA) became available in 2014 and are achieving greater than 90% cure rates.[20] Early research found that Black and Hispanic patients were less likely than Whites to benefit from DAA initiation (adjusted rate ratio [aRR] 0.7, 95% CI 0.7–0.8 and 0.8, 95% CI 0.7–0.9, respectively).[21] Follow-up data from a national cohort found that these racial-ethnic gaps had closed by 2016; however, more recent data is needed to determine whether equitable access has persisted beyond initial evidence-driven efforts.[20]

*ED Actionable Steps:* Increase access to HCV testing and referrals to DAA treatment.

*Sexually Transmitted Infections*

Disparities in sexually transmitted infections (STI) have been described extensively in the literature. Rates of primary and secondary syphilis, HIV/AIDS, chlamydia, and gonorrhea among Blacks range from 5.4 to 17.8 times the rates among Whites in the US.[22] The SDoH associated with increased STI prevalence have been discussed extensively, ranging from inequities in healthcare, income, incarceration, residential segregation, and substance use, among others.[23,24] Importantly, prevalence must be interpreted within the context of STI screening, the odds of which are higher among Black and Hispanic women than their White counterparts (adjusted odds ratio [aOR] 2.56, 95% CI 2.60–3.10 and 1.42, 95% CI 1.39–1.46, respectively).[25]

*ED Actionable Steps:* Increase access to STI testing and ED-based treatment.

*Diarrheal Disease*

An estimated 500,000 cases of shigellosis occur annually in the US.[26] Incidence rates of infection per 100,000 are greatest among Black (7.2) and Hispanic (5.6) individuals as compared to Whites (2.6).[26] Despite the preventable nature of shigellosis, an analysis of over 25,000 laboratory-confirmed cases reported to the CDC found a strong association between its incidence and residence in areas marked by US Census Tract-level poverty and household crowding. Racial and ethnic IR disparities, however, persisted even after controlling for these socioeconomic indicators,[26] and the rates of severe infection among adults are highest among Black persons.[27] Similarly, Black (vs non-Black) infants <6 months in age had higher rates of diarrhea-associated hospitalizations that persisted even after the introduction of the rotavirus vaccines in 2006.[28]

*ED Actionable Steps:* Educate patients and parents about transmission mechanisms and mitigation strategies (eg, hand hygiene, low-cost water treatment options, vaccination), and consider offering vaccination in the ED when necessary and reasonable.

*Pandemic Respiratory Viral Infection*

Disparities exist among pandemic respiratory viral infections, including influenza H1N1 and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), resulting in higher disease incidence and mortality among minority groups.[29–31] Coronavirus disease 2019 (COVID-19) cases and hospitalization rates were 2.5-4.5 times higher among Black, Hispanic, and Native American populations than Whites. Through May 2021, COVID-19 deaths among Hispanic and Black populations were 17% and 10% greater, respectively, than expected by US population representation after controlling for age.[32] Elevated COVID-19 infection and death rates have also been observed in socially disadvantaged counties with larger proportions of BIPOC.[32,33] Among residents of a predominantly Black and Hispanic COVID-19 hotspot, very high and disparate positivity rates were observed among Black (68.5%) and Hispanic (65.3%) patients as compared to Whites (53%).[34] Higher hospitalization rates for Blacks (60.2%) and Hispanics (62.3%) as compared to Whites (47.7%) were also observed, although there were no differences in admission rates to the intensive care unit.[34]

Mortality rates among COVID-19 inpatients also show BIPOC disparities.[35,36] Recent CDC data shows higher mortality risk ratios for Native Americans (2.4), Hispanics (2.3), and Blacks (1.9) compared to Whites.[37] There are several reasons cited to explain the higher out-of-hospital mortality rates, disease burden, and severity of illness among BIPOC.[36,38–40] Several authors have concluded that population-based disparities in COVID-19 hospital mortality are best explained by differential disease incidence, prevalence of comorbid conditions, and socioeconomic marginalization among Black and Hispanic individuals.[34,39,40]

Overall racial and ethnic disparities in COVID-19 risk, severity, morbidity, and mortality arise from a combination of social, economic, and health determinants.[36,38] Due to economic strain, BIPOC are more likely to live in crowded housing (multigenerational or communal households) and densely populated neighborhoods. They are also more likely to work in consumer-facing public service industries and rely on public transportation, increasing their exposure risk. Additionally, higher rates of comorbidities (eg, heart disease, diabetes, hypertension, and obesity) increase BIPOC's risk for severe COVID-19 disease. Barriers to health insurance and health services limit access to treatments and to accurate knowledge regarding SARS-CoV-2 transmission, prevention strategies, disease symptoms, and reasons for seeking care.[41–43] Interestingly, despite the positive impact of Medicaid expansion on healthcare access, mortality, and disparities, one study failed to find an association between COVID-19 mortality and expansion vs non-expansion,[44,45] likely reflecting a benefit negated by the heightened social risk of structural racism.

Disparities in vaccination coverage were evident by the end of April 2021. When all adult age groups were eligible, vaccination rates among Black (46.3%) and Hispanic (47.3%) adults were lower than among Whites (59%) and Asians (69.6%).[46] Despite policies to ensure equitable COVID-19 vaccine access, vaccination hesitancy—originating from distrust in the medical establishment and resulting from longstanding systemic racism in healthcare and research—required community partnerships and concerted efforts by trusted sources of information to overcome the slower rates of vaccination among BIPOC.[46]

*ED Actionable Steps:* Increase access to viral testing, educate patients and parents about transmission mechanisms and mitigation strategies (eg, masks, isolation, vaccination), and consider offering vaccination in the ED when necessary and reasonable.

## Non-Communicable Conditions

### *Acute Coronary Syndrome and Acute Myocardial Infarction*

Disparities in acute coronary syndrome (ACS) care have been well-documented. Compared to White patients with door-to-balloon (DTB) times of 103.4 minutes, Black and Hispanic patients experience significantly longer DTB times (122.3 and 114.8 minutes, respectively).[47] Over the last decade, DTB times have improved significantly across all groups; however, Black Americans have a lower likelihood of experiencing DTB times <90 minutes[48] and have experienced only a modest decline in recurrent hospitalization for acute myocardial infarction (AMI) compared to Whites.[49] Black patients experience worse AMI outcomes with a five-year mortality rate of 29% compared to 18% among Whites.[50]

*ED Actionable Steps:* Consider protocolized ED triage and early management of potential ACS/AMI-related complaints beyond chest pain.

### *Type 2 Diabetes Mellitus*

Type 2 diabetes prevalence rates among Black (13.2%) and Hispanic (12.8%) Americans are similar and higher than rates among Whites (7.6%).[51] Well-controlled glycemia and hospitalization rates, quality indicators, are both worse among Black patients (37.6% and 26.5%, respectively) compared to Whites (44% and 16.1%, respectively).[51] The marker of glycemic control, hemoglobin $A_{1c}$ ($HgbA_{1c}$), is statistically worse among Black vs White patients ($HgbA_{1c}$ $9.1 \pm 2.9\%$ vs. $8.5 \pm 2.2\%$, $P = 0.001$).[52] Black and Hispanic patients have higher odds of diabetes-related ED visits (odds ratio [OR] 1.84, 95% confidence interval [CI] 1.7–2.0 and 1.60, 95% CI 1.4–1.8, respectively) than Whites.[53]

*ED Actionable Steps:* Educate patients about the complications of poor glycemic control and consider navigation partnerships with primary care for expedited post-ED visit, outpatient follow-up of patients with diabetes-related chief complaints and complications.

### *Hypertension*

Racial and ethnic disparities in hypertension are likely multifactorial related to upstream SDoH, including access to healthcare, affordable medications, low-sodium foods, and safe green spaces for physical activity.[54] Unique to Black patients, race-consciousness significantly increases diastolic blood pressure (BP), and the self-perception of having a lower social standing as a function of race is associated with medication non-adherence and higher systolic BP.[54] Research has also demonstrated that Black and Asian patients have higher odds of a high BP reading at their last clinic visit (OR 0.36, 95% CI 0.21–0.60 and 0.40, 95% CI 0.16–0.97, respectively) and Black and American Indian/Alaska Native patients have higher odds of an ED visit or hospitalization (OR 3.61, 95% CI 1.88–6.91 and 5.31, 95% CI 2.13–13.20, respectively).[55]

*ED Actionable Steps:* Educate patients about the complications of poor BP control and consider navigation partnerships with primary care for expedited post-ED visit, outpatient follow-up of patients with hypertension-related chief complaints and complications.

*End-stage Renal Disease*

Racial and ethnic disparities are profound in renal disease. Black patients experience higher IRs of end-stage renal disease (ESRD) in adolescence, greater probability of progression to advanced disease stages before initiation of dialysis, lower likelihood of peritoneal vs hemodialysis treatment, lower likelihood of transplant waitlist placement, and longer waiting times for transplantation.[56] Pediatric nephrology registry data found that among children who progressed to ESRD, 41.8% of White children received transplants compared to 16.3% and 27% of Black and Hispanic children, respectively, and 70% of White children were transplanted within two years of waitlist placement compared to 44% of Black pediatric patients.[57] Subsequent analyses confirm the persistence of these disparities with Black and Hispanic less likely than White children to receive preemptive transplants (8.7% and 14.2% vs 27.4%, respectively), and Black pediatric transplant recipients were less likely than White to experience allograft survival at five years (63% vs 80.8%, respectively).[58]

Similar disparities among non-White adult ESRD patients include lower rates of transplant referrals, delayed times to transplant waitlist placement, and longer wait times for transplant.[56] National mortality statistics indicate Blacks experience significantly higher death rates from ESRD than Hispanic and White Americans (24.6 vs 11.1 and 12.1 age-adjusted death rate per 100,000, respectively).[59]

*ED Actionable Steps:* Advocate for increased access to dialysis, particularly for the uninsured, and consider navigation partnerships with nephrology and local dialysis centers for expedited post-ED visit, outpatient follow-up of patients with ESRD-related chief complaints and complications.

*Obesity*

As a risk factor for heart disease, type 2 diabetes, hypertension, and other chronic conditions, obesity poses a real challenge to population health management efforts. National data demonstrates that the highest prevalence of adult obesity occurs among Black Americans (38.4%) followed by Hispanics (32.6%) and Whites (28.6%).[60] Much like hypertension, racial and ethnic disparities in obesity are multifactorial and require a multifaceted intervention to target social (food deserts), biological (hormone dysregulation secondary adverse childhood events), and behavioral (physical activity) determinants.[61] Research has revealed a high burden of fast- food establishments within predominantly Black communities.[62–64] Treatment disparities are also present with BIPOC demonstrating decreased responsiveness to weight-loss pharmacotherapy, decreased likelihood weight- loss center referral, and decreased likelihood of bariatric surgery.[65]

*ED Actionable Steps:* Consider partnerships with community programs focused on healthy lifestyle change and prescribe vouchers to patients whose health would benefit from weight loss.

*Mental Health*

Racial disparities in the management of psychiatric illness have also come to the forefront in recent years. Rates of depression treatment are lower among Black and Hispanic patients as compared to White patients, who are half as likely and a third as likely, respectively, to receive care than White patients.[66] According to the CDC, Black adults had the highest rates of mental health-related ED visits in 2018-2020, had longer ED wait times, and were less likely to be admitted or transferred to another hospital.[67] An analysis of national data found that Black patients presenting to the ED with a psychiatric emergency have a greater probability of chemical sedation than White patients.[68,69] Additionally, single- and multisite studies have found that Black[69–71] and Hispanic patients[71] are more likely to be physically restrained in the ED than White patients.

*ED Actionable Steps:* Use an equity lens to conduct a thorough review of policies related to restraint use, consider protocolized screening and management of agitation inclusive of early oral medication and withdrawal treatment, and consider navigation partnerships with hospital-based and community-based counseling services.

### Injuries

*Environmental Hazard-Related Injuries*

Ambient fine-particulate matter exposure (PM 2.5) is a risk factor for a host of conditions including reactive airway disease, coronary artery disease, and cerebrovascular disease.[72] The inequitable distribution of hazardous sites, namely industrial facilities, utilities, and landfills, is one of the greatest concerns in the field of environmental justice. Extensive literature has demonstrated that non-Whites are more likely to reside near stationary sources of PM, with Black Americans experiencing a higher burden of PM exposure than Whites and the general population.[73]

Racial disparities in hazardous exposure burden are not a recent phenomenon. The 1987 groundbreaking study that first exposed the disproportionate co-location of toxic waste sites and minority communities found that three of every five Black and Hispanic Americans lived in such conditions.[74] The National Research Council conducted a study that observed greater prevalence of health problems—spontaneous abortions, birth defects, heart disease, gastric cancer, leukemia, and Hodgkin's lymphoma—among those living in proximity to highly toxic chemicals and carcinogens (eg, benzene, polychlorinated biphenyls, mercury, arsenic, and lead).[75] Geo-mapping of hazardous sites found that a disproportionate number of towns overburdened by toxic sources were also home to high proportions of BIPOC, a robust positive predictor of hazardous waste site locations.[76]

*ED Actionable Steps:* Increase syndromic surveillance collaborations with public health departments for early detection and community notification of hazardous conditions, and advocate for targeted policy interventions by highlighting the harmful health impacts on local communities.

### *Long-bone Fractures*

Black and Hispanic patients are less likely to receive opioid analgesia for acute pain in the ED and opioid prescriptions at discharge compared to White counterparts.[77–79] Research shows that although average pain scores do not differ between White and non-White patients with long-bone fractures (LBF), White patients are more likely to receive opiates (70% vs 50%, $P < 0.001$).[78] Among children presenting for ED management of LBF, the data is similar: Black and Hispanic children were less likely to receive opioid analgesics (aOR 0.86, 95% CI 077–0.95 and 0.86, 95% CI 0.76–0.96, respectively) and less likely to achieve optimal pain reduction (aOR 0.78, 95% CI 0.67–0.90 and 0.80, 95% CI 0.67–0.95, respectively).[80]

*ED Actionable Steps:* Consider protocolized ED triage and early management of LBF, including adequate analgesia dosing schedules.

### *Firearm Injuries*

Firearm violence is a public health epidemic in the US. In 2018, firearms were the leading method of homicide and suicide, major causes of premature death. Per the CDC, 39,707 Americans died from firearm violence in 2019, averaging 109 deaths per day and comprising 60% suicides, 35% homicides, and 1.4% law enforcement interventions.[81] While most firearm suicide deaths impact Whites and American Indian/Alaska Natives, homicides disproportionately plague Black Americans. In 2018, firearm homicides were highest among Blacks. Black males and females aged 20–34 years died by firearm homicide at nearly 17 times higher and nearly six times higher rates than their White counterparts, respectively. Among youth aged 0–19, Black males had the highest firearm homicide rate at 14 times higher than their White peers. American Indian/Alaska Native male youth had the second highest youth homicide rate. Black males are disproportionately killed by law enforcement intervention with firearms at a rate 1.71 times that of non-Hispanic White males.[82]

*ED Actionable Steps:* Remain informed of local firearm injury statistics and advocate for adequate policy responses by highlighting the harmful health impacts on local communities.

## DISCUSSION

Across clinical pathology interests and in almost every area studied, BIPOC communities experience worse patient care and health outcomes. Contrary to historical medical teachings, there is no biological evidence for the concept of race as a genomic human subspecies to explain health disparities.[83,84] Rather, it is the social interpretation of people in a race-conscious society that disparately impacts health.[85] The system of structuring opportunity and assigning value, based on assumptions about groups of people with certain physical attributes, systematically privileges some while disadvantaging others and undergirds the deadly problem of structural racism. Compounding the well-recognized theory of resource deprivation among racially/ethnically segregated communities (eg, quality primary education, adequate housing, green space) is socioenvironmental theory, which points to acts of commission that inequitably pose health risks (eg, air pollution,[72,73] toxic waste,[74–76] and fast- food,[62–64] alcohol,[86] and tobacco outlets[87]).

Physicians must acknowledge the insidious health threat that implicit biases and structural racism pose. Disproportionate levels of socioeconomic disadvantage, social vulnerability, and poor health outcomes are manifestations of long-established and deeply entrenched racial segregation and racial deprivation. One could argue that the adverse health effects of structural racism over the centuries have created a far greater public health crisis than the COVID-19 pandemic, and yet beyond their identification, they have not received the attention they demand. Perhaps, in future years, our collective response to the volatile sociopolitical events of the last five years will be viewed as the force that changed the narrative. Many academic medical centers have created executive positions focused on equity, diversity, and inclusion and have worked to implement educational curricula aimed at dismantling structural racism.[88]

The question that remains today— how do we as individuals and collectively as an institution and specialty best advance social justice and health equity? —demands thoughtful actions and transformative policies. A recent scoping review found 37 published intervention papers with only a third including empirical research.[89] Clearly, the implementation science behind this massive multi-pronged process will take time to develop,[90] but there appears to be sufficient direction to propose potential actionable steps (Table 2) and practice recommendations.

## LIMITATIONS

As critical reviews focus on advancing thought through conceptual innovation following an analysis of the literature, the methodology, by design, does not necessitate an exhaustive comprehensive review of the literature nor the same systematicity and quality assessment as in other

**Table 2.** Potential actionable steps for emergency physicians.

| | |
|---|---|
| **Communicable diseases** | 1. DPH-funded, community partnerships for pop-up screening clinics in the community designed to provide rapid testing and counseling regarding treatment initiation for HIV, hepatitis C, and STIs.<br>2. DPH-funded, community partnerships for pop-up vaccination clinics in the community designed to provide testing, vaccination, and transmission-mitigation education in the community.<br>3. Self-guided education and peer education about the increased risk for severe COVID-19 and other respiratory and diarrheal morbidity and mortality among ethnic and racially diverse populations.<br>4. Empower patients with a thorough understanding of communicable diseases, including natural course of illness, methods of transmission, transmission prevention, and reasons for returning; discharge counseling techniques may include discharge nursing teach-back or read-back of instructions.<br>5. DPH-medical-community partnerships designed to focus efforts in areas of high transmission risk when planning resource distribution of testing, treatment, and vaccination supplies related to COVID-19 and other pandemic-related illnesses. |
| **Non-communicable conditions** | 1. Educate EPs about long-standing racial and ethnic gaps in ED-based care and health outcomes; and promote opportunities for implicit bias training.<br>2. Develop equity metrics, monitor clinical performance data on quality measures, identify inequities in clinical and research, and implement process and policy changes to close disparity gaps.<br>3. Support health equity initiatives at the individual, departmental, and organizational levels that aim to educate patients about certain medical conditions (eg, hypertension, diabetes), early warning signs of serious complications (eg, acute coronary syndrome, renal failure), and available treatment options; educational strategies may involve smart documents and waiting room video educational modules.<br>4. Support and partner with existing patient care navigator and community health worker programs to engage patients beyond the index ED visit and ensure medication and treatment plan adherence, outpatient follow-up scheduling, and regular assessments of any barriers to disease control.<br>5. Partner with local community organizations designed to promote healthy lifestyle (eg, smoking cessation, nutritional food planning, local farm food collaborative, reduced-fee gym memberships, etc). |
| **Injuries** | 1. Consider the potential environmental determinants of lung inflammation and injury in BIPOC patients with difficult-to-control asthma symptoms; educate patients about PM and its relationship to asthma and counsel them on preventative measures and importance of maintenance medication adherence.<br>2. Support and advocate for state and federal legislation and policy aimed at prevention of toxic waste dumping, containment efforts, periodic testing of soil and water supplies, increased testing for environmental exposures among communities living in high-risk exposure areas, and investment in industrial waste decontamination, safer housing, and quality medical care for affected communities.<br>3. Self-guided education and peer education about the signs and symptoms of toxicity due to common hazardous waste contaminants, and the available treatments.<br>4. Provide opioid analgesia for acute severe pain in the ED based on likely diagnosis, objective measures of pain, and optimal pain reduction (at least a 2-level reduction in pain score for initial treatment).<br>5. Support epidemiologic and narrative research of firearm violence, both nonfatal injuries and deaths, to better understand risk and protective factors as the basis for intervention.<br>6. Use the results of epidemiologic and narrative research to partner with communities to develop and implement effective interventions especially targeted at high-risk youth and young adults of color.<br>7. Partner with existing programs and personnel that have operated trauma center resources for community and firearm violence to extend their inpatient work to reach a greater proportion of those in need by developing and implementing ED protocols to identify, counsel, and refer at-risk populations.<br>8. Educate EPs on the effective counseling of populations at disproportionate risk for community and firearm violence and incorporate smart discharge phrases into the electronic health record system.<br>9. Develop strong collaborations with community groups and social services to whom the ED could transition primary and secondary prevention; incorporate these referrals into discharge materials.<br>10. Encourage state and federal legislation and policy aimed at decreasing firearm homicides and nonfatal injuries (eg, decrease access to illegal firearms, increase federal funding for research on firearm violence, decrease the production of violent video games and media and replace them with games in which the protagonist must save lives rather than kill to win). |

*BIPOC*, Black, indigenous and people of color; *DPH*, Department of Public Health; *ED*, emergency department; *EP*, emergency physician; *PM*, particulate matter; *STIs*, sexually transmitted infections.

more structured review approaches.[11] Additionally, the objective of the conceptual product of a critical review is to propose a new phase of research within the field in question,[11] and as a result, the actionable steps and practice recommendations made have yet to be proven effective but instead serve as a starting point for a new phase of implementation science.

## CONCLUSION

The suggested actionable steps and following practice recommendations constitute the conceptual product of this critical review, demanding a new phase of implementation and evaluation research that identifies effective strategies and best practices for mitigating racial health inequities. Emergency physicians, as individuals and organizational leaders, can act from several positions in the social structure:

A. Societal members
  1. Participate in local, state, and federal government forums advocating for health through resources and advantages historically inaccessible to BIPOC:
     a. Affordable, safe housing
     b. Food security (ie, sufficient, safe, and nutritious sustenance)
     c. Firearm safety, neighborhood safety, and support for survivors of violence
     d. Health-promoting lifestyle (eg, green space and density restrictions on fast-food, tobacco, and alcohol outlets)
     e. Comprehensive community health centers with expanded hours of operations
  2. Develop meaningful individual and organizational partnerships with antiracist stakeholders and communities (ie, Black Lives Matter, White Coats for Black Lives, etc).
  3. Engage leadership and representatives of first responder agencies in upholding the value of every human life.

B. Stewards of medicine
  1. Engage medical leadership in changing organizational culture to one that consistently prioritizes equity, addresses inequities in clinical and professional spaces, and recognizes the systematic advantage of privilege.
  2. Create permanent positions accountable to equity, diversity, and inclusion initiatives[91] and ensure core leadership articulates diversity as an institutional priority and dialogues constructively with all relevant stakeholders.[92]
  3. Increase BIPOC representation within the pipeline and across all organizational strata.[93]
  4. Identify racial disparities and their sources within the system, conduct root cause analyses, and implement strategies to remedy inequities.[94] Describe, document, and proactively work to mitigate the health impact of racism.[95]
  5. Draft policies and enforce protocols for dealing with race-based aggression by patients and other staff.
  6. Educate medical personnel through multimodal continuous medical education on trauma-informed care, anti-racism practice, and cultural humility.[96]
  7. Offer medical education curricula and periodic trainings for students, residents, community physicians, and faculty that include the following:[93,97]
     a. SDoH: Although the prospective, patient-oriented outcome is sparse, many medical schools and residency programs have adopted SDoH curriculum, which may lead to measurable changes in the future[98] and is a stated priority of the Institute of Medicine.[99] Comprehensive training materials are free and available on the web.[100]
     b. Cultural humility training to address implicit bias, stereotypes, and prejudice.[101]
     c. Anti-racism and trauma-informed care training to improve patient care communication and bedside skills.
  8. Evaluate the impact of educational programs on patient care and health outcomes to curate efforts.[102] Disseminate evidence-based best practices.
  9. Endeavor as an institution and specialty to eliminate racialized conceptions of disease susceptibility (eg, casting Blacks as innately diseased and dehumanizing their suffering).[103]

C. ED staff
  1. Develop equity metrics, monitor clinical performance data, identify clinical and research gaps, and implement process and policy changes to eliminate health disparities.
  2. Abandon the practice of stating the patient's race in the narrative of the history and physical as it has minimal benefit, risks introducing bias, and is offensive to minority physicians.[104]
  3. Cease the use of correction formulas that use race as a proxy for pathology when their use furthers health inequities.[105]
  4. Make deliberate efforts to treat racial groups similarly on individual and population levels as a concrete first step in ameliorating racial health disparities. Although physicians undoubtedly carry implicit racial biases equal to the general

population, there is some evidence that emergency physicians show less implicit racial bias than the general population.[106]

5. Address racist patient attitudes professionally even when these cause moral distress.[107] Addressing racism and attempting to rebuild therapeutic alliances is part of the leadership and professionalism that emergency physicians must emulate.

D. Hospital executives

Institutional leaders must assure appropriate ED ancillary staffing and address hospital policies (eg, inpatient census levels, direct and transfer admissions) that result in ED crowding, medical error, morbidity and mortality, and staff demoralization.[108] Emergency physicians are experts in rapid cognition or thin-slicing, but with that practice comes the expression of latent stereotypes and biases that require a deliberate "bias-check" pause to better understand the patient and, thus, achieve better outcomes.[109] Research has demonstrated that overstressing physicians beyond reasonable levels is associated with increases in implicit bias.[110]

E. Clinical caregivers

1. Employ a trauma-informed care approach with individual patient interactions.[111] The BIPOC communities suffer under the pervasiveness of historical and personal trauma as well as the psychological trauma inflicted by law enforcement killings of unarmed Blacks.[112] Moreover, BIPOC minorities are exposed daily to stressful and traumatic events at much great rates than the general population.[113] To adopt the trauma-informed care framework:
   a. Abandon power imbalances common in traditional, paternalistic doctor-patient dynamics.
   b. Empower patients to be partners in treatment decisions.
   c. Offer patients validation, explanation, and choice.
   d. Practice cultural humility, an orientation to care that is based on self-reflexivity, appreciation of patients' lay expertise, openness to sharing power and knowledge with patients, and desire to learn from patients.[114]
2. Recognize and counter potentially racist clinical decisions by doing the following:
   a. Follow evidence-based race-blind admission and surgical criteria.
   b. Provide professional peer-to-peer feedback with coaching on delivery of difficult conversations.[115]
   c. Build race-blind analgesia protocols.[116]
   d. Create policies to address interprofessional microaggressions and patient-to-clinician racism. Micro- and macroaggressions contribute to burnout and must be combated to ensure inclusion and career longevity.[117,118]

In conclusion, from a medical standpoint, there is only one race—the human race—and we must recognize and counter our implicit biases. As fellow humans, we must acknowledge that structural racism drives health inequities, and as emergency physicians we can choose to address it by employing any or all the actions and recommendations proposed herein.

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# Exploring Muslim Women's Reproductive Health Needs and Preferences in the Emergency Department

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**Objective:** We explored individual Muslim women's reproductive healthcare experiences, preferences, beliefs, and behaviors in the emergency department (ED) and in general.

**Methods:** This was a qualitative study conducted at a community ED using semi-structured interviews with a piloted interview guide. We interviewed participants awaiting care in the ED with the following criteria: female gender; English or Arabic speaking; aged ≥18 years; and self-identified as Muslim. We conducted interviews in both English and Arabic until thematic saturation was reached. Transcripts were coded using an iteratively developed codebook, maintaining intercoder agreement greater than 80%. We used an inductive thematic analysis to identify themes, and results were interpreted in the context of interview language and patient's age.

**Results:** We interviewed 26 Muslim-identified female ED patients. We found that cultural representation and sensitivity among ED staff mitigated discrimination and promoted inclusion for Muslim ED patients. However, assumptions about Muslim identity also impacted the participants' healthcare. Most participants endorsed a preference for a female clinician for their reproductive healthcare in general, but not necessarily for other areas of medicine. Clinician cultural concordance was not always preferred for participants in the ED due to fears about the loss of confidentiality. Marital status impacted beliefs about reproductive and sexual health in the context of Muslim identity. Overall, family planning was acceptable and encouraged in this patient population.

**Conclusion:** The themes elucidated in this study may guide clinicians in developing culturally sensitive practices when providing reproductive healthcare to the Muslim population. [West J Emerg Med. 2023;24(5 Supplemental)121–130.]

## INTRODUCTION

Racial and ethnic minorities continue to have inequitable healthcare access and outcomes, from preventive measures to the treatment of acute illness.[1–4] With an increasingly diverse patient population, much focus has been on improving patient-clinician cross-cultural interactions to prevent stereotyping, biases, and lack of trust that impede the delivery of quality care.[2] Models of cultural competence emphasize a patient-centered approach to enhance healthcare delivery to minority groups with cultural and linguistic differences.[5] This is especially important in the emergency department (ED), a safety-net care setting in which clinicians do not typically have established relationships with patients.[6,7]

Health outcomes and cultural preferences of the Muslim population are not well established in the healthcare literature or practice guidelines.[8] An estimated 3.3 million Muslims live in the United States today, making Islam the third most prominent religion in the country.[9] The Muslim population is growing and projected to reach 8.1 million by 2050, largely due to increased immigration.[10] Considering the prevalence of Muslims nationally, it is important that clinicians are well trained in delivering care that is sensitive to the unique perspectives and beliefs of these patients.

Ensuring that clinicians are knowledgeable about Muslim patients' preferences regarding reproductive health is especially important in the ED where patients often present for obstetric or gynecological complaints and there is no established patient-clinician relationship.[11] Although best practices for care of Muslim patients in the ED have been published, there is a lack of literature that is derived from patient preferences that specifically focuses on reproductive healthcare for female Muslims in the ED.[11–14] Moreover, the Muslim population constitutes a very heterogenous population that includes many different ethnic groups, and in which religious identity is often confounded by specific cultural values. Understanding perspectives of individual patients can help elucidate how to best address the diversity of identity within this population.[15] Therefore, we aimed to explore Muslim women's reproductive healthcare experiences, preferences, beliefs, and behaviors in the ED and in general.

*Population Health Research Capsule*

What do we already know about this issue?
*Best practice care models for Muslim patients that have been published to improve cultural competency among clinicians are not derived from patient preferences.*

What was the research question?
*We aimed to explore Muslim women's reproductive healthcare experiences and preferences in the ED and in general.*

What was the major finding of the study?
*Most women preferred a female clinician for their reproductive healthcare, but cultural concordance was not always desired due to fears about confidentiality. Family planning was acceptable, and desired in this patient population.*

How does this improve population health?
*The themes elucidated here may guide clinicians in developing culturally sensitive practices when providing reproductive healthcare to this population.*

## METHODS

### Study Design and Setting

We conducted semi-structured, face-to-face interviews using a piloted interview guide with female Muslim patients of reproductive age presenting to a community ED located in a midwestern suburb with a large Muslim population. The study was approved by the institutional review board at the institution where data collection occurred. To ensure our interview guide was culturally sensitive, we performed cognitive interviews in English while piloting the interview guide.

Two team members (AN and MS) conducted all study activities in English or Arabic according to the participant's preference. AN, a third-year medical student, conducted all of the English interviews, and MS worked as a registered nurse at the study site and conducted all of the Arabic interviews. Both AN and MS are reproductive-aged, cisgender females who identify as Muslim, but neither wear the hijab. AN is South Asian and is familiar with the community through her medical education activities and volunteerism. MS is Lebanese and a life-long member of the local Muslim community. Both were new to qualitative research and were trained by MC, who has extensive training and experience in qualitative methods and community-based participatory research. Note that all Arabic research documents were professionally transcribed and certified by the health system's approved company, as well as reviewed by multiple Arabic-speaking members of the study team.

### Selection of Participants

While patients awaited medical treatment in the ED, a study team member screened the electronic health record (EHR) track board for inclusion in this study and approached potentially eligible participants. Participants who met the following criteria were included: 1) female gender per the EHR; 2) age ≥18 years per the EHR; and (3) self-identified as Muslim. Any individual who was identified by the EHR to meet the first two inclusion criteria were approached and asked whether they self-identified as Muslim to avoid profiling. Individuals who met the following criteria were excluded: 1) in physical, mental, or emotional distress, including Emergency Severity Index 1 (the highest acuity); 2) prisoners; 3) cognitively delayed; or 4) could not understand and converse about reproductive health in English or Arabic. Interviews were conducted in the ED patient rooms without the presence of family members in the majority of cases.

### Measurements

Participants completed a brief screening questionnaire to obtain demographic information. Written informed consent was obtained from all participants in their preferred language. Participants received a $20 cash compensation for participating in the 30- to 40-minute interviews. Interviews were audio recorded, transcribed, and de-identified by a professional transcription company. Arabic transcripts were subsequently translated into English and verified by MH and AB, who are Arabic-speaking, Muslim resident physicians. Interviewers documented field notes of their observations and experiences for each interview, which were used to contextualize interview data during analysis.

### Analysis

Interviews were collected until thematic saturation was reached or when recurring themes were identified in the manuscripts, which was found to be at 26 interviews. No repeat interviews needed to be conducted. The study team developed a codebook using axial and open coding, resolving disagreements using a consensus process. The codebook was iteratively revised throughout coding to include emerging content. Prior to coding, and every five transcripts thereafter, coders performed an intercoder agreement trial and maintained intercoder agreement at or above 80%. Using qualitative data analysis software Dedoose version 7.0.23 (SocioCultural Research Consultants, LLC, Los Angeles, CA), two trained coders (MM, a Muslim graduate student and SA, a Muslim medical student) employed codes from the codebook to the transcribed and de-identified interviews. AN used an inductive thematic process to analyze the text data. Findings were validated by the entire research team, which is comprised of mostly Muslim members and two non-Muslims. Thematic results were converged with demographic data obtained in the questionnaire.

## RESULTS

### Characteristics of Study Subjects

We interviewed 26 participants, of whom 14 were English-speaking and 12 were Arabic-speaking (Table 1). The majority of participants (16) were of reproductive age, defined as 18–50 years old; 19 were US citizens; 23 had publicly funded health insurance; and 14 identified as having more traditional Islamic religious views. The Arabic-speaking group was older than the English-speaking interviewees (39 vs 33 years old). All the Arabic-speaking participants were born outside the US, and this group had lower educational levels with 41.6% reporting an eighth-grade education or less. The English-speaking population mostly identified as Lebanese (11), whereas the ethnicity most often represented among the Arabic-speaking group was Yemeni (six participants).

### Main Results

We grouped themes into two main categories: 1) impact of Muslim identity on reproductive health experiences in general; and 2) impact of Muslim identity on reproductive health preferences, beliefs, and behaviors (Table 2). The supporting quotes are formatted as follows: interview language (E = English, A = Arabic); participant number; and participant age in years (y).

#### *Impact of Muslim Identity on Reproductive Health Experiences in General*

*I. Cultural representation and cultural sensitivity mitigate experiences of discrimination and promote feelings of inclusion.* The most prevalent theme in the interviews addressed discrimination, cultural representation, and cultural sensitivity in healthcare in general. When interviewers asked participants whether they had ever felt discriminated against while receiving reproductive health services because of their religion, the majority of participants denied such experiences in the ED and in healthcare at large. For example, many participants seemed to agree that "I don't see any difference [in receiving reproductive healthcare] whether I wear a hijab or not. They treat us the same way" (A2, 34y). Put more explicitly, "I'm treated the same by every doctor and nurse that I encounter, so I think [discrimination] is not a problem" (E15, 24y).

Many participants alluded to the unique cultural representation in the local community as being a major protective factor against discrimination and bias. One participant said, "coming in [to the ED] and seeing Muslim people . . . it just makes me more comfortable" (E15, 24y). Another participant described how "[in this hospital], since they know there's a lot of Arabs and stuff, and they always have Arab nurses, they can communicate, so here it's better" (E7, 35y) indicating that cultural representation is an important part of building comfort with clinicians. Additionally, some participants also suggested that, "a lot of the American doctors [in this community] . . . know our culture . . . but if you go outside like Florida and stuff . . . I heard that they would treat [Muslims] differently" (E7, 35y).

Notable exceptions to this theme seemed related to language and religious clothing, such as the hijab. One participant stated, "I've heard [a lot of stories of discrimination] and it usually [involved] women who didn't speak English" (E8, 27y). Another participant concurred that "probably because [another Muslim woman] had an accent and [she] couldn't speak English well, [the clinicians] were kind of rude to [her]" (E7, 35y). One participant shared a story of her support of another Muslim woman who wore a hijab, describing, "a little scarf lady . . . she couldn't defend herself, so I had to defend her because [the clinicians were] talking like she's stupid" (E6, 27y). One of the English-speaking participants explained that she had never

**Table 1.** Participant demographics of English- and Arabic-speaking interviews conducted in the emergency department.*

| | **English (n = 14)** | **Arabic (n = 12)** | **Total (N = 26)** |
|---|---|---|---|
| Average age, years | 33 | 39 | 38 |
| ED visits in the last 12 months, mean | 1.6 | 2.9 | 2.7 |
| Place of birth (%) | | | |
| In the United States | 42.8 (6) | 0 (0) | 23.0 (6) |
| Outside the United States | 57.2 (8) | 83.3 (10) | 69.2 (18) |
| Citizenship (%) | | | |
| US citizen, by birth | 50 (7) | 0 (0) | 26.9 (7) |
| US citizen, by naturalization | 28.5 (4) | 50 (6) | 38.4 (10) |
| US citizen, born abroad by parents who are US citizen | 14.2 (2) | 0 (0) | 7.6 (2) |
| Not a U.S. citizen | 7.1 (1) | 41.6 (5) | 23 (6) |
| Health insurance (%) | | | |
| Public insurance | 92.8 (13) | 83.3 (10) | 88.4 (23) |
| Private insurance | 7.1 (1) | 16.6 (2) | 11.5 (3) |
| Ethnicity (%) | | | |
| Iraqi | 14.2 (2) | 25 (3) | 19.2 (5) |
| Lebanese | 78.5 (11) | 16.6 (2) | 50 (13) |
| Palestinian | 0 (0) | 8.3 (1) | 3.8 (1) |
| Yemeni | 7.1 (1) | 50 (7) | 26.9 (8) |
| Marital status (%) | | | |
| Never married | 28.6 (4) | 8.3 (1) | 19.2 (5) |
| Married | 50 (7) | 66.7 (8) | 57.6 (15) |
| Divorced | 14.3 (2) | 8.3 (1) | 11.5 (3) |
| Separated | 0 (0) | 8.3 (1) | 3.8 (1) |
| Widowed | 7.1 (1) | 0 (0) | 3.8 (1) |
| Religiosity (%) | | | |
| Traditional | 64.3 (9) | 41.6 (5) | 53.8 (14) |
| Neither traditional nor non-traditional | 21.4 (3) | 25 (3) | 23 (6) |
| Non-traditional | 7.1 (1) | 16.6 (2) | 11.5 (3) |
| Highest grade/degree completed (%) | | | |
| 8th grade or less | 7.1 (1) | 41.6 (5) | 23 (6) |
| High school graduate/GED | 50 (7) | 8.3 (1) | 30.8 (8) |
| Some college or associate's degree | 28.6 (4) | 33.3 (4) | 30.8 (8) |
| Bachelor's degree or higher | 14.3 (2) | 8.3 (1) | 11.5 (3) |
| Difficulty for you or your household to pay bills in last 12 months, (%) | | | |
| Hard | 50 (7) | 33.3 (4) | 42.3 (11) |
| Neither hard nor easy | 35.7 (5) | 0 (0) | 19.2 (5) |
| Easy | 7.1 (1) | 50 (6) | 26.9 (7) |

*ED*, emergency department; *GED*, General Educational Development.
*Not all data add up to 100% because of missing data or rounding.

encountered discrimination due to her Muslim religion, "maybe because I don't wear a head scarf, it's different. And I come out speaking English - you wouldn't mistake me for a Muslim." Despite her own experiences, she had heard stories of other Muslims being treated "rude and disrespectful" (E4, 30y).

The Arabic-speaking participants did not share experiences of language bias and had overwhelmingly

**Table 2.** Supporting quotes from study participants.

| Themes | Illustrative quotes |
|---|---|
| I. Cultural representation and cultural sensitivity mitigate experiences of discrimination and promote feelings of inclusion | • "They're very understanding, especially around here in the community" (E13, 34y).<br>• "I feel like if I were to go out of state or anywhere, everybody would look at me differently, just because I'm a Muslim" (E9, 20y).<br>• "Where we go we see racism so we don't feel comfortable. Everywhere, not only in the hospital. Thank God, I wasn't treated with racism in the hospital. They treat everyone equally" (A1, 29y).<br>• "I have been here for a very long time, [doctors] never differentiate [between a non-Muslim and a Muslim]" (A12, 49y).<br>• "[The doctors] are nice and they have mercy, it doesn't make a difference for them if we are Muslims or not . . . they have more mercy than we do" (A4, 60y).<br>• "I feel that [the doctors] are good . . . they deal in a nice way, they don't discriminate whether you are Sunni, Shia, American or Arab" (A7, 27y).<br>• "We all get treated the same [in the ED]" (E3, 33y).<br>• "When I came [to the ED], they treated me in a very nice way, in gynecology, they respect that I wear a Hijab and they take care of me" (A12, 49y).<br>• "They're very understanding [of my Hijab] especially around here in the community. Most of the doctors know and they're aware of all that, so they do whatever they can to accommodate it (E13, 34y). |
| II. Assumptions about Muslim identity | • "When you walk in and you're covered . . . a male doctor will walk in, they do get a little 'Are you okay with [me being here]?' or 'Do you want us to, you know–?' . . . but not if it wasn't a covered woman or a Muslim woman" (E2, 31y).<br>• "Just because they see you covered up doesn't mean you don't speak their language. I think they have that mentality, but it's far from the truth" (E8, 27y).<br>• "If they see I don't have a wedding ring on and I'm Muslim, they're like 'Oh, so you're not pregnant for sure . . . she's a virgin. She doesn't drink. I'm going to quickly go over this question' . . . whereas people can be varying levels of religiosity depending on whether they wear the headscarf or not" (E15, 24y). |
| III. Preference for a female clinician tends to be specific to reproductive health | • "Some problems should only be discussed with a female doctor . . . woman to woman there's nothing to hide" (A5, 37y).<br>• "If they have to do the vaginal test, yes [would prefer a woman] . . . because we are Muslims" (E11, 31y).<br>• "Because he is a stranger, you know that in our religion that's not acceptable, it is Haram unless if it is an emergency and her life is in danger, then it is acceptable . . . .I am only talking about genital organs, but it is fine in other specialties." (A8, 47y).<br>• "I think [clinician gender] doesn't matter except if I am going to have a gynecological exam" (A8, 47y).<br>• "If it is a female doctor, I feel more comfortable because we are the same" (A2, 34y).<br>• "When I gave birth to my eldest son, the female doctor wasn't there, and I had to deal with a male doctor, it was embarrassing but I accepted it because it was an emergency case" (A1, 29y). |
| IV. Preference for non-Muslim/non-Arab clinician | • "I know that most of my race, subconsciously they will judge you regardless of if they tell you they don't . . . I don't like to be criticized or judged or looked at in a certain way just because of how I look or what I'm here for . . . what my blood results will come out to" (E2, 31y).<br>• "They prefer to go to a Caucasian or any other race of psychologists than one just like them, in fear or worry that I will gossip in the community . . . and it works both ways. Like I would be scared too" (E15, 24y).<br>• "I think there are a lot of girls that are younger. They get abortions. But they don't have nobody to talk to . . . especially being Arab, you can't. You have to go somewhere nobody knows about . . . The problem isn't with the doctor. The problem is with the . . . whole environment. You really can't say much in Dearborn" (E3, 33y).<br>• "If I had done something or wanted to talk about it, I'll be worried . . . if there's people listening in the hallway, or if someone recognizes me" (E15, 24y). |
| V. Marital status impacts ideas about intercourse | • "In the past maybe like before I got married [preferred female doctor], before I had kids. But after all that it's like, they've seen everything. You're just open about it. You don't care anymore" (E13, 34y).<br>• "[Intercourse] is [not permissible] in our religion . . . only with her husband" (A8, 47y).<br>• "Muslim girls don't wear tampons if they're not married yet" (E15, 24y).<br>• "You're not supposed to do [pelvic exams] until basically you're married" (E9, 20y). |
| VI. Religious permissibility for contraception | • "I didn't know that [birth control] had anything to do with religion" (E2, 31y).<br>• "I would never take birth control nor would I want my daughters to . . . it's not that [Islam is] against it. It's not natural but then again, it is their choice but I would advise them don't take it" (E10, 54y).<br>• "[Birth control] is not something people talk about that much, but people our age, I think it's not a big deal for us" (E15, 24y). |

(*Continued on next page*)

**Table 2.** Continued.

| Themes | Illustrative quotes |
|---|---|
| | • "It is normal to take birth control pills, if I don't want to get pregnant, it is totally fine to take birth control pills" (A7, 27y).<br>• "If the woman is weak and can't support a new pregnancy because of several previous miscarriages, she should use birth control pills to protect her health or if the woman has enough children, she should use them as well" (A8, 47y).<br>• "I've used contraceptive pills and that's okay [in my religion]" (A11, 67y).<br>• "I don't know what Islamic religion says about birth control pills but personally I used to take them when I was in Lebanon. I didn't think about religion at that time, but it is a bad thing to bring a baby to this world if you can't take care of him" (A12, 49y).<br>• "Religion is not against birth control pills . . . in fact it's quite the opposite. It's for these things, because you can't risk getting pregnant every day" (A9, 57y). |

*A*, Arabic-speaking participant; *E*, English-speaking participant; *ED*, emergency department; *y*, age in years.

positive experiences to share when asked about feelings of discrimination. One participant explained, "I don't feel that [non-Muslims are treated better] no . . . to be honest I would like to thank the Americans in this regard . . . they respect you" (A6, 47y). Another participant agreed saying, "I have been here 17 years and I have never felt [discriminated against in healthcare]" (A2, 34y). All of these sentiments applied to their reproductive healthcare, as well as their healthcare experiences in general.

*II. Assumptions about Muslim identity.* Although most participants did not feel religiously discriminated against, some shared feeling stereotyped by clinicians. Participants explained how visible religious expressions, such as wearing the hijab, led to clinicians making assumptions about their preferences. "When you walk in and you're covered . . . a male doctor will walk in, they do get a little 'Are you okay with [me being here]?' . . . but not if it wasn't a covered woman or a Muslim woman" (E2, 31y). Another participant shared "just because they see you covered up doesn't mean you don't speak their language. I think they have that mentality but it's far from the truth" (E8, 27y). These assumptions may affect the care Muslim patients receive, as one participant mentioned "if they see I don't have a wedding ring on and I'm Muslim, they're like 'Oh, so you're not pregnant for sure . . . she's a virgin. She doesn't drink. I'm going to quickly go over this question' . . . whereas, people can be of varying levels of religiosity depending on whether they wear the headscarf or not" (E15, 24y).

### *Impact of Muslim Identity on Reproductive Health Preferences, Beliefs and Behaviors*

*I. Preference for a female clinician tends to be specific to reproductive health.* Most participants preferred a female clinician for discussions about reproductive health and reproductive physical examinations. Participants explained that "it is difficult for Arab women and especially those who wear hijab to discuss [reproductive health] with male doctors" (A1, 29y). Another participant agreed: "I always prefer if it's a woman if they are going to check private parts and stuff" (E5, 50y).

The Arabic-speaking participants were more fixed than the English-speaking participants about their preferences for reproductive health clinician gender. As one participant said, "I can't expose my genital area to a male doctor. That's impossible . . . that is not acceptable" (A8, 47y). Another participant indicated that in the past because of a male clinician "[I] did [refuse a gynecological exam] one time" (A5, 37y). Another Arabic-speaking participant explained how the preference was influenced by traditions more than just personal choice as, "some women don't accept if the doctor is male because of their traditions. In Iraq, if we have an emergency, we accept to be examined by a male doctor but when it comes to labor or gynecological emergencies, some women can't accept because their husband don't accept or because their religion or families" (A1, 29y). However, participants overwhelmingly agreed that in an emergency "if there is only a male doctor, I would accept that. I have no choice" (A2, 34y). Other exceptions to the preference for a female clinician only appeared in the English interviews, as two participants mentioned that they actually preferred male clinicians because "they're very gentle" (E4, 30y) and "women have a tendency to overthink" (E10, 54y). They did not provide further context into these beliefs.

When participants were asked to describe the best person to care for their reproductive health, almost all participants discussed character traits rather than gender. These included traits like "listen[ing] and understand[ing]" (E12, 47y) and "as long as they're qualified and have a heart and can understand what I'm going through" (E10, 54y). Gender preference seemed to be related only to reproductive health, as most participants reported that "if I am having a gynecological exam, it should be a female doctor. But for any other problems, there is no difference between male or female doctors" (A3, 57y). Another participant concurred that "outside of the emergency [sic], if it is something related to OBGYN, I would prefer a female doctor only. But for any other health problems, it doesn't matter if it is a male doctor" (A7, 27y).

*II. Preference for a non-Muslim/non-Arab clinician.* Multiple participants discussed a desire for a non-Muslim/non-Arab clinician while receiving reproductive healthcare, citing concerns about privacy. One participant explained that discussing her reproductive health with a Muslim or Arab clinician would cause "fear or worry [about] gossip in the community" (E15, 24y). Another participant agreed that "subconsciously . . . [Muslim or Arab clinicians] will judge you regardless of if they tell you they won't" (E2, 31y).

Some participants shared beliefs that clinicians who did not come from their community were better. For example, one participant suggested that "people are so judgmental, and I'm Arabic, so trust me I know how they are . . . I love my race . . . but I'd rather have a [clinician be a] nice white lady or a nice black guy, Chinese, whatever . . . they're good" (E6, 47y). Another participant concurred, "I think that Americans have more mercy than Arabs" (A8, 47y).

*III. Marital status impacts ideas about reproductive health.* For many participants, marital status was vitally important to reproductive health, because it provides an important context for the role intercourse plays in their religion, health, and healthcare. Many interviewees emphasized that "[intercourse] is [generally not permissible] in our religion . . . only with her husband" (A8, 47y). For some participants, women who "had sex and [weren't] married . . . there's no way in hell [they] could tell that to anybody" (E3, 33y), indicating that the subject of sexual activity is taboo and may not be discussed readily, if at all, by some Muslim women. Another participant explained this further, describing, "I broke my virginity and I wasn't married. But I would still go talk to my gynecologist [who was] an old white guy . . . And I made sure that I didn't know nobody that worked at that office" (E3, 33y). Similarly, marital status also influenced ideas about general reproductive health topics like menstruation since "Muslim girls don't wear tampons if they're not married yet" (E15, 24y). Another participant agreed, "you're not supposed to do [pelvic exams] until basically you're married" (E9, 20y).

*IV. Religious permissibility for contraception.* When participants were specifically asked how their religious beliefs impacted their choices around contraception, the responses were overwhelmingly positive and emphasized religious permissibility. As one participant explained, "No, [birth control] won't be considered against God or religion because God knows how my health is. He knows that I can no longer tolerate another pregnancy . . . We all know ourselves, maybe we aren't able to raise the children and to be responsible about them. These pills aren't against Islam at all" (A2, 34). Another participant emphasized how these choices are personal since, "I rather not [use birth control] because I think [if a pregnancy is] meant to be, then it's meant to be . . . [These feelings are] just personal. If birth control works for you then use it" (E6, 27). Not only did participants express religious permissibility, but one participant articulated religious necessity for the non-contraceptive effects of contraception. "When I was like 14, we went to the Islamic pilgrimage, Hajj. And to do that, I had to get on birth control so that I don't get my period there and miss the opportunity to pray there" (E15, 24).

## DISCUSSION

In this study, we aimed to explore Muslim women's reproductive healthcare experiences, preferences, beliefs, and behaviors. We were able to elucidate key themes from participants that can inform culturally sensitive care for this population. More specifically, this exploration highlighted the high proportion of Muslim representation in healthcare in the community we sampled, which helped mitigate discrimination and promoted inclusion. Previous studies in minority populations have highlighted the need for cultural representation and sensitivity as tools to better serve a community.[16] Yet there were drawbacks to the insular nature of this community, such as the potential for loss of confidentiality that may lead to stigma around reproductive health behaviors. This influenced preferences for non-Muslim clinicians for some participants. Other studies have shown that minority communities receive better care from members of their own community, but that cultural concordance is not always possible.[16–19] When not possible, environments should be intentional in hiring a diverse workforce to help increase the cultural knowledge of clinicians outside the minority population. All clinicians, including those who are religiously and culturally concordant, should explore and be sensitive to their patients' concerns about privacy, especially for taboo subjects like reproductive and sexual health.

Interestingly, there were major differences that dichotomized the results between English- and Arabic-speaking participants, emphasizing the diversity of the Muslim population. The concerns about privacy and judgment were almost exclusively conveyed by the English-speaking participants. The English-speaking group was younger, more educated, and more likely to be native to the US compared to the Arabic-speaking group. In this way, the English-speaking participants may exhibit less traditional beliefs and behaviors than other subgroups in their community, such as older or immigrant women. The fact that members of the Arabic-speaking group were more fixed in their preference for a female clinician supports the idea that this group may be more traditional. Although religiosity was explicitly explored in our demographic survey, this is a term that is both subjective and relative, making it difficult to measure. This potentially explains the discrepancy between our hypothesis and the results finding that the

English-speaking group reported more traditional religious beliefs.

Additionally, the Arabic-speaking participants overall did not endorse feelings of discrimination while receiving reproductive healthcare, despite the English-speaking participants reporting that language barriers played a role in their observation of discrimination against Arabic-speaking Muslim women. The Arabic-speaking group was exclusively born outside the US and likely had more experiences receiving reproductive healthcare overseas. Their positive reproductive healthcare experiences, contextualized in this US-based study setting, may be attributed to social desirability bias or ideas about superior healthcare in the US.[20] Furthermore, since the English-speaking group predominantly identified as Lebanese, whereas the Arabic-speaking group were largely Yemeni, it is difficult to elucidate whether these differences were truly related to Muslim identity and religiosity or rather inherent ethnic dissimilarities. Although this study was focused on exploring the experiences of Muslim women, it is important to consider the challenges in capturing data that can be purely attributed to religious identity without being confounded by ethnic or cultural nuances.

The majority of participants desired a female clinician for reproductive healthcare in the ED unless it was an emergency situation, consistent with previous studies that have demonstrated this preference in almost all groups, regardless of race or religion.[21] Yet many of the participants discussed certain personality traits, such as empathy and good listening skills, as the most important attributes when describing the best clinician for reproductive healthcare in the ED. This is an idea that has been established in previous studies, suggesting that it is not unique to Muslim patients to prioritize clinician qualities over gender for reproductive healthcare.[22,23] Additionally, most participants agreed that they did not have a gender preference when receiving non-reproductive healthcare. Therefore, clinicians should avoid assumptions about gender preference in the Muslim patient population. This also emphasizes the need for gender diversity in healthcare when possible and creating policies to support patient clinician preferences for reproductive health when it can be feasibly accommodated.

Marital status was also found to dictate what was permissible regarding reproductive health. Participants discussed how sexual activity outside of marriage was largely considered taboo with major potential consequences within the Muslim community. This also influenced concerns about menstruation and pelvic exams compromising virginity. This is important knowledge for clinicians because they may be a patient's only confidant on these subjects. It is also an area where clinicians can provide sexual health education and address misinformation with sensitivity to deeply held beliefs.

Lastly, this study helped elucidate Muslim women's attitudes toward family planning, an area well known to be influenced by religious and cultural norms.[24–26] Participants conveyed beliefs about the religious permissibility of contraception, as well as in some cases, religious necessity. This is in line with a recent self-reported survey that examined American Muslim's contraception utilization patterns, which demonstrated that Muslim respondents reported higher contraception use than the national proportion.[27] Participants also emphasized that choices about contraception were personal and should not be influenced by others' beliefs. These are important takeaways because they demonstrate that family planning counseling should be tailored to an individual's motivations and goals, rather than based on assumptions about cultural or religious belief.[28]

Previous literature that has focused on cultural competency in providing medical care to the Muslim population has largely included generalizations about the Muslim population, such as preference for a female clinician or assumptions about sexual activity before marriage.[29–31] This study focused on individual experiences that at times contradicted these generalizations. Our finding aligns with the cultural empowerment model of cultural competence that emphasizes the dynamic nature of cultural competency.[15] More specifically, "because of the specific nature of each patient-clinician interaction within its particular social and political environment, culturally competent behavior in one context may be culturally incompetent in another."[15] This provides a framework for providing care to the Muslim population who exhibit a large range of diversity—such as race, ethnicity, and language—that may heavily influence the way one practices their religion.

## LIMITATIONS

This study had several limitations. We enrolled English- and Arabic-speaking patients from a single ED within a predominantly Middle Eastern community; therefore, the results may not be generalized to all Muslims. However, the qualitative approach was designed to be exploratory and generate hypotheses and future research questions that may be evaluated for generalizability in the future. The demographic survey and interviews in Arabic may have been affected by participant comprehension and literacy or translation nuances that changed the meaning of concepts, which is a limitation of the study. Additionally, the demographics of the interviewers may have affected the sentiments our study participants felt comfortable sharing due to social desirability bias. More specifically, AN was younger and not visibly Muslim, so participants may have spoken more freely about stigmatizing topics with her than with MS, a lifelong member of the local Muslim community who is a nurse at the study site.

## CONCLUSION

Our findings contribute to the growing body of literature focusing on cultural sensitivity in treating the Muslim population. We found that cultural representation and sensitivity among ED staff mitigated discrimination and promoted inclusion for Muslim ED patients. However, assumptions about Muslim identity also impacted the participants' healthcare. Most participants endorsed a preference for a female clinician for their reproductive healthcare in general, but not necessarily for other areas of medicine. Clinician cultural concordance was not always preferred by participants in this ED study due to fears about the loss of confidentiality. Marital status impacted beliefs about reproductive and sexual health in the context of Muslim identity. Overall, family planning was acceptable and encouraged in this patient population.

This study is unique because it emphasizes patient preferences and focuses on female Muslims' reproductive health preferences, an area of clinical importance that has not been thoroughly explored. Ultimately, our findings underscore the need for future work to capture a more diverse perspective of Muslim women and better elucidate the reproductive health preferences and needs that are unique to this population.

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# Emergency Department Use Among Recently Homeless Adults in a Nationally Representative Sample

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**Introduction:** In this study we examined the association of homelessness and emergency department (ED) use, considering social, medical, and mental health factors associated with both homelessness and ED use. We hypothesized that social disadvantage alone could account for most of the association between ED use and homelessness.

**Methods:** We used nationally representative data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-III). Emergency department use within the prior year was categorized into no use (27,674; 76.61%); moderate use (1–4 visits: 7,972; 22.1%); and high use (5 or more visits: 475; 1.32%). We used bivariate analyses followed by multivariable-adjusted logistic regression analyses to identify demographic, social, medical, and mental health characteristics associated with ED use.

**Results:** Among 36,121 respondents, unadjusted logistic regression showed prior-year homelessness was strongly associated with moderate and high prior-year ED use (odds ratio [OR] 2.31 and 7.34, respectively, $P < 0.001$). After adjusting for sociodemographic factors, the associations of homelessness with moderate/high ED use diminished (adjusted OR [AOR] 1.27 and 1.62, respectively, both $P < 0.05$). Adjusting for medical/mental health variables, alone, similarly diminished the association between homelessness and moderate/high ED use (AOR 1.26, $P < .05$ and 2.07, $P < 0.001$, respectively). In a final stepwise model including social and health variables, homelessness was no longer significantly associated with moderate or high ED use in the prior year.

**Conclusion:** After adjustment for social disadvantage and health problems, we found no statistically significant association between homelessness and ED use. The implications of our findings suggest that ED service delivery must address both health issues and social factors. [West J Emerg Med. 2023;24(5 Supplement)131–142.]

## INTRODUCTION

Emergency departments (EDs) have long served as a healthcare safety net for the medical needs of marginalized populations in the US, such as people experiencing homelessness.[1] Over the past several years, there has been increasing recognition that in providing this service, EDs play a distinct role in delivering "social emergency medicine" to address the structural determinants of poor health such as poverty, racism, inadequate housing, and food insecurity.[2–4] "Emergency department use is costly,[5] and some question the appropriateness and efficiency of addressing social problems within the ED and healthcare system, especially in the US where social services are limited.[5,6]

Previous studies have shown that ED patients are far more likely to be homeless than other adults.[7,8] A multisite study conducted in Northeastern Pennsylvania estimated that the prevalence of homelessness in EDs ranged from 7–18%.[7] At one ED in New York City, 14% of patients were homeless and 25% had been concerned about becoming homeless during the prior two months.[8] Homelessness is specifically associated with high levels of ED use.[9–14] National data from the Veterans Health Administration found that patients experiencing homelessness were 6.6 times more likely than others to have more than 25 ED visits annually.[15] Furthermore, patients experiencing homelessness are four times more likely than others to re-present to the ED within three days of a prior evaluation.[16] Although homelessness is strongly associated with high ED use, it may not be independently associated with such use since many social and medical factors may drive this association; however, this needs to be empirically examined.

Previous research on ED utilization among patients experiencing homelessness has been almost exclusively based on data from patient populations sampled in clinical settings, potentially biasing our understanding of how homelessness relates to ED use in the general population.[7–11,13–16] Few studies have examined ED use in nationally representative samples that included non-health service users. The few available reports from community-based studies among homeless individuals suggest that only a small minority (8–12%) use the ED more than three times per year.[17,18] Thus, there is a need to examine this issue in a nationally representative sample.

In this study, we used a nationally representative survey, the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-III), to examine the association of recent homelessness and factors that may be associated with ED use.[19] We hypothesized that social disadvantage (eg, poverty, racism, educational attainment, and neighborhood environment) might account for much of the extensive ED use by homeless adults, although we suspected that health-related factors would also play a role. We thus sought to examine evidence to clarify how social, medical, and mental health factors play into the association between homelessness and ED use among the most socially disadvantaged sectors of the US population.

*Population Health Research Capsule*

What do we already know about this issue?
*Previous research among patient populations in clinical settings demonstrated a strong association between homelessness and high frequency ED use.*

What was the research question?
*Do social disadvantage and health-related factors account for much of the extensive ED use by homeless adults?*

What was the major finding of the study?
*Adjusted for social and health factors, homelessness and ED use were not significantly associated (AOR 1.27, 95% CI 0.79–2.03).*

How does this improve population health?
*The complex interplay between social and medical issues should encourage the development of service delivery models linking these intersecting dimensions of need.*

## METHODS

### Data Source and Study Sample

We performed a cross-sectional analysis to assess the association between homelessness and ED use using data from NESARC-III. The NESARC-III is a nationally representative survey of 36,906 adults, which includes information on experiences of prior-year homelessness and emergency care utilization as well as demographic and recent social, medical, and mental health characteristics.[19] This data allows examination of the association of both recent homelessness and other factors that are likely to be associated with ED use, thus offering an examination of the independent association of homelessness and ED use when social, medical, and mental health factors are taken into consideration. The survey was sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and conducted between April 2012–June 2013 among the non-institutionalized US civilian population ≥18 years old.[19] Multistage probability sampling was used to randomly select persons from this population. Primary sampling units were individual counties or groups of contiguous counties. Secondary sampling units consisted of area segments of census-defined blocks. Households within the sampled secondary sampling units were then selected. Finally, eligible adults within the sampled households were randomly selected.[19] An initial 43,364 eligible sample persons were identified, and 36,309 participated in the NESARC-III, while 7,055 were classified as nonresponders, for a person-level response rate of 84.0%.[19]

A total of 36,309 respondents completed the Alcohol Use Disorder and Associated Disabilities Interview Schedule, DSM-5 version (AUDADIS-5), a fully structured, computer-assisted diagnostic interview conducted by trained NIAAA interviewers.[20] Institutionalized individuals (eg, in nursing homes, prisons, hospitals, or shelters) were excluded along with active duty military personnel. Racial/ethnic minorities were oversampled to assure representative analysis. Data was adjusted for oversampling and nonresponse and then weighted to represent the US civilian population based on the 2012 American Community Survey.[21] Informed consent was electronically recorded, and respondents received $90 for participation. Institutional review boards (IRB) at the US National Institutes of Health and Westat, Inc. (Rockville, MD) approved the study protocol. This study was approved by the IRBs of the Department of Veterans Affairs Connecticut Healthcare System and Yale School of Medicine.

## MEASURES

### ED Utilization

We measured the primary outcome variable, ED utilization, based on self-report by respondents and categorized into a three-level variable representing no use (0 visits), moderate use (1–4 visits), and high use (5 or more visits) in the prior year.

### Sociodemographics

Sociodemographic characteristics included age, gender, race, marital status, annual household income, level of education, employment status, military service, rural vs urban residence, and health insurance coverage.

### Social History

Social history variables addressed homelessness, incarceration, interaction with law enforcement, parental social history, adverse childhood experiences such as sexual abuse or neglect, experiences of racial discrimination, social contacts, and social support. We created two dichotomous homelessness variables that identified adults with homelessness in the past year and homelessness prior to the most recent past year. Lifetime homelessness was assessed with this question: "Since you were 15, did you have a time that lasted at least one month when you had no regular place to live—like living on the street or in a car?" A separate question—"In the last 12 months, have you at any time been homeless?"—was the independent variable of central interest in this study. A previous study using NESARC-III data reported the lifetime and one-year prevalence of homeless to be 4.2% and 1.5%, respectively.[22]

Other social history variables included questions such as "During the last 12 months, did you have serious trouble with the police or law?" which was coded into a dichotomous variable for police involvement. Experiencing racial discrimination was a continuous variable assessed from six questions within AUDADIS-5 that have been shown to have good validity and reliability for measuring experiences of racial discrimination.[22] The six discrimination questions ask about experienced racial discrimination in six contexts: obtaining healthcare/health insurance; receiving care; in public; obtaining a job; being called racist names; being hit/threatened with harm. We used a Likert scale to assess the frequency of experiences of discrimination in the past year: 0 = never; 1 = almost never; 2 = sometimes; 3 = fairly often; or 4 = very often.

Parental history included experiences of incarceration, psychiatric hospitalization, suicide attempt or completion, and substance use. The extent of social support was assessed using the Interpersonal Support Evaluation List[23,24]: perceived availability of others to share activities, talk about one's problems and from whom to potentially receive material support. Social contacts were assessed through a series of questions regarding how many people the respondents had contact with in the previous two weeks, which were summed to create an index of social contacts. Veterans were identified as those who responded to the question "Have you ever served on active duty in the U.S. Armed Forces, Military Reserves, or National Guard?" with "Yes, in the past, but not now."

### Medical, Mental Health, and Service Use History

Medical history variables included number of medical comorbidities, up to 18; presence of moderate to severe pain; number of injuries in the past year; cancer history; body mass index (BMI) > 40; and mental- and physical health-related quality of life. Respondents were asked whether or not they had each of 18 medical conditions (eg, arthritis, diabetes, and insomnia) in the past 12 months. Those who responded positively were further asked, "Did a doctor or health professional tell you that you had [a medical condition]?" Using these two questionnaire items for each medical condition, we created a measure of chronic conditions experienced in the past year. Quality of life was measured using the Short Form-12, version 2 (SF-12), a reliable and valid measure of health status commonly used in population surveys.[25,26] The 12 questions can be scored into subscales to yield a mental component summary (MCS) score and a physical component summary (PCS) score as well as overall subjective health status. The number of injuries reported by respondents was assessed by the question, "During the last 12 months, how many injuries have you had that caused you to seek medical help or to cut down your usual activities for more than half a day?" This variable was measured as a continuous variable.

We assessed lifetime or past year presence of DSM-5 mental health diagnoses with the AUDADIS-5 and included the following: mood disorders (major depressive disorder, bipolar I disorder, dysthymia); anxiety disorders (generalized anxiety disorder, specific phobia, panic disorder); post-traumatic stress disorder (PTSD), and eating disorder. We used AUDADIS-5 scoring for all disorders except schizophrenia/psychosis, which was addressed with the following question, "Did a doctor or other health professional tell you that you had schizophrenia or a psychotic illness or episode?" Personality disorders included antisocial, borderline, and schizotypal. Lifetime and past year substance use disorders (SUD) included alcohol use disorder, as well as cannabis, cocaine, opiate, heroin, stimulant, and sedative use disorders (considered together as non-alcohol drug use disorders), and tobacco use disorder.

Multimorbidity was addressed with dichotomous variables indicating the following: the presence of only one psychiatric diagnosis and another indicating two or more such diagnoses; the presence of only one SUD diagnosis and another indicating two or more such diagnoses. An additional measure captured the presence of both psychiatric disorder and SUD (dual diagnosis).

### Data Analysis

We used a series of bivariate analyses to evaluate the association of each demographic, social, or medical and mental health characteristic with each level of ED usage. Because there was inflated statistical power given the large sample size, we selected variables for inclusion in subsequent multivariable analyses based on effect sizes rather than *P*-values. We identified risk ratios $> 1.5$ or $< 0.7$ as representing substantial and meaningful effects for dichotomous variables.[27] For continuous variables we used Cohen d as an indicator of effect size, with $d > 0.20$ or $< -0.20$ indicating at least a small effect size.[28]

We then conducted a series of four logistic regression analyses conducted separately with different sets of independent variables, all including past year homelessness. The first logistic regression was unadjusted and included only past year homelessness as the independent variable. The second model was adjusted only for demographic and social variables meeting criteria for substantial bivariate effects and thus evaluated the concurrent role of social determinants of health. A third logistic model examined only co-occurring medical and mental health variables showing substantial association with ED use in bivariate analyses. We included variables regarding parental suicide, drug use, and psychiatric hospitalization in the third (health) model, whereas parental prison history was included in the second model of non-medical social risk factors. Finally, we entered all variables with meaningful effect sizes per the above criteria into a stepwise multinomial logistic regression analysis with forward selection to identify a parsimonious set of statistically significant factors that were independently associated with moderate and high ED use. Since all these variables had passed the effect size screens on bivariate analysis, we applied a conventional $P < 0.05$ level of statistical significance to these models.

We computed standardized regression coefficients to allow identification of variables most strongly associated with ED use. Comparison of −2 log likelihood indicators were used to assess goodness of fit with larger values indicating superior fit. We performed all analyses using SAS version 9.4 (SAS Institute Inc, Cary, NC).

## RESULTS

### Sample

Of the total 36,121 respondents with complete data, 27,674 (76.61%) reported no ED use in the past year, 7,972 (22.07%) reported moderate ED use, and 475 (1.32%) reported high use. Having experienced homelessness within the past year was reported by 559 (1.55%) respondents, and 1,541 (4.27%) responded that they had experienced homelessness within their lifetime.

### Bivariate Correlates of ED Use

Bivariate analyses showed past year homelessness (relative risk [RR] = 6.83) to be among the three variables most strongly associated with high ED use, exceeded only by past year suicide attempt (RR = 11.51) and receipt of a diagnosis of schizophrenia or psychosis in the past year (RR = 8.61) (Tables 1–3). Demographic variables substantially associated with moderate and high ED use included receiving disability benefits (RR = 2.71 and RR = 7.68, respectively). Having a college education was protective (Table 1).

Among the social variables (Table 2) associated with moderate and high ED use, homelessness in the past year (RR = 2.27 and RR = 6.83) and homelessness within one's lifetime (RR = 1.97 and RR = 4.38) were associated with the highest relative risk. Experiencing trouble with the police (RR = 4.17) and history of incarceration before and after age 18 (RR = 3.74 and RR = 2.64) were also associated high ED use, as were adverse childhood events such as neglect, sexual abuse, parental suicide attempts, parental suicide completion, parental imprisonment, parental drug use, and parental psychiatric hospitalization. As Black race was associated with high ED use, it should be noted that experiencing racial discrimination in the past year was also significantly associated with high ED use.

Health status variables (Table 3) associated with moderate and high ED use included worse general health (Cohen d = 1.11 and 1.12), experiencing moderate or severe pain, and a BMI > 40. Higher scores on both the PCS and MCS were protective.

**Table 1.** Bivariate associations of demographic variables with emergency department use.

| | ED use Group 1 N = 27,674 | ED use Group 2 n = 7,972 | ED use Group 3 n = 475 | Bivariate analysis | |
|---|---|---|---|---|---|
| **Variable** | **0 visits mean (SD)/%** | **1–4 visits mean (SD)/%** | **≥5 visits mean (SD)/%** | **2 vs 1 RR/Cohen d*** | **3 vs 1 RR/Cohen d*** |
| Gender | | | | | |
| Male | 49.15% | 44.91% | 36.57% | 0.91 | 0.74 |
| Age* | 46.25 (17.48) | 47.61 (18.76) | 44.82 (17.59) | 0.08 | –0.08 |
| Annual income | | | | | |
| <$20,000 | 20.80% | 28.20% | 51.05% | 1.36 | 2.45 |
| $20,000–40,000 | 23.47% | 26.46% | 25.81% | 1.13 | 1.1 |
| $40,000–60,000 | 22.51% | 20.87% | 11.77% | 0.93 | 0.52 |
| >$60,000 | 33.22% | 24.47% | 11.39% | 0.74 | 0.34 |
| Race | | | | | |
| Black | 10.74% | 15.01% | 20.90% | 1.4 | 1.95 |
| White | 66.26% | 66.37% | 61.79% | 1 | 0.93 |
| Hispanic | 15.25% | 13.17% | 10.09% | 0.86 | 0.66 |
| Other | 7.75% | 5.45% | 7.24% | 0.7 | 0.93 |
| Marital status | | | | | |
| Separated or divorced | 12.81% | 16.89% | 25.09% | 1.32 | 1.96 |
| Widowed | 5.27% | 7.48% | 8.54% | 1.42 | 1.62 |
| Never married | 22.58% | 21.82% | 29.68% | 0.97 | 1.31 |
| Married or cohabitating | 59.34% | 53.81% | 36.69% | 0.91 | 0.62 |
| Employment | | | | | |
| Receives disability | 3.61% | 9.77% | 27.70% | 2.71 | 7.68 |
| Looking for work | 6.98% | 8.65% | 13.99% | 1.24 | 2 |
| Other employment | 16.92% | 17.60% | 18.89% | 1.04 | 1.12 |
| Retired | 16.68% | 20.76% | 14.11% | 1.24 | 0.85 |
| Employed | 72.36% | 63.01% | 49.85% | 0.87 | 0.69 |
| Military service | | | | | |
| Any military service | 9.08% | 11.94% | 10.54% | 1.32 | 1.16 |
| Rurality | | | | | |
| Urban | 78.96% | 78.21% | 75.06% | 0.99 | 0.95 |
| Highest level of education | | | | | |
| Pre-high school | 12.17% | 15.27% | 23.65% | 1.26 | 1.94 |
| High school | 25.01% | 28.31% | 31.24% | 1.13 | 1.25 |
| Pre-college | 32.41% | 35.29% | 36.49% | 1.09 | 1.13 |
| College | 30.42% | 21.14% | 8.62% | 0.69 | 0.28 |
| Health insurance coverage | | | | | |
| Medicaid | 8.22% | 16.58% | 32.40% | 2.02 | 3.94 |
| VA Tricare | 4.18% | 6.42% | 8.20% | 1.53 | 1.96 |
| Medicare | 19.43% | 27.71% | 32.85% | 1.43 | 1.69 |
| Any insurance | 79.43% | 83.49% | 85.30% | 1.05 | 1.07 |
| Private insurance | 59.83% | 51.99% | 35.23% | 0.87 | 0.59 |

Bivariate analyses compare moderate and high ED users to non-users.
*Denotes continuous variable with Cohen d for measure of association.
*ED*, emergency department; *RR*, relative risk; *VA*, Veterans Administration.

**Table 2.** Bivariate associations of social variables with emergency department use.

| Variable | ED use Group 1 n = 27,674 0 visits mean (SD)/% | ED use Group 2 n = 7,972 1–4 visits mean (SD)/% | ED use Group 3 n = 475 ≥5 visits mean (SD)/% | Bivariate analysis 2 vs 1 RR/ Cohen d* | Bivariate analysis 3 vs 1 RR/ Cohen d* |
|---|---|---|---|---|---|
| Homelessness | | | | | |
| Past year | 1.14% | 2.59% | 7.81% | 2.27 | 6.83 |
| Lifetime | 3.39% | 6.68% | 14.84% | 1.97 | 4.38 |
| Incarceration history | | | | | |
| Police trouble in past year | 1.30% | 2.50% | 5.41% | 1.92 | 4.17 |
| Incarcerated before age 18 | 3.33% | 5.86% | 12.47% | 1.76 | 3.74 |
| Incarcerated after age 18 | 9.56% | 14.91% | 24.47% | 1.61 | 2.64 |
| Social history and social support | | | | | |
| History of child neglect* | 12.22 (5.02) | 13.49 (6.21) | 15.62 (8.35) | 0.19 | 0.52 |
| History of child sexual abuse* | 4.37 (1.54) | 4.76 (2.40) | 5.49 (3.18) | 0.17 | 0.47 |
| Racial discrimination in the past year* | 1.21 (.43) | 1.29 (.52) | 1.47 (.70) | 0.14 | 0.48 |
| Social support* | 3.02 (.464) | 2.96 (.51) | 2.83 (.61) | −0.12 | −0.37 |
| Number of contacts in the past two weeks* | 16.36 (15.08) | 15.91 (15.08) | 14.28 (14.28) | −0.02 | −0.11 |
| Parental history | | | | | |
| Parent with suicide attempt | 2.81% | 4.20% | 10.46% | 1.49 | 3.72 |
| Parent with prison history | 6.48% | 11.49% | 19.07% | 1.77 | 2.94 |
| Parent with suicide completion | 0.86% | 0.98% | 2.42% | 1.14 | 2.82 |
| Parent with drug use history | 4.99% | 8.15% | 11.26% | 1.63 | 2.38 |
| Parent psychiatric hospitalization history | 4.74% | 7.47% | 11.26% | 1.58 | 2.38 |

Bivariate analyses compare moderate and high ED users to non-users.
*Denotes continuous variable with Cohen's d for measure of association.
*ED*, emergency department; *RR*, relative risk.

Among the mental health variables associated with ED use (Table 3), suicide attempt in the past year was the most strongly associated with both moderate (RR = 5.01) and high ED use (RR = 11.51). Moderate and high ED use were both associated strongly with personality disorders and diagnosis of schizophrenia or psychosis within one's lifetime. Having more than one substance use disorder, more than one psychiatric disorder, or dual diagnosis within the past year were also all associated with moderate and high use (Table 3).

### Multivariate Multinomial Logistic Regression Analyses

Unadjusted logistic regression analysis demonstrated that people with experience of homelessness within the past year were approximately twice as likely to report moderate ED use (odds ratio [OR] 2.31; 95% confidence interval [CI] 1.93–2.76; $P < 0.001$) and seven times more likely to report high ED use (OR 7.34; 95% CI 5.04–10.68; $P < 0.001$) compared to those without past year experience (Figure 1).

After adjusting only for demographic, social variables, the association of homelessness and its statistical significance were greatly diminished as people with past year experience of homelessness were only 27% more likely to report moderate ED use than others (adjusted OR [AOR] 1.27; 95% CI 1.05–1.54; $P = 0.014$) and 62% more likely to report high ED use (AOR 1.62; 95% CI, 1.05–2.50; $P = 0.030$) (Figure 1).

The third model, which adjusted only for medical and mental health variables, also showed marked decline in ORs compared to the unadjusted model as participants experiencing past year homelessness were 26% more likely to report moderate use (AOR 1.26; 95% CI 1.03–1.55; $P = 0.025$) and about twice as likely as to have high ED use (AOR 2.07; 95% CI, 1.33–3.24; $P = 0.001$).

In the final stepwise model with forward selection at $P <$ 0.05, including all substantially important variables (social, medical, and mental health), homelessness was no longer significantly associated with either moderate or high ED use at $P < 0.05$. A further analysis in which past year

**Table 3.** Bivariate associations of medical and mental health variables with emergency department use.

| Variable | ED use Group 1 n = 27,674 0 visits mean (SD)/% | ED use Group 2 n = 7,972 1–4 visits mean (SD)/% | ED use Group 3 n = 475 ≥5 visits mean (SD)/% | Bivariate analysis 2 vs 1 RR/Cohen d* | 3 vs 1 RR/Cohen d* |
|---|---|---|---|---|---|
| Psychiatric and substance use disorders | | | | | |
| Past year suicide attempt | 0.10% | 0.50% | 1.16% | 5.01 | 11.51 |
| Schizotypal disorder | 5.04% | 10.10% | 22.14% | 2.01 | 4.4 |
| Antisocial disorder | 3.58% | 6.48% | 15.61% | 1.81 | 4.37 |
| Lifetime diagnosis of schizophrenia or psychosis | 1.73% | 3.57% | 7.41% | 2.07 | 4.29 |
| Past year greater than one substance use disorder diagnosis | 1.79% | 3.54% | 6.84% | 1.98 | 3.82 |
| Past year single drug use disorder diagnosis | 3.15% | 5.93% | 11.30% | 1.88 | 3.58 |
| Past year greater than one psychiatric diagnosis | 6.72% | 13.51% | 23.34% | 2.01 | 3.47 |
| Borderline personality disorder | 7.96% | 16.87% | 29.72% | 2.01 | 3.47 |
| Past year dual diagnosis: psychiatric/ substance use disorder | 4.00% | 7.16% | 9.48% | 1.79 | 2.37 |
| Past year single psychiatric diagnosis | 12.57% | 16.91% | 24.93% | 1.35 | 1.98 |
| Multiple recurring traumas | 12.86% | 16.00% | 22.00% | 1.24 | 1.71 |
| Lifetime alcohol use disorder diagnosis | 27.97% | 32.56% | 38.13% | 1.16 | 1.36 |
| Past year single substance use disorder diagnosis | 12.85% | 15.03% | 17.01% | 1.17 | 1.32 |
| Past year alcohol use disorder diagnosis | 13.16% | 16.05% | 17.01% | 1.22 | 1.29 |
| Medical history | | | | | |
| Medical conditions (range 1–18)* | 0.62 (0.97) | 1.28 (1.48) | 2.26 (1.97) | 0.45 | 1.12 |
| Number of injuries* | 0.20 (2.11) | 0.96 (4.50) | 2.44 (8.00) | 0.16 | 0.46 |
| General health (scale of 1 to 5)* | 2.33 (1.04) | 2.84 (1.15) | 3.64 (1.14) | 1.11 | 0.46 |
| Short Form-12 mental component* | 51.62 (9.18) | 48.63 (11.42) | 43.37 (12.56) | −0.27 | −0.75 |
| Short Form-12 physical component* | 50.91 (9.49) | 45.51 (12.37) | 36.68 (12.85) | −0.47 | −1.23 |
| Moderate or severe pain | 15.80% | 32.77% | 63.90% | 2.07 | 4.04 |
| Any history of cancer | 3.65% | 6.20% | 12.94% | 1.70 | 3.55 |
| BMI >40 | 3.76% | 6.76% | 10.78% | 1.8 | 2.86 |

Bivariate analyses compare moderate and high users to non-users.
*Denotes continuous variable with Cohen's d for measure of association.
*ED*, emergency department; *RR*, relative risk; *BMI*, body mass index.

homelessness was forced into the model to assess the point estimate of the effect size association of recent homelessness with ED use showed an AOR for moderate ED use of 1.13 (95% CI 0.91–1.40, not significant) and AOR 1.27 (95% CI 0.79–2.03, not significant) for high ED use (Figure 1).

Closer examination of the final model (Table 4) showed a notable commonality in variables associated with both moderate and high ED use (Table 4). Variables with the highest associations with *moderate* use included number of injuries (AOR 1.79, 95% CI 1.73–1.86, standardized regression coefficient [SRC] = 0.8), number or medical conditions (AOR 1.33, 95% CI 1.30–1.37, SRC = 0.18), and Medicaid insurance (AOR 1.49, 95% CI 1.37–1.62, SRC = 0.07).

Variables with the strongest independent associations with *high* ED use also included number of injuries in the past year (AOR = 1.82, 95% CI 1.75–1.89, SRC = 0.82), number of medical conditions (AOR = 1.53, 95% CI 1.43–1.64,

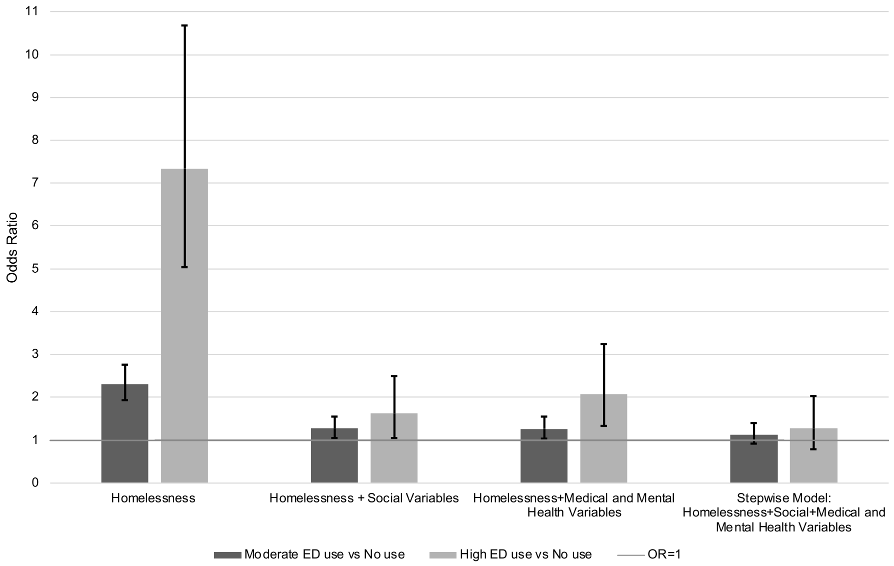

**Figure 1.** Association of past year homelessness with moderate and high ED use: Unadjusted and Adjusted Odds ratios from multinomial logistic regression models. *OR*, odds ratio.

SRC = 0.27), and Medicaid insurance (AOR = 1.97, 95% CI 1.55–2.51, SRC = 0.11), along with parental drug use history (AOR 1.95, 95% CI 1.40–2.71; SRC = 0.09). The strongest protective variables for both moderate and high ED use included high SF-12 component scores, college education, and being married or cohabitating.

Comparison of −2 log likelihood indicators of model fit showed the model of homelessness alone (−2LL = −41495, degrees of freedom [df] = 2) had a poorer goodness of fit than both the model of social (−2LL = 38,777, df = 40) and the model of medical and mental health factors alone (−2LL = 36,076, df = 52), and all three had a poorer model fit than the final combined stepwise model (−2LL = 35,188, df = 42) with each model fit significantly superior to that of the previous model at $P < 0.005$.

## DISCUSSION

This study showed that homelessness was strongly associated with ED use in an unadjusted model, as has been found in many other studies.[9–14] However, estimates of the *independent* association of homelessness and ED use, adjusting first for measures of demographic characteristics and social disadvantage and then separately for medical and mental health, showed that both sets of factors largely accounted for this association. This suggests an important potential mediating role of these factors. The association of homelessness with ED use was further reduced to non-significance when both types of factors were included as covariates.

The strongest risk factors in the final model were injuries, medical conditions, Medicaid coverage, and parental drug use while the strongest protective variables were high physical- and mental health-related quality of life, college education, and being married or cohabitating. These findings are consistent with existing literature that has demonstrated lower socioeconomic status, lower educational attainment, public insurance, and poorer perceived health were predictors of frequent ED use.[29] Physical injuries have also been shown to be associated with frequent ED visits, including return visits.[30]

The strong unadjusted association between homelessness and ED use is consistent with prior literature.[15,31] However, in this study we further considered medical and social factors as separate blocks to explore the association of homelessness and ED use adjusting for these factors. Additionally, our study was based on a nationally representative sample extending its generalizability to populations that included people outside clinical settings.[17,18] The NESARC-III dataset was also exceptional in the rich array of social variables unavailable in medical records (eg, education, parental histories, adverse childhood events, social isolation, and criminal justice interaction.)

### Implications

It has been suggested that the high cost of healthcare in the US compared to other wealthy countries reflects limited provision of social services.[5] Health policy experts increasingly recognize the social determinants of health, and federal and local initiatives are emerging to address social needs and reduce healthcare service use and costs, including ED costs.[32,33] While frequent ED users represent only 4–8% of ED patients, they account for 21–28% of all ED visits and generate significant costs.[34] Recent studies show that individualized case management interventions can modestly

**Table 4.** Stepwise multinomial logistic regression models of the association of ED use and social, medical, psychiatric, and substance use disorders.

| | **Moderate ED use vs Non-use*** | | | **High ED use vs Non-use*** | |
|---|---|---|---|---|---|
| **Variable** | **OR (95% CI)** | **Standardized regression coefficient** | **Variable** | **OR (95% CI)** | **Standardized regression coefficient** |
| Number of injuries | 1.79 (1.73–1.86) | 0.8 | Number of injuries | 1.82 (1.75–1.89) | 0.82 |
| Medical conditions | 1.33 (1.30–1.37) | 0.18 | Short Form-12 physical component | 0.95 (0.94–0.96) | −0.32 |
| Short Form-12 physical component | 0.98 (0.977–0.983) | −0.12 | Medical Conditions | 1.53 (1.43–1.64) | 0.27 |
| Medicaid insurance | 1.49 (1.37–1.62) | 0.07 | College education | 0.47 (0.32–0.68) | −0.19 |
| Short Form-12 mental component | 0.99 (0.987–0.993) | −0.06 | Married or cohabitating | 0.56 (0.45–0.69) | −0.16 |
| Black | 1.34 (1.23–1.46) | 0.05 | Short Form-12 mental component | 0.98 (0.966–0.984) | −0.14 |
| Any traumatic experience | 1.2 (1.13–1.27) | 0.05 | Medicaid insurance | 1.97 (1.55–2.51) | 0.11 |
| College education | 0.81 (0.76–.87) | −0.05 | Parent with drug use history | 1.95 (1.40–2.71) | 0.09 |
| Past year suicide attempt | 3.03 (1.74–5.27) | 0.03 | Black | 1.56 (1.19–2.05) | 0.08 |
| VA Tricare | 1.29 (1.14–1.46) | 0.03 | Racial discrimination in the past year | 1.35 (1.14–1.59) | 0.07 |
| Parent with prison history | 1.23 (1.11–1.37) | 0.03 | Police trouble in past year | 2.06 (1.25–3.38) | 0.05 |
| Borderline personality disorder | 1.20 (1.09–1.21) | 0.03 | Past year homelessness | ** | ** |
| Social support | 1.14 (1.07–1.21) | 0.03 | Past year suicide attempt | ** | ** |
| History of child sexual abuse | 1.03 (1.01–1.04) | 0.03 | VA Tricare | ** | ** |
| Past year greater than one substance use disorder diagnosis | 1.28 (1.08–1.52) | 0.02 | Past year greater than one substance use disorder diagnosis | ** | ** |
| Married or cohabitating | 0.91 (0.86–0.97) | −0.02 | Parent with prison history | ** | ** |
| Past year homelessness | ** | ** | Any traumatic experience | ** | ** |
| Police trouble in past year | ** | ** | Borderline personality disorder | ** | ** |
| Parent with drug use history | ** | ** | Social support | ** | ** |
| Racial discrimination in the past year | ** | ** | History of child sexual abuse | ** | ** |

*All variables with a *P*-value for Wald chi-square <.01.

**Variable not included in the final stepwise regression.

*ED*, emergency department; *OR*, odds ratio; *CI*, confidence interval; *VA*, Veterans Administration.

reduce ED use.[35–37] Other studies that focus on primary care access are less promising since most frequent ED users already use high levels of primary care.[15] Housing-focused initiatives significantly reduce homelessness but have had limited effect on the physical or mental health of clients, on decreasing ED use, or on reducing health service costs. [38–42]

These mixed findings suggest there is a larger context beyond service integration and supported housing that requires attention.

The concurrence of homelessness, social disadvantage, and chronic medical and mental illness points to a vulnerability deeper than merely having multiple, chronic illnesses and may be best understood through the evolving concept of allostatic burden.[43] Allostasis is the general adaptive capacity of a person to respond effectively to physical or social demands. Allostatic burden refers to the magnitude of the demand for and potential failure of adaptive capabilities. In individuals with high allostatic burden, the cumulative effect of chronic stress and life events overwhelms adaptive capacities in a broad sense. Allostatic burden has been shown to be associated with poorer health outcomes in cardiovascular disease, diabetes, preeclampsia, geriatric frailty, periodontal disease, PTSD, psychotic disorders, and alcohol dependence,[43] and to arise from conditions of poverty, segregation, discrimination, sexual trauma, and low educational attainment and thus exceeds any conception of chronic disease that merely reflects illnesses continuing over a long-term course.[43] Many indicators of allostatic burden were significant in our model of high ED use and are disproportionately represented in the homeless population. While no studies to date have examined the association of allostatic load and frequent ED use, the allostatic burden model may facilitate understanding of frequent ED use, and specifically high use among people experiencing homelessness.

In recognition of what is currently known, social emergency medicine (EM) should be added to the EM research agenda and included in the core curriculum for ED residents via both didactics and community-based learning.[44] A useful framework could differentiate three distinct levels of care: acute care for immediate problems (eg, appendicitis, traumatic injuries); acute-on-chronic care for urgent treatment of exacerbated heart failure; diabetic ketoacidosis, etc; and care for long-term overwhelming allostatic burden, the complex of lifelong social and medical problems that challenges the ability of an individual to maintain themselves in the society in which they live, and about which much remains to be learned.[2,44]

## LIMITATIONS

Several limitations warrant consideration. First, specific data on the immediate reasons for individual ED visits were not available in NESARC-III. While medical and mental health problems account for much of the association between ED use and homelessness, it is unclear whether ED visits were directly related to treatment of these health issues. Previous studies found that the majority of visits among patients with mental illness were for physical health conditions rather than reasons related to mental health.[45–48] We heuristically separated medical and mental health problems but recognize that they are tightly intertwined.[49–51]

Second, our study was cross-sectional and cannot support conclusions about causality. The variable representing homelessness referred to prior year homelessness without data on the recency or chronicity of the homelessness episode. Additionally, our cross-sectional data is from 2012–2013 and associations may have changed in the intervening time. Our findings suggest trends to be explored in longitudinal studies of how ED use among homeless adults, as well as others, relates to overwhelming long-term allostatic burden.

Third, the sample excluded institutionalized adults, omitting pertinent populations at high risk for homelessness such as incarcerated individuals and those in homeless shelters. This limitation is not unique to our study, although it is more comprehensive than in previous literature. Finally, some NESARC-III variables themselves are imprecise and of uncertain validity. Homelessness and ED use were based on self-report and thus subject to recall bias. The ED use item was limited to a maximum of 10 or more visits per year, limiting the precision with which we could analyze the construct of "high" ED use. It is possible that at the extremes of ED use, there may have been an even stronger association with homelessness and other evidence of extreme allostatic burden.[15]

## CONCLUSION

Homeless individuals use the ED at higher rates than other individuals, but when adjusting for other social and medical factors, we did not find an independent association between homelessness and higher ED usage. This highlights the complex interplay between social and medical issues and should encourage the development and evaluation of more fully integrated training and service delivery models linking these intersecting dimensions of need.

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# Addressing Emergency Department Care for Patients Experiencing Incarceration: A Narrative Review

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Patients experiencing incarceration face a multitude of healthcare disparities. These patients are disproportionately affected by a variety of chronic medical conditions. Patients who are incarcerated often remain shackled throughout their hospital course, experience bias from members of the healthcare team, and have many barriers to privacy given the omnipresence of corrections officers. Despite this, many physicians report little formal training on caring for this unique patient population. In this narrative review, we examine the current literature on patients who are incarcerated, especially as it pertains to their care in the emergency department (ED). We also propose solutions to address these barriers to care in the ED setting. [West J Emerg Med. 2023;24(5 Supplement)143–150.]

## INTRODUCTION

The United States has over 1.6 million incarcerated people.[1] This population has been historically medically underserved and faces a variety of healthcare disparities. Individuals who are incarcerated are more likely than the general population to have medical conditions such as diabetes, hypertension, HIV, hepatitis C, and tuberculosis.[2,3] The often substandard living conditions in jails and prisons also negatively impact incarcerated patients' health. For example, the morbidity and mortality from COVID-19 was significantly higher in prisons than in the general public.[4,5] While incarceration sometimes connects individuals who have not had previous access to care with continuity of care and medication for chronic conditions, many individuals are still unable to access adequate treatment while incarcerated.[6,7] For example, cancer patients report inadequate access to pain medications, patients face barriers to acute surgical care, and pregnant patients report inadequate prenatal care.[8,9,10] Even when patients are able to access care while incarcerated, they often face immense barriers to healthcare once released.[2,3]

In addition to the disparities noted above, incarceration is associated with mental illness and early mortality. When compared to non-incarcerated people, those who are incarcerated have higher rates of major depression, bipolar disorder, and schizophrenia.[11–16] Furthermore, incarceration itself may predispose individuals to mental illness, as experiencing incarceration is a risk factor for developing a first psychotic episode.[17] Substance use disorders (SUD) are more prevalent in the incarcerated population than the general population.[18] Many correctional facilities do not provide adequate treatment for SUD, which can lead to situations of life-threatening withdrawal in individuals with benzodiazepine and alcohol use disorder.[19,20] Individuals with opioid use disorder have a markedly increased risk of opioid overdose after release, especially if they are not started on medication-assisted treatment while incarcerated.[21–24] With regard to mortality, studies have shown that people who have been incarcerated have an increased risk of death at a younger age when compared to the general population.[25,26] This risk of premature death in incarcerated people disproportionately affects Black populations when compared to other demographic groups.[27,28]

It is impossible to discuss the disparities faced by incarcerated patients without recognizing that the criminal justice system is one based on racial oppression.[29] Black Americans are incarcerated, wrongfully convicted, and stopped and searched by police at disproportionately higher rates than White Americans.[30–33] The history of policing is also rooted in systemic racism. In the 18th and 19th centuries, groups called "slave patrols" would search for and detain enslaved people who escaped; these groups are considered the basis of "modern-day policing."[34,35] When formal police departments were established in the early 20th century, these organizations served a large role in enforcing Jim Crow laws (laws in the South that institutionalized racial segregation, such as requiring separate water fountains for Black and White people).[34] In the late 20th century, the systemic criminalization of recreational drug use from President Ronald Reagan's "War on Drugs" and President Bill Clinton's Violent Crime Control and Law Enforcement Act disproportionately targeted Black and Latino Americans.[36,37] These are some examples, but by no means an exhaustive list, of how systemic racism is linked to the criminal justice system in the US.

While this review focuses on patients who are incarcerated, patients present to the emergency department (ED) in various types of custody. Often patients are brought to the ED after they are arrested but before they are convicted of a crime so that emergent medical concerns can be addressed prior to booking. Some patients are brought in while detained by US Immigration and Customs Enforcement officers. Patients may also present to the ED during the pre-trial period or post-conviction from jail or prison. Patients from both jails and prisons experience barriers to healthcare, but there are great discrepancies in the care provided at jails, based on the variation in a jail's size and resources and given that people typically spend less time in jails than in prisons.[6,38,39] Additionally, smaller jails may contract out most of their medical services, and jails are subject to less regulatory healthcare oversight than prisons.[39] While we will focus on the care of individuals who are incarcerated, many of the principles outlined in this article are applicable to patients in various types of custody.

Physicians employed by jails and prisons face an ethical dilemma termed "dual loyalty," meaning the conflict in interest between caring for their patient and catering to the demands of the prison administration.[40] Sometimes, physicians are asked to perform tasks that go against their role as healers, ie, to perform drug tests without a patient's consent, to withhold an expensive medical treatment despite it being the standard of care, and to perform medical exams for the purpose of "certify[ing] that prisoners are fit for imprisonment."[40] Similarly, emergency physicians must be aware of the conflicts of interest that arise when caring for patients who are incarcerated, such as cases when they are asked to "medically clear" a patient prior to booking or perform tests or exams that are not clinically indicated.

Penal harm refers to any "planned governmental act whereby a citizen is harmed" for punitive reasons; the harm is considered "justifiable precisely because it is an offender who is suffering."[41,42] Although the Eighth Amendment of the US Constitution broadly "prohibits cruel and unusual punishment," it was not until the 1976 Supreme Court ruling in the case of *Estelle v Gamble* that penal harm in the context of medical care was explicitly deemed unconstitutional.[43] The *Estelle v Gamble* ruling, which centered on "the deliberate indifference of the medical needs of prisoners," set a clear precedent for the rights of incarcerated patients to accessible medical care (including inpatient and specialist care).[43,44] Failure to provide incarcerated patients with the same "standard of care" as non-incarcerated patients has henceforth been considered a violation of the Eighth Amendment.[44] However, in practice, upholding the healthcare rights of incarcerated patients is more challenging to enforce.[45]

In this narrative review, we will identify several barriers to maintaining the standard of care for incarcerated patients in the ED. We hope to increase awareness of these disparities and propose solutions to better address them in clinical practice.[34,46]

## BARRIERS TO CARE

Through our review of the existing literature, we identified multiple barriers to treating incarcerated patients in the ED: biased care from physicians; presence of law enforcement; and use of physical restraints.

### Bias

Members of the healthcare team, including physicians and nurses, often have their own preconceived notions about incarcerated patients that ultimately affect patient care. A survey study of formerly incarcerated individuals found that many patients have experienced discrimination based on their criminal record.[47] Many patients also reported discrimination in the healthcare setting due to their race and ethnicity.[47] This survey study also found that formerly incarcerated individuals with increased ED utilization reported a higher rate of discrimination from healthcare professionals.[47]

However, many physicians already recognize the disparities in the care of patients who are incarcerated. One recent qualitative study by Douglas et al acknowledges the need to optimize quality of care for incarcerated patients.[48] In this paper, surgical residents were surveyed about their encounters with law enforcement while caring for patients experiencing incarceration. The surgical residents noted many challenges when caring for these patients, including barriers to adequate follow-up care and the designated holding areas for incarcerated patients that may contribute to "substandard care" or decreased monitoring of critically ill patients.[48]

Bias has been reported among many members of the healthcare team. The study "Caring for Hospitalized Incarcerated Patients: Physician and Nurse Experience" by Brooks et al examined physician and nurse experiences when caring for hospitalized incarcerated patients using open and closed-ended survey questions.[49] A majority of physicians believed patients who were incarcerated received less frequent non-medical interventions (defined as "social work support, physical therapy visits, nutrition consults") during hospitalization than other patients.[49] Over 30% of physicians believed that these patients received "fewer diagnostic tests" and "fewer medical interventions" than other patients.[49]

### Patient Privacy

There are also many limits to patient privacy when caring for patients who are incarcerated in the ED. The presence of corrections officers who accompany these patients to the ED often leads to protected health information (PHI) being shared if members of the healthcare team do not ask officers to step away during the history and physical.[43,50]

In the survey study by Brooks et al, a higher percentage of nurses when compared to physicians reported that they kept law enforcement in the exam rooms when performing their histories and physicals.[49] Still, 35% of physicians reported not asking corrections officers to leave during patient encounters, and over 50% of the physicians reported not asking for shackles to be removed during their histories and physicals.[49] In the survey, physicians also identified a lack of formal training in their medical education when caring for this group of patients.[49]

Many surgical residents in the Douglas et al study recognized incarcerated patients' barriers to privacy. The majority of residents in this study reported witnessing incidents when law enforcement officers would question patients during trauma assessments, at times disrupting the primary and secondary survey and impinging on patient privacy.[48] In addition, many residents reported instances when an "armed guard was present in the operating room" during a surgical procedure.[48] One resident reported an instance when an officer requested an ethanol level on a patient, even though this test was not pertinent to the patient's care at that time.[48]

The literature also describes instances when law enforcement, namely police officers, have requested invasive body searches and tests on patients, although these tests were not clinically indicated.[51,52] In a survey study, emergency physicians reported breaches of patient privacy in the presence of law enforcement, including instances when officers solicited PHI.[53] Physicians reported being uncertain of the exact role and limitations of law enforcement in their workplace.[53]

While physicians should always strive to maintain patient privacy, there are circumstances in which aspects of patient care may need to be disclosed to law enforcement. For example, PHI may need to be disclosed if a patient requires specific treatment or follow-up care in the outpatient setting. Given the delays that can occur in the care of incarcerated patients, instructions may need to be explicitly written or discussed with law enforcement to ensure appropriate care occurs after discharge from the ED.[54] However, physicians should always attempt to obtain approval from patients prior to sharing their PHI. There are also instances where incarcerated patients may exhibit violent behavior that poses a safety threat to themselves or to ED staff. In these instances, it is appropriate to interview patients in the presence of law enforcement.

### Physical Restraints

Physicians are taught to use physical restraints with caution and only when absolutely necessary. Physical hospital restraints, which are often applied to protect patient safety, are associated with numerous complications. For example, there is a statistically significant increased incidence of pulmonary embolism and deep vein thrombosis in patients who are physically restrained.[55,56] Furthermore, restraints are associated with delirium, emotional distress, rhabdomyolysis, injury, and even death when improperly used.[57–59] Indeed, both the American College of Emergency Physicians (ACEP) and The Joint Commission have published standards on the criteria necessary to justify restraint use and minimize harm associated with restraints.[59–61]

Despite the caution advised when using physical restraints, patients who are incarcerated often arrive to the ED in shackles and remain in shackles throughout the course of their ED stay. Some surgery residents have even reported caring for patients who are shackled to the bed while intubated and sedated.[48] There are some policies in place to limit the use of shackles in clinical settings. Recognizing the risks of physical restraints in pregnancy, many states have mandated against physical restraints for patients who are incarcerated in the perinatal period.[62] Federal policies have also been enacted to restrict use of physical restraints in pregnancy, except when considered necessary for safety reasons.[62]

There is a dearth of protections for patients who are not pregnant. Non-pregnant, incarcerated patients often remain shackled throughout their hospital stay; this includes those who are terminally ill and those who are intubated and sedated.[63–65] There is little data to support the medical rationale for shackling and, indeed, its use is mainly determined by federal and local policy to be a requirement during transport.[63,64,66–68] A discussion on ways to address shackling in the ED is included below.

## STRATEGIES TO IMPROVE CARE

In this section, we propose several strategies to improve the quality of ED care for patients who are incarcerated. These suggestions are not exhaustive; much more research is required to further investigate the many disparities these patients face.

### Bias

Hofmeister and Soprych discuss the importance of including formal teaching on treating incarcerated patients in medical curricula.[69] The authors discuss how the use of workshops on implicit biases can be incorporated into resident medical education. The workshop they performed allowed resident physicians to self-reflect on their biases and better recognize the disparities that specifically affect incarcerated patients.[69] There should be increased curriculum development in medical education that focuses on addressing the biases faced by patients who are incarcerated.

### Privacy

The US Department of Health and Human Services outlines PHI protections for patients who are incarcerated. Sharing of PHI is only permitted in a few distinct circumstances, such as when healthcare clinicians are responding to a request for "PHI [that] is needed to provide health care" to the patient, or when the PHI is necessary to protect the health/safety of the individual or people around them.[70] As one can imagine, information may be inadvertently divulged to corrections officers if the emergency physician (EP), nurse practitioner (NP), or physician assistant (PA) conducts the history and physical with corrections officers in the room.[43] A toolkit for protecting patient privacy created by the Working Group on Policing and Patient Rights of the Georgetown University Health Justice Alliance recommends that EPs, NPs, and PAs ask officers to step out of "earshot" to protect PHI and "prevent accidental disclosures."[50] EPs, NPs, and PAs should also obtain patient consent prior to lab tests and procedures.[50] The "Medical Provider Toolkit" and ACEP also note that while law enforcement personnel may even provide warrants for specific tests and exams such as body cavity searches, EPs, NPs, and PAs can refuse if they are not clinically indicated or are not in the patient's best interest.[50,71]

### Physical Restraints

Just as certain federal and state policies advocate for limiting shackle use in pregnant patients, so too should there be a greater emphasis placed on the removal of shackles on patients who are not pregnant. When interviewed, many physicians and nurses reported not requesting that shackles be removed.[49] As mentioned above, there is little data to support the use of shackles, and many of the rules and regulations regarding shackle use focus on transportation. Barriers to shackle removal are often due to knowledge deficits and unclear institutional guidelines surrounding shackling. EPs, NPs, and PAs should recognize the harms associated with shackles and request their removal whenever possible, as these are often not medically necessary.[50,64] Indeed, the International Association for Healthcare Security & Safety states that it is the responsibility of the physician and other members of the healthcare team to "assess the safety of continued use of restraint."[72] In addition, it is the duty of the corrections officers, and not the medical team, to ensure the patient's security.[64] Given that there are often unclear guidelines surrounding shackles and non-medical restraints, hospitals should also set forth their own guidelines to uphold the principle of medical non-maleficence in all treatment areas including the ED.[64]

To minimize harm, physicians should avoid and advocate against the shackling of patients in the prone position. This type of restraint confers an even greater risk of complications and has been linked to cardiopulmonary arrest, especially in agitated patients.[73] Controversy remains as to whether this is secondary to positional asphyxia; Steinberg provided a review of the current literature detailing how the cause of sudden death in prone restraint is "multifactorial," resulting from "reduced cardiac output," metabolic acidosis, and impaired ventilation.[73] While the Joint Commission does not explicitly prohibit prone restraint, hospitals are required to report any deaths that occur while a patient is restrained.[74,75] Since prone restraint has been identified as a contributor to death in subjects who are agitated, many institutions have created policies against its use.[76,77]

### Advocacy

We encourage EPs to advocate for change in the carceral system and in their own institutions to improve the healthcare of patients who are incarcerated. Issues of inadequate living conditions in prisons, prison crowding, and discrimination outside the hospital have been well documented.[78–81] Given the health implications of these issues, physicians should recognize and advocate for better living situations for these vulnerable patients.[82] Conditions for patients who are incarcerated are sometimes inadequate in the hospital. Some hospital EDs have separate holding areas for patients who are incarcerated. The quality of care in these ED holding areas could be improved by increasing the staffing, resources, and attention to these sections.[48] Physicians should advocate for better conditions for incarcerated patients, both within the ED and without.

### Continuity of Care

In addition to the reported substandard care that incarcerated patients receive while in the hospital setting, there are many barriers to appropriate medical care in correctional facilities. The article "Emergency Medical Care of Incarcerated Patients: Opportunities for Improvement and Cost Savings" by Martin et al is a chart review of incarcerated patients' ED visits at a single institution.[54] Patients reported barriers to care, such as difficulty accessing prescription medications for chronic conditions.[54] In light of this, EPs, NPs, and PAs should ask patients who are incarcerated about their access to medications for chronic conditions and refill appropriate prescriptions prior to discharge. In addition, there are many documented cases of patients eventually presenting to the medical system with late-stage illnesses that could have been treated earlier if they had been previously identified.[79] We encourage EPs, NPs, and PAs to refer patients to specialists and recommend clinic visits when appropriate.[79]

### Education

There is a lack of formal education surrounding care for incarcerated patients. In addition to bias workshops, the implementation of lectures, case-based discussions, and simulation cases can provide residents, attending physicians, NPs, and PAs with the tools necessary to care for this unique patient population. We developed and successfully implemented a simulation case for resident learners involving the presentation of a patient experiencing incarceration. This simulation aimed to expose learners to the issues unique to incarcerated patients as well as promote discussion on the removal of shackles during ED care, implicit biases, and protecting PHI. We are in the process of analyzing survey data from this simulation session, and results are forthcoming.

## CONCLUSION

Incarcerated patients are part of a vulnerable population that currently receives substandard care in many healthcare settings, including EDs. The biases held by members of the healthcare team, the presence of corrections officers, and pervasive use of restraints contribute to the numerous healthcare inequities. We have proposed strategies to improve the quality of care for this group of patients, recognizing that changes must be made on the physician level, throughout medical education, and institutionally.

> *"Medicine should be viewed as social justice work in a world that is so sick and so riven by inequities."*[83] – Dr. Paul Farmer.

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# Social Determinants of Health in EMS Records: A Mixed-methods Analysis Using Natural Language Processing and Qualitative Content Analysis

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**Introduction:** Social determinants of health (SDoH) are known to impact the health and well-being of patients. However, information regarding them is not always collected in healthcare interactions, and healthcare professionals are not always well-trained or equipped to address them. Emergency medical services (EMS) professionals are uniquely positioned to observe and attend to SDoH because of their presence in patients' environments; however, the transmission of that information may be lost during transitions of care. Documentation of SDoH in EMS records may be helpful in identifying and addressing patients' insecurities and improving their health outcomes. Our objective in this study was to determine the presence of SDoH information in adult EMS records and understand how such information is referenced, appraised, and linked to other determinants by EMS personnel.

**Methods:** Using EMS records for adult patients in the 2019 ESO Data Collaborative public-use research dataset using a natural language processing (NLP) algorithm, we identified free-text narratives containing documentation of at least one SDoH from categories associated with food, housing, employment, insurance, financial, and social support insecurities. From the NLP corpus, we randomly selected 100 records from each of the SDoH categories for qualitative content analysis using grounded theory.

**Results:** Of the 5,665,229 records analyzed by the NLP algorithm, 175,378 (3.1%) were identified as containing at least one reference to SDoH. References to those SDoH were centered around the social topics of accessibility, mental health, physical health, and substance use. There were infrequent explicit references to other SDoH in the EMS records, but some relationships between categories could be inferred from contexts. Appraisals of patients' employment, food, and housing insecurities were mostly negative. Narratives including social support and financial insecurities were less negatively appraised, while those regarding insurance insecurities were mostly neutral and related to EMS operations and procedures.

**Conclusion:** The social determinants of health are infrequently documented in EMS records. When they are included, they are infrequently explicitly linked to other SDoH categories and are often negatively appraised by EMS professionals. Given their unique position to observe and share patients' SDoH information, EMS professionals should be trained to understand, document, and address SDoH in their practice. [West J Emerg Med. 2023;24(5.1)151–160.]

## INTRODUCTION

Social determinants of health (SDoH), including housing, employment, education, income, neighborhoods, access to healthcare, and education are known to impact the health and well-being of patients, yet these variables are not always accounted for during interactions with the healthcare system.[1,2] While unmet basic social needs have measurable impacts on individuals, communities, and the public health system,[1,3,4] little guidance exists for healthcare clinicians to address patients' SDoH, and current strategies focus on the population and policy levels.[5] Greater attention is needed to individual-level social issues, as leaving them unaddressed leads to poor clinical outcomes, health disparities, and increased healthcare costs.[3] Patients with unmet social needs frequently access healthcare through hospitals and, particularly, emergency departments (ED) only, warranting an increased focus on SDoH in emergency medicine (EM).[6–8]

Emergency medical services (EMS) professionals operating at the intersection of public safety, public health, and healthcare are uniquely positioned to observe and attend to SDoH in productive and influential ways.[9] They use their perceptions of patients' social and physical environments to aid in medical decision-making, such as determining whether to transport the patient to the hospital or not.[10] Additionally, conveying information to ED staff about factors such as unsafe housing, lack of access to medications, or inability of patients to safely care for themselves can ultimately affect whether or not that patient can be safely discharged from the ED. Nevertheless, information exchange through verbal hand-offs from EMS professionals to ED nursing staff and subsequent reporting to additional hospital personnel often results in lost information and miscommunication.[11–19]

Electronic health record documentation by EMS is a reliable channel through which information about a patient's SDoH can be shared with all healthcare personnel associated with the patient's hospitalization.[20] There is a paucity of SDoH information in EMS records for pediatric patients,[21] but the presence, appraisal, and connections of SDoH information in EMS records for adult patients is unknown. Our objective in this study was to determine the presence and frequency of SDoH documentation in adult EMS records and understand the ways in which those insertions are referenced, appraised, and linked to other determinants.

*Population Health Research Capsule*

What do we already know about this issue?
*The ability of emergency medical services (EMS) personnel to assess patients' social determinants of health (SDoH) can have a great impact on patient care.*

What was the research question?
*We sought to evaluate the presence, appraisal, and relationships of SDoH documentation in EMS records.*

What was the major finding of the study?
*Of 5,665,229 adult patient EMS records we analyzed, 3.1% were identified as containing at least one reference to SDoH.*

How does this improve population health?
*Understanding how EMS personnel recognize and document patients' SDoH is key to identifying their diverse needs and expanding out-of-hospital care options.*

## METHODS

### Study Design and Setting

We retrospectively analyzed 9-1-1 records for adult patients (≥18 years) in the 2019 ESO Data Collaborative public-use research dataset. The ESO Data Collaborative consists of de-identified prehospital electronic patient care records created by EMS personnel during the course of patient care. All EMS agencies that contribute to the dataset agree to share their de-identified data for research and benchmarking. Annual research datasets are made available free of charge following a proposal process and review by an institutional review board (IRB). We selected this database for the diversity of included practice settings and the ability to request free-text narratives. In 2019, this database contained more than eight million records from 1,322 EMS agencies with encounters across all four US Census regions (South: 58%; Midwest: 22%; West: 16%; and Northeast: 5%) and 6% of encounters occurring in rural settings. A total of 31% of encounters occurred in communities classified within the most vulnerable quartile of socioeconomic status based on the US Centers for Disease Control and Prevention's social vulnerability index.[22] This study was designated not human subjects research by the State University of New York at Buffalo IRB.

### Selection of Cases

All cases, regardless of complaint or disposition, were screened. We used a multilabel classification machine-learning model which, when identifying SDoH topics, has area under the curve receiver operating characteristics of 93.9.[23] This natural language processing (NLP) algorithm has a framework of applications to EM and EMS records.[21,23] By applying this algorithm, we identified free-text narratives containing documentation of at least one SDoH from categories associated with food, housing, employment, insurance, financial, and social support insecurities.

### Measures and Analysis

We performed descriptive statistical analysis and randomization of records for qualitative analysis using Stata MP version 17.0 (StataCorp LLC, College Station, TX). From the corpus produced by the NLP algorithm, a random sample of 100 narratives was chosen from each determinant category for qualitative content analysis. Using an interpretive paradigm,[24] the three study team members read each narrative to understand the first-person perspectives of the EMS professionals who documented their interactions with patients in the records they kept. This approach was necessary to facilitate a hermeneutical approach and understand the social construction of those EMS professionals' experiences on the calls about which they documented. Team members used a grounded theory framework[24–26] to describe the content found in the EMS records.

Three researchers (JCI, an ED attending, EMS physician, and paramedic; MCK, an ED attending and EMS fellow; and SJB, a paramedic and EMS educator) reviewed narratives, performed primary coding to understand the content of the EMS records, and further immersed themselves in the data by discussing their findings for each category with the other qualitative-analysis study team members.[24,27] During this data immersion phase, codes were developed. For example, patients who were documented as not having eaten in several days were coded as food insecure (if their cases were not otherwise categorized in the food insecurity determinant category by the NLP corpus), or patients who reported they could not afford medications were coded as financially constrained. Then, using the constant comparative method,[24,28] researchers organized the primary codes into secondary codes to synthesize social topics illustrated by the data throughout the determinant categories. For example, patients who reported financial constraints were categorized as having accessibility problems. Researchers further collaborated to assure that the content of the EMS records was represented by the social topics and each concept was robustly supported by data.[29]

In a separate round of purposive coding, researchers looked for documentation of other insecurities in each determinant category to determine the relationship, frequency, and directionality of their reference. For example, if a narrative was determined by the NLP corpus to contain information about social support insecurities, but the patient was documented as not having eaten in several days, they were coded as food insecure, as referred to in the social support category. Additionally, the team members qualitatively appraised each narrative to identify the valence of the narratives as a means of further understanding the EMS professionals' perspectives. To limit potential perceptions of bias, the qualitative researchers frequently checked in with themselves and the others as a means of reflexivity.[24,28] They verified that their interpretations and models were representative of the data and that their own and the others' experiences and biases did not result in misinterpretation. They also collaboratively built models and interrogated their data to assure their findings were strongly supported by the data from the EMS record narratives.

## RESULTS

Of 5,665,229 records analyzed by the NLP algorithm, 175,378 (3.1%) were identified as containing at least one reference to a SDoH. Of the records in this corpus, 171,740 (97.93%) contained only one identifiable reference to SDoH, while 3,580 records (2.04%) contained two identifiable references; 57 (0.03%) contained three identifiable references; and one of the records (<0.01%) contained four identifiable references to SDoH. Records containing appearances of SDoH in the corpus were as follows: housing (52.28%); employment (33.06%); general financial (8.04%); insurance (4.73%); social support (3.86%); and food (0.14%).

### Social Topics Illustrated in Emergency Medical Services Records

Similar SDoH topics were identified throughout the various social determinant categories. These SDoH topics were accessibility, mental health concerns, physical health concerns, and substance use. Examples of the social topics' appearances in each determinant category can be found in the Table.

#### *Accessibility*

All determinant categories included documentation of concerns about patients' lack of access to services or goods, often because of an inability to afford or physically get to their needed interventions. Patients with employment/income insecurities were documented as unable to afford safe housing, medications, or medical care. Attending EMS professionals linked these financial constraints to the calls for help, particularly when ambulances were used as a means of transportation or facilitators for additional, non-urgent care, such as access to medications, treatments, or social services. It was also noted that financial barriers to access compounded existing health conditions because patients could not afford necessary medications or follow-up care. When other patients with documented financial insecurities encountered EMS for non-chronic conditions (eg, motor vehicle collisions or falls), they refused treatment and transport by EMS because of reported inabilities to afford ambulance or hospital bills.

When documenting food insecurities, EMS personnel wrote that patients could not readily afford or access nutritious foodstuffs. In some cases, patients were reported as selling, skipping, or misusing medications to divert funds to their food budgets. Housing insecurity information was documented because of patients' lack of safe or permanent

**Table 1.** Representative quotes for each social topic within each determinant category.

| | | Social Topics | | | |
|---|---|---|---|---|---|
| | | **Accessibility** | **Mental health** | **Physical health** | **Substance use** |
| SDoH categories | Food | "She had been standing in line outside <the food bank> for approx. 30min, felt light headed <sic>, and passed out… states she hasn't eaten since yesterday." | "<The patient> advised that he was suicidal because his roommates had been bullying him by taking his belongings, including his phone, food stamps, etc. <He> also advised that he was feeling homicidal, but that those feelings had passed." | "<The patient> states she vomited yesterday and her chest hurts today… she went to WIC today to get food at the food bank." | "He relays he was on a meth binge over the weekend and feels tired but needs to be here to get his food stamps for the week." |
| | Employment/ income | Male at day labor staffing building "was standing next to the counter and began having a seizure… <the patient> states he does have a hx of seizures and has been off his Keppra for quite some time now, 'states he can't afford it.'" | Patient living in a community facility "started having hallucinations… <The patient> was talking about baby geese that staff did not see." | "<The patient> states he felt dizzy and went to ground from seated position. <The patient> states he feels fine and is refusing all treatment or transport… <he> states he is a diabetic but <cannot> afford medical bill<s>. <His mother> states she will take him to the ED." | Dispatched to a motel for a stroke: "<the patient> is homeless but came to stay with her sister… <the patient> admitted to smoking marijuana this morning… She advised <of medical history including> drug use and she hasn't drank <sic> alcohol in several days… or eaten in a few days." |
| | Financial | The patient presented as "hyperglycemic, hypertensive, <with altered mental status>… He has a history of hypertension and diabetes, but it is not controlled with medications, as he has been unable to afford them for several months." | A representative from the patient's bank called because the patient "had made suicidal comments to them during a phone conversation involving a bill… <the patient> states that she is depressed about the passing of her husband and has been having financial issues as well." | "The patient stated she has a history of COPD and had complications <with> breathing for the past 12 hours… The patient stated she is normally on home oxygen but has been unable to afford her medications this month." | After receiving naloxone, "she began to come around. She admitted to alcohol use but no other drugs… she wanted to sign out of the hospital before she accumulated any bills because she felt they could not afford them." |
| | Insurance | Patient "reporting a headache that started last night at 1900 hours due to withdrawals from Depakote and amitriptyline. She reports she has been out approx. one week due to the cost because she lost her Medicaid." | Call for psychiatric complaints and crew found the patient requesting assistance "getting her Medicaid … pt was being uncooperative and yelling angrily… pt refused <transport>, becoming angry again and stating she didn't want to go to the ED and that she just wanted her Medicaid again." | After an MVC, a patient complained of "lower back pain… Patient stated she wanted to be check out by EMS but refuse to be transport by EMS due to no insurance." | The patient left an ED for a heroin overdose … "patient became belligerent and aggressive when asked about drug use since leaving <hospital> patient stated the blood <on his face> was from him vomiting blood and the abrasions were for <an> allergic reaction to the <heroin> … patient does not have insurance." |

(*Continued on next page*)

**Table 1.** Continued.

| | Social Topics | | | |
|---|---|---|---|---|
| | **Accessibility** | **Mental health** | **Physical health** | **Substance use** |
| Social support | Patient at a physician's office was found hypertensive. "The patient's niece related that there has been a problem with the patient's pharmacy and <the medications have not been in stock>." The niece also reported the patient lives alone and, while she checks on him, "she feels that he is not taking them because he doesn't remember to <take his medications>." | The patient's friend reported, "she started hiding in different places in the house . . . <then went> into a neighbor's garage <to> hide from her friend . . ." When a police officer arrived, the patient "stated she did not want to be shot and put her hands over her head as if she was told to raise her hands." After speaking with a mental health professional on scene, "a family friend came and . . . stated that she would take her to the hospital and pick up her medication." | The patient called 911 for chest pain and reported inability "to sleep . . . nausea and felt like she might faint. She waited to see if she would improve. as time went by, she states she became more worried and finally decided to call 911." She refused transport and "admits her anxiety was a significant factor in her calling 911. Pt frequently calls 911. Pt lives alone." Her visiting nurse was due soon and the "patient does not believe her nurse will make her go as she is feeling better." | An elderly female who lived alone was checked on by a friend who found her stating she had "progressively been feeling weaker over the past week . . . pt is normally able to walk and take care of herself with no assistance." The patient's friend also revealed the patient "is an alcoholic and was drinking heavily up until one week ago." |
| Housing | Call for patient at facility who seized: "staff states <the patient was without> his medications x1 week. <The patient> states they were stolen from him while he as at the homeless center." | Homeless shelter staff called because the patient "was walking around with broken glass bottles and was paranoid." The patient was "hyper paranoid. And stated, 'they are trying to kill me.' <The patient> advised that 'some put a hit' out on her and that someone has been following her." | "Found a <female patient> at local women's shelter with c/c of contractions, abdominal pain. <The patient> states she is 34 w pregnant with twins." | "Patient advised he is addicted to meth and wants to get help with detox." Upon arriving the homeless shelter, "he did about ½ gram of meth about two hours ago . . . he attempted to spray 'bleach bathroom cleaner' in his mouth to assist him in passing a drug test." |

*Approx.*, approximately; min, minute; *WIC,* Women, Infants and Children; *hx,* history; *ED,* emergency department; *pt,* patient; *MVC,* motor vehicle collision; *EMS,* emergency medical services; *w*, weeks.

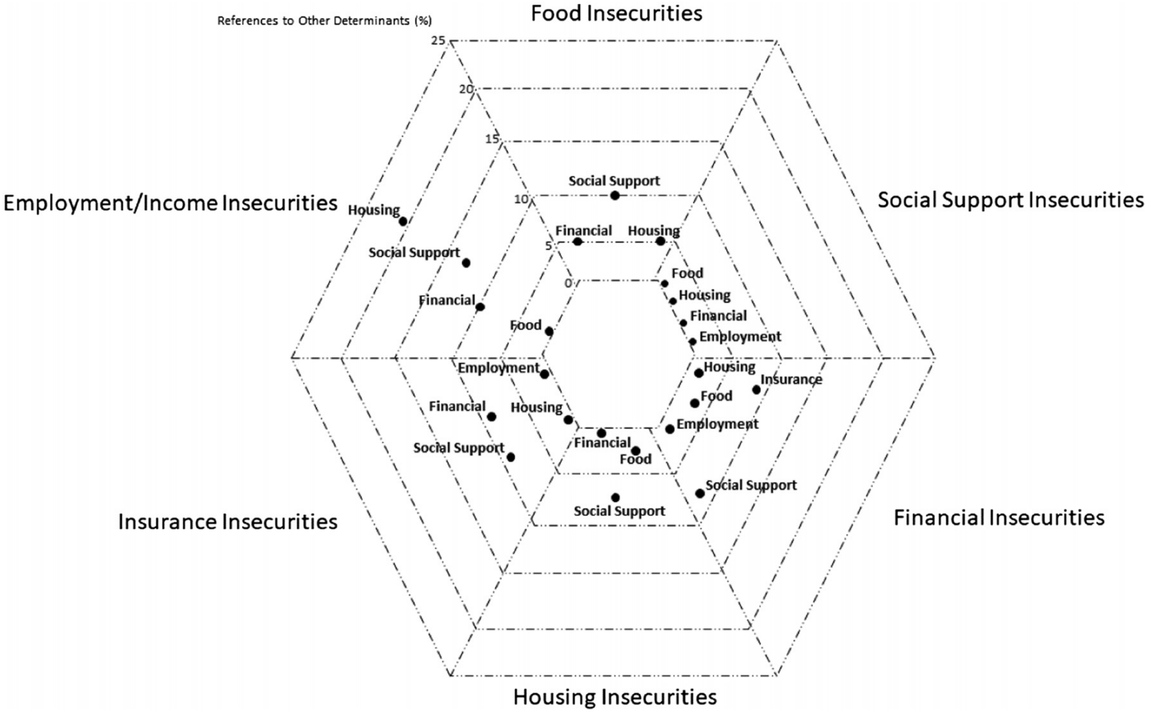

**Figure 1.** Explicit references to other determinant categories in charts (%).

housing, which may have presented problems upon discharge. Insurance insecurities were documented because of a lack of access to health insurance, sometimes secondary to lack of employment; however, more often, EMS personnel wrote about patients' using the 9-1-1 system to express their desires to obtain insurance or care covered by insurance. These patients explicitly requested help in signing up for insurance or referrals to other sectors of the healthcare system, and in one case a person called 9-1-1 for transport to a facility to have an already prescribed medical procedure because their insurance would not otherwise cover it as an outpatient treatment. In the documentation of social support insecurities, patients lacked family members, friends, or healthcare personnel to aid in safely caring for their conditions, accessing food, or finding safe living environments. When strong social support was available, access to resources and assistance was clearly documented in this determinant category.

### *Mental Health Concerns*

When mental health concerns were documented, regardless of determinant category, EMS professionals conveyed they were precipitated by the insecurities. Patients with employment and food insecurities expressed depression or suicidality while patients with housing insecurities primarily described anxiety. Those with documented financial and insurance insecurities also reported suicidality, but the EMS professionals explicitly linked the cause of financial constraints as ongoing expenses of chronic health conditions. Additionally, there were cases of documented elder or financial abuse perpetrated on or by patients who interacted with EMS. Those with social support insecurities were primarily anxious or nervous about living alone, but these issues often were not the reasons for why the calls were made for emergency services.

### *Physical Health Concerns*

Patients with employment and housing insecurities were often found outside, exposed to the elements, and with complaints related to those conditions. For example, many complained of pain in their legs or backs that could have been attributed to their frequent walking or hot- or cold-related issues. Some of these cases were results of calls for other conditions, but EMS crews often found these patients were more interested in shelter than medical care at the hospital. Those with food insecurities complained of weakness, hypoglycemia, or near or completed syncope, particularly while standing in line, awaiting access to a food bank. Some reported being without food because of financial problems, but others reported they had no other way of accessing goods without community resources. In some cases, patients reported prioritizing accessing medications over food. Those with financial and insurance insecurities most often complained of manifestations of their chronic conditions and inability to treat them. In some cases, patients with both determinant types had acute health concerns and many had diagnoses, but they could not afford or otherwise access the prescribed treatments. Patients with social support insecurities most often complained of acute medical- or trauma-related issues and an inability to properly address them. These patients were most often elderly patients who complained of weakness and falls.

*Substance Use*

Patients with documented employment and housing insecurities were more often described to be using or withdrawing from various substances. Those with food insecurities were also described as engaging in heavy use of substances while their ability to access or not access food was documented. Documentation of alcohol use with food, financial, housing, insurance, and social support insecurities were rarely associated with patients' complaints or conditions, but they were frequently written about as part of the scene-setting descriptions.

### Relationships Between Determinant Categories

Within the social determinants categories, EMS personnel sometimes documented links to other determinant categories. For example, when a chart was flagged because of a documented food insecurity, EMS personnel included information about concurrent housing, financial, or social support insecurities. (See Figure for articulated relationships between determinant categories.) Some of these relationships were unidirectional (eg, insurance insecurities were linked to social support insecurities, but social support insecurities were not linked to insurance insecurities), although there were frequent bidirectional referrals between determinants but for varying reasons. For example, patients with financial insecurities refused EMS treatment and transport because they were documented as reporting a lack of insurance, but patients with insurance insecurities requested EMS transportation because they could not afford alternative treatment or transport.

Most often, however, the other determinants were not explicitly referenced in the documentation, but plausible explanations could be inferred from context. For example, in the case of a patient with housing insecurity, the EMS professional documented the patient had not eaten or taken their medications in several days. These elements could be indicative of food, insurance, or financial insecurities, but they were not explicitly cited.

### Appraisal of EMS Professionals' Perspectives

When EMS professionals wrote about employment, food, and housing insecurities, most of the appraisals were negative and appeared to discursively position the patients as at fault for their 9-1-1 complaints and life conditions. Some of the content in these narratives was unnecessary and unrelated to the patients' needs within the context of the EMS call. For example, in the case of a patient with housing insecurity who complained of lower extremity pain, the writer included several insertions about how the patient did not appear to have discomfort or unsteady gait and hypothesized the patient had ulterior motives for the call to 9-1-1. For those with insurance insecurity, most of the documentation in the EMS narratives included inability for patients or crew members to obtain the billing information for another part of the chart. Narratives for patients with financial or social support insecurities contained less perceivable negativity in the descriptions of those patients' conditions.

Within the social support category, specifically, the narratives were generally much longer than in the other categories and the scenes were described with greater detail. Although some of the patients were documented as repeat customers, the overtone was positive, and the EMS professionals described their familiarity in association with the help they provided for the patients in the current and previous interactions. Only the social support insecurities category contained descriptions of the advocacy work provided by the EMS crews on the scene, including referrals to mobile integrated health or other community resources, assisting in patients' errands, calling a patient's primary healthcare physician for them, or delivering food from their own station so the patient could eat a meal. This category also contained richer descriptions of safety concerns for patients who lived in homes, generally alone, yet the reflection of safety concerns did not come up for patients who did not have homes, food, medications, or money.

## DISCUSSION

Understanding how EMS professionals document SDoH within electronic health records is vital for improving emergency care, subsequent treatment, and outcomes for patients with insecurities. Most often, SDoH information was not included in EMS records and, when present, was neither holistic nor interconnected to other insecurities that may impact a patient's health and well-being. Additionally, EMS personnel often—likely unintentionally—wrote about patients' insecurities with a negative valence or tone. Such negativity in health records has demonstrated downstream impressions of the patients themselves.[30]

Because EDs are venues that perform as safety nets for myriad health and social problems, there are proposals for employing social emergency care to screen and connect patients with the resources they need to address their insecurities.[6,31] As members of the patients' care teams, EMS professionals should be included in any efforts to collect and apply information about patients' SDoH. Patient navigators and other hospital personnel collect data and add SDoH information to patients' medical records,[31,32] but hospital personnel should be aware of the EMS records' content and the reduced likelihood of social desirability bias or influence by the EMS professionals.

Social EM is a burgeoning sub-field of EM[6] and can be seen as a way for the EMS profession to expand its scope, as well. Calls to expand training and curricula for emergency practitioners[33,34] can be extended to EMS professionals to improve the quantity and quality of SDoH-related content in EMS records. While addressing SDoH in all medical records, terminology should be consistent to avoid miscommunication.[8] Systematic and prescribed formatting for verbal hand-offs from EMS to ED personnel have improved efficacy and information transmission,[11,16,18,35] and the National Emergency Medical Services Information System (NEMSIS)[36] has standardized and improved the collection of EMS data. The creation of a specific data collection tool can increase and improve information acquisition and neutral reporting of patients' SDoH.

Additionally, recent initiatives to address patients' needs and avoid unnecessary transports to overwhelmed EDs—such as the Emergency Triage, Treat, and Transport (ET3) Model[37]—by addressing SDoH through community engagement have resulted in fewer unnecessary calls to 9-1-1, fewer unnecessary visits to EDs, less out-of-service time for first responder units, and decreased incidence of patient falls.[38,39] All EMS personnel should learn about the resources available in their own communities for addressing SDoH (eg, emergency shelters, food banks, or home healthcare and outreach organizations). If EMS professionals are aware of support services in their communities, they may be more likely to help their patients make necessary connections. Emergency medical services personnel of all levels and in all organization types should undergo specific training to recognize and address patients' insecurities. Future research about EMS personnel's knowledge about SDoH, their roles in this type of data collection, and perceptions of education about the topic may be informative to EMS and other fields' implementation of interventions to improve longitudinal patient care.

Over the past several years, increased recognition and research linking emergency care and SDoH have significantly impacted the volume of literature in this salient area. These studies have examined SDoH and training,[33,34,40,41] documentation and screening,[8,23,42–44] interventions,[6,45,46] homelessness,[47] mental health,[48,49] insurance types,[50] and links to chronic or acute illness and injuries.[7,51–54] Nearly all of these studies focused on EDs, which are not the only points of contact for all patients seeking emergency care and lack the perspective of seeing from where a patient hails. Emergency medical services personnel have the benefit of sharing in patients' lived experiences and interacting with patients who may not subsequently present to EDs. This study provides a view from this novel vantage point.

## LIMITATIONS

The narratives analyzed in this study were from EMS records from various sources throughout the US, including first response agencies, transporting ambulance agencies, and flight EMS organizations. The certification levels of the EMS personnel were unknown during analysis. There may be differences in documentation of SDoH based on geographic location, organization types, or levels of training. Since this was a retrospective analysis of free-text narratives, we did not assess other sections of the records for information about patients' SDoH. Given the de-identified nature of this dataset, it was also unclear whether individual agencies provided guidance to their personnel about SDoH or their documentation. Additionally, this analysis leveraged records from a large convenience sample of EMS agencies that use a single, privately owned electronic health record system; thus, the generalizability of these findings to communities served by EMS agencies using other documentation systems is unknown.

The use of three qualitative researchers and joint analysis sessions may have increased the potential for groupthink, which could have narrowed the focus on themes and concepts for the benefit of consensus-building. Future studies should evaluate whether these variables are associated with SDoH documentation and valence of EMS personnel's perspectives. Use of the interpretive paradigm and hermeneutical approach could account for any potential differences in message reception and intention during documentation.

## CONCLUSION

Addressing social determinants of health can lead to improved health outcomes, reduced strain on healthcare systems, and decreased health spending. Emergency medical services professionals are uniquely positioned to collect and share information on patients' SDoH through their documentation, but the overwhelming majority of EMS records lack such content. Education about SDoH and their relationships to one another, along with training on how to neutrally include such content in their documentation can be beneficial for EMS professionals and their patients. The creation of standardized educational content and documentation tools to collect SDoH information and collections of organizations' community resources for addressing insecurities may improve EMS professionals' awareness, documentation, and treatment of SDoH.

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# Sexual Assault Nurse Examiners Lead to Improved Uptake of Services: A Cross-Sectional Study

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**Introduction:** Sexual Assault Nurse Examiners (SANE), who are trained to provide comprehensive and compassionate specialty care to sexual assault survivors, are increasingly used in the emergency department (ED), but there is little published literature to support their benefit. In this study we aimed to compare services offered and received by sexual assault survivors in the ED when care was provided by a SANE vs those with traditional care teams, hypothesizing that SANE utilization will be associated with improved uptake of recommended services.

**Methods:** This was a retrospective review examining all patient encounters in which a sexual assault was disclosed in a large, urban, adult ED between June 1, 2019–June 30, 2022. We extracted timeline information from the ED encounter, demographic information, resources offered to and accepted by the patient, clinical care data, and continuity of care data from the medical record. We used unadjusted and adjusted analyses to compare patient demographics and services offered and accepted between SANE and non-SANE encounters.

**Results:** We included a total of 182 encounters in the analysis, of which 130 (71.4%) involved SANEs. Demographics were similar between groups, except there was a larger proportion of cisgender men in the non-SANE group (14.0% vs 5.5%), and the timing of visits differed, with non-SANE visits more common during the overnight shift. All recommended testing, prophylaxis, and resources were offered more frequently during SANE visits, and all but one were more frequently accepted by patients during SANE visits, although not all comparisons reached statistical significance.

**Conclusion:** Patients who received care from a SANE were more often offered recommended services and resources and more frequently accepted them. Making SANE care available at all times to these vulnerable patients would both improve patient outcomes and allow hospitals to meet required quality metrics. States should consider expanding legislation to encourage and fund SANE coverage for all hospitals to support access to vital resources in the ED for survivors of sexual assault. [West J Emerg Med. 2023;24(5 Supplement)161–169.]

## INTRODUCTION

Sexual assault (SA) is a major public health issue that affects people of all socioeconomic and cultural backgrounds. Each year in the United States, more than 100,000 survivors of SA seek care in the emergency department (ED).[1] Understanding that survivors of SA are a vulnerable group with unique acute and chronic care needs, there have been recent moves toward implementing legislation that will help support comprehensive and compassionate hospital care for survivors, including the federal Survivors' Bill of Rights Act of 2016, the Illinois Sexual Assault Survivors Emergency Treatment Act (SASETA) amended in 2019, and the No Surprises for Survivors Act, introduced in 2022.[2–4] These laws aim to protect SA survivors from financial ruin after their hospital visit, ensure medical forensic kits are processed in an efficient and timely manner, establish care guidelines and reporting systems for hospitals that treat SA survivors, and promote the provision of comprehensive, trauma-informed care.

The goal of these initiatives is to address inequities in access to care faced by survivors of SA, among whom the most vulnerable members of society—particularly young, socioeconomically disadvantaged women— are disproportionately represented.[5–7] Survivors face many barriers to receiving optimal care, with fewer than one in five US hospitals providing all 10 metrics of what is considered "comprehensive medical care management" for SA survivors in the ED.[6] One proposed mechanism to address this gap is to use specially trained Sexual Assault Nurse Examiners (SANE).

Sexual Assault Nurse Examiner programs were developed in 1976 to augment training, address concerns of physicians about caring for survivors of sexual assault, decrease long ED wait times, and support sensitive and socially competent care.[8] Many emergency physicians and nurses feel unprepared and uncomfortable providing some or all necessary patient care in cases of SA.[9] They may also face significant challenges due to the unique ED environment, including crowding, caring for multiple patients simultaneously, or needing to care for patients who require immediate attention. Earlier studies have shown that when SANEs provide care, they do so in a compassionate, respectful, and safe manner that is associated with feelings of confidence and relief in survivors.[10,11] The SANEs are able to build a unique, trusting relationship with their patients that is focused on providing SA survivors with control and choices surrounding their care decisions.[12]

Sexual Assault Nurse Examiner programs are increasingly common, and there is rising awareness of the importance of specialized SANE training; however, there is still a nationwide shortage of SANEs.[13] Rural areas have few SANEs and are less likely than urban areas to have 24-hour continuous SANE coverage.[14] Even in urban areas, 85.5% of nurses indicate that they are not SANE-trained, yet they have cared for SA survivors in their healthcare institution.[13] While some studies have examined the impact of SANEs on the patient experience, few have evaluated the effects of SANE care on quality metrics in terms of the actual delivery of recommended services and resources.

We conducted this study at a large, urban, tertiary care hospital with a Level I trauma center. Approximately 60–80 adult survivors of SA visit our ED annually. In this ED, a SANE is unavailable in the adult ED approximately 20-30% of the time, mostly overnight. Care for a SA survivor is always provided by a SANE, if available; if not, then care is provided by a physician or non-physician clinician and a registered nurse, which is the standard of care. During a visit for SA, patients are offered a medical forensic examination kit, if appropriate, which can be used as evidence should a case go to trial, testing and prophylaxis for HIV and other sexually transmitted infections (STI), a pregnancy test, and emergency contraception. They should also have the opportunity to speak with police, a SA advocate, and social services, and access other hospital resources as needed, such as behavioral health support or safe housing options, and they are given a packet of post-visit resources before discharge. Both SANEs and registered nurses have access to a checklist of these items that should be completed during the ED visit. This study compared the rate at which these services were offered or accepted between encounters in which care was provided by a SANE vs those with traditional care teams, hypothesizing that SANEs would be more likely to offer services, and that their patients would be more likely to accept them. Increased uptake of recommended services with SANE care would support the adoption and expansion of SANE programs, which would ultimately address disparities in care faced by SA survivors.

*Population Health Research Capsule*

What do we already know about this issue?
*Few studies have examined the impact of Sexual Assault Nurse Examiners (SANE) on the patient experience, or evaluated their effects on delivery of recommended services.*

What was the research question?
*Were sexual assault survivors more likely to receive recommended healthcare services in the ED if they were cared for by a SANE?*

What was the major finding of the study?
*Patients cared for by a SANE were more likely to be offered advocate services ($P < 0.05$), medical forensic exam kits ($P < 0.05$), and resource packets ($P < 0.05$).*

How does this improve population health?
*Sexual assault survivors cared for by a SANE are more likely to receive recommended treatment in the ED, which may have major impacts on long-term outcomes for them.*

## METHODS

### Study Design

This was a retrospective review of all adult patient encounters in which a SA was disclosed (defined as a triage chief complaint or ED diagnosis code for SA) in the ED between June 1, 2019–June 30, 2022. Encounters were included even if the patient left before the visit was considered complete, provided any services had been offered. For patients who were included more than once (i.e., had two instances of SA during the study period), each encounter was considered an independent event, as the details of the assault and the ED encounter were unique. This study was approved by our institutional review board.

### Measures

Data extracted from the electronic health record (EHR) included the following: demographics (e.g., age, gender, race/ethnicity); the time the patient was admitted to the ED; days since incident reported; clinical care data (e.g., STI testing and prophylaxis, forensic kit collection, pregnancy testing and provision of emergency contraceptives); and continuity of care data (e.g., linkage to primary care or mental health resources). Encounter time was divided according to shift times in the ED, with 6:30 AM–2:30 PM considered the morning, 2:30 PM–10:30 PM considered the afternoon, and 10:30 PM–6:30 AM considered overnight.

The primary outcomes of this study were the proportions of patients offered and accepting services when cared for by a SANE or non-SANE team. In certain cases, for which a service was not applicable during the ED visit (e.g., already completed elsewhere, too much time passed since the incident, or pregnancy testing for individuals without a uterus), these were removed from the denominator of services offered. If an applicable service was not explicitly documented to have been offered or accepted in the EHR, it was considered not offered or not accepted for the purposes of the analysis. If a service was partially accepted (e.g., prophylaxis for gonorrhea and chlamydia but not hepatitis), the outcome (e.g., STI prophylaxis) was considered accepted in the analysis.

### Statistical Analyses

We compared patient demographics and the proportion of patients offered and accepting services to identify differences between SANE and non-SANE evaluated patients, using a *t*-test for continuous variables and chi-square ($\chi2$) test or the Fisher exact test for categorical variables. We used logistic regression to calculate odds ratios between groups, adjusting for patient arrival time as a potential confounder in the model. Offering the medical forensic kit, accepting the discharge resource packet, and accepting the social work consult were excluded from the logistic regression analysis due to the presence of zero responses. Differences were considered significant at $P \leq 0.05$. We performed all statistical analyses using R version 4.2.1. (R Core Team, R Foundation for Statistical Computing, Vienna, Austria).

## RESULTS

### Participant Characteristics

Over the three-year study period, we identified 182 adult ED encounters for SA, including 177 unique individuals, five of whom presented on two separate occasions for SA. Of all encounters, 130 (71.4%) received care from a SANE, while 52 (28.6%) received the standard of care with a physician/nurse team (Table 1). Cisgender women (90.4%) and non-Hispanic Black individuals (82.7%) represented the majority of encounters, with a mean age of 30 years (range 18–79). Demographics were similar between the two groups; however, the non-SANE group had more cisgender men than the SANE group (14.0% vs 5.5%) and no transgender individuals. The groups differed by time of patient arrival, with a larger proportion of SANE encounters (48.5%) in the afternoon, and the largest proportion of non-SANE encounters (50.0%) during the overnight shift ($P < 0.01$). Both SANE and non-SANE groups presented to the ED within similar time frames after the assault (mean 1.16 days, SD 1.44, non-SANE vs mean 1.28 days, SD 1.72, SANE; $P = 0.65$). Additionally, there was a significant difference in the number of patients who left before treatment was complete (15.4% non-SANE vs 2.3% SANE, $P < 0.01$).

### Resources, Medical Care, and Services Offered and Accepted

While not all differences were statistically significant, every type of recommended resource or care studied was offered in a higher proportion of SANE encounters than non-SANE encounters (Table 2). Significant differences observed in services offered between SANE and non-SANE groups included SA advocate (97.7% SANE vs 89.4% non-SANE; odds ratio [OR] 5.04, 95% confidence interval [CI] 1.16-21.99, $P = 0.03$), medical forensic kit (100% vs 93.6%, $P = 0.02$); pregnancy testing (96.2% vs 86.1%; OR 4.11, 95% CI 1.09-15.54, $P = 0.05$); and discharge resource packet (69.0% vs 48.9%; OR 2.33, 95% CI 1.16-4.65, $P = 0.03$). A higher percentage of the SANE group was offered emergency contraception (94.3% vs 82.4%, $P = 0.07$), although not significant. The proportion of encounters offered safe disposition planning (28.7% vs 21.7%) or a social work consult (33.3% vs 27.7%) was markedly low in both groups, although it is unknown whether this was related simply to lack of documentation around these services.

For those services documented to have been applicable and offered, the proportion of recommended resources and care accepted in SANE encounters was also higher for every service category except the discharge resource packet, which was comparable between groups (98.9% SANE vs

**Table 1.** Demographics of emergency department patient encounters for sexual assault from June 1, 2019–June 30, 2022, by type of care team.

| | All encounters (n = 182) | | SANE (n = 130) | | Non-SANE (n = 52) | | |
|---|---|---|---|---|---|---|---|
| | n | (%) | n | (%) | n | (%) | *P*-value |
| Age (mean, SD) | 30.2 | (13.1) | 30.1 | (13.5) | 30.6 | (12.3) | 0.81 |
| Gender$^+$ | | | | | | | 0.11 |
| Female | 160 | (90.4%) | 117 | (92.1%) | 43 | (86.0%) | |
| Male | 14 | (7.9%) | 7 | (5.5%) | 7 | (14.0%) | |
| Transgender/Non-binary | 3 | (1.7%) | 3 | (2.4%) | 0 | (0.0%) | |
| Race/Ethnicity$^+$ | | | | | | | 0.83 |
| Non-Hispanic White | 14 | (8.4%) | 10 | (8.1%) | 4 | (9.3%) | |
| Non-Hispanic Black | 138 | (82.7%) | 101 | (81.5%) | 37 | (86.0%) | |
| Hispanic | 9 | (5.4%) | 8 | (6.5%) | 1 | (2.3%) | |
| Other | 6 | (3.6%) | 5 | (4.0%) | 1 | (2.3%) | |
| Patient arrival time$^\wedge$ | | | | | | | <0.01* |
| Morning | 48 | (26.4%) | 32 | (24.6%) | 16 | (32.0%) | |
| Afternoon | 73 | (40.1%) | 63 | (48.5%) | 10 | (18.0%) | |
| Overnight | 61 | (33.5%) | 35 | (26.9%) | 26 | (50.0%) | |
| Days since incident (mean, SD) | 1.19 | 1.51 | 1.16 | 1.44 | 1.28 | 1.72 | 0.65 |

*SANE*, Sexual Assault Nurse Examiner.
*Indicates a *P*-value ≤ 0.05; Fisher tests were conducted due to the small cell counts.
$^+$Gender (n = 177) and race/ethnicity (n = 177), given that five individuals had two encounters.
$^\wedge$Patient arrival times were categorized into the following: morning 6:30 AM–2:30 PM; afternoon 2:30 PM–10:30 PM; and overnight 10:30 PM–6:30 AM.
Missing values for race/ethnicity (n = 15, 8%) and days since incident (n = 7, 4%).

100.0% non-SANE, *P* = 1.00). A much larger proportion of encounters in the SANE group accepted SA advocate services (78.7% vs 61.9%; OR 2.28, 95% CI 1.07-4.84, *P* = 0.05) and a medical forensic kit (88.4% vs 68.2%; OR 3.55, 95% CI 1.54-8.15, *P* < 0.01). Large differences that did not reach statistical significance were found for several service types, including making a police report (82.4% vs 67.5%), HIV prophylaxis (76.3% vs 64.1%), HIV testing (93.4% vs 85.7%) and STI testing (93.5% vs 86.0%), emergency contraception (66.3% vs 57.1%), and social worker consultation (100% vs 84.6%).

Because SANE encounters occurred more often during the afternoon and non-SANE encounters more often overnight, additional models were created to adjust for the effects of patient arrival time on services offered and accepted (Tables 3 and 4). In the adjusted analysis, SANE encounters were still more likely to offer recommended services such as SA advocates (adjusted [aOR] 5.51, 95% CI 1.26-24.05, *P* = 0.03) and to accept both the advocate services (aOR 2.60, 95% CI 1.22-5.52, *P* = 0.02) and the medical forensic kit (aOR 2.90, 95% CI 1.26-6.66, *P* = 0.02). Of note, after adjusting for arrival time, the higher proportion of SANE encounters completing a police report was significant (aOR 2.63, 95% CI 1.17-5.93, *P* = 0.03). While the non-SANE group had a higher proportion of cisgender men than the SANE group (Table 1), the model was not adjusted for patient gender, as this observed difference did not reach statistical significance.

## DISCUSSION

We found that survivors cared for by a SANE were more often offered the recommended care and resources in every category examined, and they accepted this offer more often for all but one category. The SANEs were significantly more likely to offer a pregnancy test and emergency contraception, and survivors cared for by a SANE were significantly more likely both to be offered and to accept SA advocate services and a medical forensic examination kit. While only a few categories reached statistical significance, this is likely due to the small sample size inherent in studying a relatively uncommon event, and the results of this study suggest major potential benefits from SANE care.

Recent data shows a concerning trend in US ED visits for SA, which have increased more than 1,533.0% from 2006 to 2019.[5] Young, low-income women are disproportionately represented among survivors of SA.[5] Survivors may have increased risk for a variety of mental health complications, substance use, and chronic health conditions.[15–17] Providing

**Table 2.** Bivariate analysis of services offered and accepted by emergency department patients evaluated after sexual assault from June 1, 2019–June 30, 2022, by type of care team.

| | SANE (n = 130) | | Non-SANE (n = 52) | | *P*-value |
|---|---|---|---|---|---|
| | n/N | (%) | n/N | (%) | |
| Testing and prophylaxis | | | | | |
| HIV testing | | | | | |
| Offered$^+$ | 122/128 | (95.3%) | 42/46 | (91.3%) | 0.46 |
| Accepted$^+$ | 113/121 | (93.4%) | 36/42 | (85.7%) | 0.20 |
| STI testing | | | | | |
| Offered$^+$ | 124/129 | (96.1%) | 43/47 | (91.5%) | 0.25 |
| Accepted$^+$ | 115/123 | (93.5%) | 37/43 | (86.0%) | 0.20 |
| Pregnancy testing | | | | | |
| Offered$^+$ | 102/106 | (96.2%) | 31/36 | (86.1%) | 0.05* |
| Accepted$^+$ | 94/101 | (93.1%) | 28/31 | (90.3%) | 0.70 |
| HIV prophylaxis | | | | | |
| Offered$^+$ | 115/126 | (91.3%) | 39/44 | (88.6%) | 0.56 |
| Accepted | 87/114 | (76.3%) | 25/39 | (64.1%) | 0.20 |
| STI prophylaxis | | | | | |
| Offered$^+$ | 122/129 | (94.6%) | 41/46 | (89.1%) | 0.31 |
| Accepted | 103/121 | (85.1%) | 33/41 | (80.5%) | 0.65 |
| Emergency contraception | | | | | |
| Offered$^+$ | 99/105 | (94.3%) | 28/34 | (82.4%) | 0.07 |
| Accepted | 65/98 | (66.3%) | 16/28 | (57.1%) | 0.50 |
| Services and resources | | | | | |
| Medical forensic kit | | | | | |
| Offered$^+$ | 129/129 | (100.0%) | 44/47 | (93.6%) | 0.02* |
| Accepted | 114/129 | (88.4%) | 30/44 | (68.2%) | <0.01* |
| Sexual assault advocate | | | | | |
| Offered$^+$ | 127/130 | (97.7%) | 42/47 | (89.4%) | 0.03* |
| Accepted | 100/127 | (78.7%) | 26/42 | (61.9%) | <0.05* |
| Police report | | | | | |
| Offered to call$^+$ | 119/125 | (95.2%) | 40/44 | (90.9%) | 0.29 |
| Report complete | 98/119 | (82.4%) | 27/40 | (67.5%) | 0.08 |
| Resource packet | | | | | |
| Offered | 89/129 | (69.0%) | 22/45 | (48.9%) | 0.03* |
| Accepted$^+$ | 88/89 | (98.9%) | 22/22 | (100.0%) | 1.00 |
| Social worker consult | | | | | |
| Offered | 43/129 | (33.3%) | 13/47 | (27.7%) | 0.60 |
| Accepted$^+$ | 43/43 | (100.0%) | 11/13 | (84.6%) | 0.05 |
| Safe discharge planning | | | | | |
| Offered | 37/129 | (28.7%) | 10/46 | (21.7%) | 0.47 |
| Accepted$^+$ | 36/37 | (97.3%) | 9/10 | (90.0%) | 0.38 |
| Left before treatment complete | 3/130 | (2.3%) | 8/52 | (15.4%) | <0.01 |

*SANE*, Sexual Assault Nurse Examiner; *STI*, sexually transmitted infections.
*Indicates a *P*-value $\leq 0.05$; $^+$Fisher tests were performed due to small cell counts.

**Table 3.** Odds ratios of services offered to emergency department patients evaluated after sexual assault from June 1, 2019–June 30, 2022, by type of care team.

| | Unadjusted odds ratio | 95% Confidence interval | *P*-value | Adjusted odds ratio | 95% Confidence interval | *P*-value |
|---|---|---|---|---|---|---|
| Testing and prophylaxis | | | | | | |
| HIV testing | 2.35 | (0.77, 7.24) | 0.13 | 1.93 | (0.63, 5.95) | 0.27 |
| STI testing | 2.33 | (0.76, 7.16) | 0.14 | 2.40 | (0.78, 7.36) | 0.15 |
| Pregnancy testing | 1.44 | (1.00, 16.96) | 0.62 | 1.41 | (0.87, 14.79) | 0.64 |
| HIV prophylaxis | 1.80 | (0.82, 3.95) | 0.14 | 1.87 | (0.86, 4.10) | 0.14 |
| STI prophylaxis | 1.39 | (0.55, 3.48) | 0.49 | 2.11 | (0.48, 3.04) | 0.70 |
| Emergency contraception | 1.43 | (0.61, 3.38) | 0.41 | 1.61 | (0.68, 3.80) | 0.29 |
| Services and resources | | | | | | |
| Medical forensic kit | 3.55 | (1.54, 8.15) | <0.01* | 2.90 | (1.26, 6.66) | 0.02* |
| Sexual assault advocate | 2.28 | (1.07, 4.84) | 0.03* | 2.60 | (1.22, 5.52) | 0.02* |
| Police report | 2.25 | (1.00, 5.06) | 0.05 | 2.63 | (1.17, 5.93) | 0.03* |
| Resource packet | N/A | | | N/A | | |
| Social worker consult | N/A | | | N/A | | |
| Safe discharge planning | 4.00 | (0.23, 70.30) | 0.34 | 3.64 | (0.21, 63.91) | 0.40 |

*STI*, sexually transmitted infections.
*Indicates a *P*-value ≤ 0.05; reference group = non-Sexual Assault Nurse Examiners. Analyses are adjusted for patient arrival time. Odds ratio analysis could not be calculated for N/A entries due to 0 responses in a single group.

**Table 4.** Odds ratios of services accepted by emergency department patients evaluated after sexual assault from June 1, 2019, through June 30, 2022, by type of care team.

| | Unadjusted odds ratio | 95% Confidence interval | *P*-value | Adjusted odds ratio | 95% Confidence interval | *P*-value |
|---|---|---|---|---|---|---|
| Testing and prophylaxis | | | | | | |
| HIV testing | 1.94 | (0.52, 720) | 0.32 | 2.04 | (0.55, 7.58) | 0.32 |
| STI testing | 2.31 | (0.59, 8.99) | 0.23 | 2.04 | (0.52, 7.94) | 0.33 |
| Pregnancy testing | 4.11 | (1.09, 15.54) | 0.04* | 3.59 | (0.95, 13.55) | 0.08 |
| HIV prophylaxis | 1.34 | (0.44, 4.10) | 0.61 | 1.07 | (0.35, 3.26) | 0.92 |
| STI prophylaxis | 2.13 | (0.64, 7.06) | 0.22 | 1.59 | (0.48, 5.29) | 0.47 |
| Emergency contraception | 3.54 | (1.05, 11.78) | 0.04* | 3.00 | (0.90, 9.97) | 0.08 |
| Services and resources | | | | | | |
| Medical forensic kit | N/A | | | N/A | | |
| Sexual assault advocate | 5.04 | (1.16, 21.99) | 0.03* | 5.51 | (1.26, 24.05) | 0.03* |
| Police report | 1.98 | (0.53, 7.39) | 0.31 | 1.87 | (0.50, 6.96) | 0.37 |
| Resource packet | 2.33 | (1.16, 4.65) | 0.02* | 1.96 | (0.98, 3.93) | 0.07 |
| Social worker consult | 1.21 | (0.58, 2.54) | 0.59 | 1.05 | (0.50, 2.19) | 0.91 |
| Safe discharge planning | 1.45 | (0.65, 3.23) | 0.36 | 1.34 | (0.60, 2.98) | 0.49 |

*STI*, sexually transmitted infections.
*Indicates a *P*-value ≤ 0.05; Reference group = non-Sexual Assault Nurse Examiners. Analyses are adjusted for patient arrival time. Odds ratio analysis could not be calculated for N/A entries due to 0 responses in a single group.

comprehensive and trauma-informed care to survivors of SA in the ED is vital to the long-term outcomes for these vulnerable patients. However, time constraints, crowding, lack of awareness or training in trauma-informed care, and many other challenges of the ED environment can present major obstacles.

Recent federal and state laws have been passed or proposed to try to address this problem, requiring certain standards for all visits for SA. For example, the Illinois SASETA act created universal care and reporting guidelines and requires EDs to have continuous coverage by a SANE or a clinician with equivalent training.[4] Guidelines from the American College of Emergency Physicians on management of patients presenting after SA emphasize the importance of "specially trained, non-physician medical personnel," which may include SANEs, and "access to appropriate medical, technical, and psychological support" for patients.[18] In addition, with the recent increasing popularity of the value-based reimbursement model, there will be financial incentives for hospitals to provide services to SA survivors beyond basic medical care.[19] Similarly, there may be financial penalties or legal ramifications for hospitals that do not meet these quality metrics in states that have implemented laws like SASETA.

The SANE programs have been proposed to fill these gaps, using dedicated care personnel with specialized training in caring for survivors of SA. These programs have been shown to reduce patient wait times, increase quality of examination and evidence collection, and provide overall comprehensive and compassionate care in a timely manner.[20] Despite growing evidence and guidelines supporting SANE services, SANE utilization and availability are highly variable. One study found that 35.5% of hospitals had no access to SANE services at all.[13] Hiring and retaining a specially trained group of nurses to be available at all times, if needed, is expensive and challenging. For hospitals without the means to expand SANE coverage, community efforts have laid the groundwork for telehealth SANE coverage in rural areas.[21]

While there is a growing body of evidence demonstrating the benefits of SANE care, thus far little has been published on the effect of SANE care on quality metrics, which are important both for individual patient outcomes and regulatory and financial reasons. Evidence of an association between SANE care and improved service delivery could encourage expanded support for the development and adoption of SANE programs. Prior studies suggest that specialized training may help nurses approach patients about receiving medical services for a SA in a manner that encourages engagement in care.[11,22] When care is provided by a SANE, patients report positive psychological outcomes, such as feelings of empowerment and compassion.[11,22]

One study found that SANEs go beyond "collecting evidence," and that "the manner in which it was being done" made a positive impact on patients.[10] Patients interviewed in that study found that SANEs provided a "clear and thorough explanation of the exam process and findings."[10] In the present study, more survivors completed treatment in the ED when care was provided by a SANE. This may reflect the additional training in trauma-informed care or the lack of concurrent clinical duties during SANE care, both of which may lead patients to engage more in their care. Additionally, when services were offered to survivors, they were accepted at much higher rates when offered by a SANE. This likely reflects the way in which the resource was presented or described to the survivor, which certainly could be affected by training and awareness.

Involvement of SANES in care is associated with more medical services provided, more forensic kits collected, and more police reports filed.[23] The same trend was identified for SANE care in cases of pediatric SA.[24] In the current study, after adjusting for patient arrival time, police reports were completed during SANE encounters at a significantly higher rate. The police reporting options for patients are complex, there can be significant delays waiting for police to arrive to file a report, and non-SANE nurses may not be familiar with all the options, which may lead to missed opportunities to file a police report.

Non-SANE nurses caring for SA survivors have a checklist of services to offer and, therefore, theoretically should offer these services at the same rate. However, SANEs receive substantial additional training that may afford them a better understanding of the importance of these resources and the skills to discuss them sensitively with a traumatized patient. A SANE-trained nurse may have a more positive attitude toward SA survivors in general.[13] They may also have more time to talk with the patients, as they are not responsible for any other patient care duties at the same time; or the higher resource acceptance rates among SANE patients may simply reflect the fact that SANE nurses have self-selected for additional training due to an interest in helping SA survivors, which may allow them to provide more sensitive care. Regardless of the reason, given mounting evidence to support the benefits of SANE care to patient and quality outcomes, SANE programs should be expanded and supported whenever possible.

## LIMITATIONS

The major limitation of this study was the reliance on retrospective, routine care data collected from the EHR. It is possible that some services or resources were offered and/or accepted by patients and simply not documented, and it is unknown whether one group was more likely to document than the other. Any service not documented was considered to not have been offered or received for the purposes of the analysis, which may have affected the outcomes if a large proportion of those services not documented were either not applicable or were actually provided. Additionally, there were five individuals who presented for SA twice during the study period. Each encounter was analyzed independently, but it is possible that the first ED experience impacted their choices during the second encounter. However, given that these individuals represented such a small proportion of the sample, it is unlikely that their inclusion significantly affected the results of the study. Due to the small sample size, the effects of survivor gender could not be fully explored, as gender differences between groups were not statistically significant. It is possible that the larger proportion of cisgender men in the non-SANE cohort affected outcomes, or that their gender affected either the likelihood of SANE care or their likelihood of accepting services, as men may be less trusting of their care team due to significant stigma.[24,25]

Furthermore, much of the study period included the COVID-19 pandemic, which may have impacted clinical documentation, availability of ED services, or willingness of patients to remain in the ED while waiting for results or referrals, although these should have impacted both SANE and non-SANE groups similarly. Lastly, this was a single-site study. While it is likely that the results are generalizable to other large, urban, adult EDs, further studies are needed to validate these results in other ED settings.

## CONCLUSION

This study revealed that sexual assault survivors in the ED who received care from a Sexual Assault Nurse Examiner were more likely to be offered and to accept standard-of-care SA services and resources. This may reflect the increased sensitivity and expanded skillset afforded by SANE training, or the ability of a dedicated SANE to work outside the time, space, and workflow constraints of a busy ED. While arranging for continuous SANE coverage in the ED can be logistically and financially challenging, it may not only benefit patient outcomes but allow hospitals to meet recommended quality metrics, which may be required by governing bodies or even tied to reimbursement in the value-based care model. Legislative support for SANE coverage should be expanded nationally, with parallel increases in funding to help hospitals implement continuous SANE coverage. This will positively impact the quality of care for survivors of SA, who may then be more likely to receive the services and treatment that they need after a traumatic event.

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# Racial Differences in Triage for Emergency Department Patients with Subjective Chief Complaints

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**Introduction:** Black and Hispanic patients are frequently assigned lower acuity triage scores than White patients. This can lead to longer wait times, less aggressive care, and worse outcomes. In this study we aimed to determine whether these effects are more pronounced for patients with subjective complaints.

**Methods:** We performed a retrospective analysis for all adult visits between 2016-2019 at an urban academic emergency department (ED) with acuity-based pods. We determined rates of initial high-acuity triage both across all patients and among the subset located in the high-acuity pod at time of disposition (either through initial assignment or subsequent up-triage). Analysis was performed for common chief complaints categorized as subjective (chest pain, dyspnea, any pain); observed (altered mental status); numeric (fever, hypotension); or protocolized (stroke, ST-elevation myocardial infarction). We constructed logistic regression models to control for age, race, gender, method of arrival, and final disposition.

**Results:** We analyzed 297,355 adult ED visits. Black and Hispanic patients were less likely to be triaged to high-acuity beds (adjusted odds ratio [aOR] 0.76, 95% confidence interval [CI] 0.73-0.79 for Black, and aOR 0.87, 95% CI 0.84-0.90 for Hispanic patients). This effect was more pronounced for those with subjective chief complaints, including chest pain (aOR 0.76, 95% CI 0.73-0.79 for Black and 0.88, 95% CI 0.78-0.99 for Hispanic patients), dyspnea (aOR 0.79, 95% CI 0.68-0.92 and 0.8, 95% CI 0.72-0.99), and any pain (aOR 0.83, 95% CI 0.75-0.92 and 0.89, 95% CI 0.82-0.97, respectively). Among patients in the high-acuity pod at time of disposition, Black and Hispanic patients were disproportionately triaged to lower acuity pods on arrival (aOR 1.47, 95% CI 1.33-1.63 for Black and aOR 1.27, 95% CI 1.15-1.40 for Hispanic adults), with significant differences observed only for subjective chief complaints. No differences were observed for observed, objective, or protocolized complaints in either analysis.

**Conclusion:** Black and Hispanic adults, including those who ultimately required high-acuity resources, were disproportionately triaged to lower acuity pods. This effect was more pronounced for patients with subjective chief complaints. Additional work is needed to identify and overcome potential bias in the assessment of patients with subjective chief complaints in ED triage. [West J Emerg Med. 2023;24(5.1)170–175.]

## INTRODUCTION

Over the past several decades, a robust literature has developed demonstrating racial-, gender-, and language-based disparities in the quality and intensity of medical care in the United States.[1–5] Black and Hispanic patients are consistently offered less intensive care,[6–8] subjected to longer wait times,[9] and seen as less acutely ill then their White counterparts, even when controlling for other possible explanatory factors.[10,11] In some cases, these differences can lead to delays in care, inadequate intensity of intervention or monitoring,[12–16] and greater risk of adverse outcomes.[17]

Triage provides a natural context in which to assess encounter-level drivers of such disparities because of both its well-defined, episodic nature and because it initiates a treatment path that may influence a patient's care throughout their clinical course. In this study we sought to 1) determine whether racial differences are present in either initial rates of high-acuity triage or need for later re-assignment to a high-acuity pod and 2) whether these differences vary by patient chief complaint. We hypothesized that Black and Hispanic patients experience higher rates of under-triage, and these differences are more pronounced for patients presenting with subjective or symptom-based chief complaints. This hypothesis is in keeping with prior literature suggesting that subjective assessments with incomplete information may lead to greater introduction of bias,[18] whereas chief complaints that trigger clear protocols (such as ST-elevation myocardial infarction [STEMI] or stroke alerts) may tend toward more prescriptive and, therefore, less biased triage processes. We hope that by identifying the circumstances under which racial disparities in triage appear, we may better understand and thereby intervene and act upon the phenomena that drive them.

*Population Health Research Capsule*

What do we already know about this issue?
*Racial disparities in triage can lead to less aggressive care and worse outcomes.*

What was the research question?
*Is race-based triage more pronounced for patients with subjective chief complaints, such as pain and dyspnea?*

What was the major finding of the study?
*Black and Hispanic patients were less likely than similar White patients to be triaged to high-acuity bays when presenting with chest pain (aOR 0.76 for Black and 0.88 for Hispanic patients), dyspnea (aOR 0.79 and 0.80), or any pain (aOR 0.83 and 0.89). However, patients whose complaints activated protocolized pathways (e.g., "Code Stroke") were triaged identically across racial groups.*

How does this improve population health?
*Further integration of objective data (eg, vital signs and ECGs) and protocols for specific complaints may help reduce disparities in triage.*

## METHODS

We conducted a retrospective analysis of all adult patient visits between 2016–2019 to an urban academic ED with nursing-led triage to acuity-based pods (including low-acuity/fast-track, mid-acuity, and critical-care/high-acuity pods) based on hospital-specific, resource-based guidelines. Our analysis considered both the full set of visits and selected chief complaints, which were chosen to represent four types of complaint: "subjective" complaints were those relating to patients' reports of their own symptoms; "objective" complaints were defined by numeric cutoffs in prehospital or home assessments; "observed" complaints were subjectively defined but reported based on assessments by a third party; and finally, "protocolized" chief complaints were defined as those for which triage is assigned by protocol.

For this, we included the three most common chief complaints with at least a 20% rate of high-acuity triage (chest pain and shortness of breath as "subjective" complaints and altered mental status as "observed"). "Objective" complaints included both the most common and highest acuity complaints with numerical definitions (fever and hypotension). Two common "protocolized" chief complaints (STEMI and stroke) were also included. To better assess a broad group of subjective complaints, we assessed an additional category of any chief complaint including "pain," (approximately 10% of which was initially triaged as high acuity). Chief complaints were identified via search and manual review of free-text chief complaints entered at triage. Racial categories were taken from data entered at time of registration, with pooled categories including Black, White, Asian, multiracial, other, and unknown. Records with missing variables (316 total) were excluded from the analysis.

We evaluated two outcomes of interest: relative probability of initial triage to the high-acuity pod (Table 2a) and relative probability of having required up-triage (reassignment to the

**Table 1.** Summarized racial, gender, and age distribution of full adult emergency department sample 2016–2019.

| | Mean age (years) | Percentage male | Percentage high-acuity triage | Number |
|---|---|---|---|---|
| White | 50.7 | 52.9% | 19% | 210,596 |
| Black | 42.4 | 52.7% | 11.7% | 32,645 |
| Hispanic | 34.0 | 49.9% | 10.6% | 49,973 |
| Asian | 41.5 | 47.1% | 14.3% | 14,875 |
| Multiracial | 41.48 | 51.5% | 14.6% | 8,216 |
| Other | 37.7 | 51.4% | 11% | 10,833 |
| Unknown | 39.4 | 53.7% | 20.1% | 7,154 |

**Table 2.** (A) Adjusted odds of initial triage to high-acuity pod and (B) adjusted odds of initial lower-acuity triage among patients completing emergency department (ED) course in high-acuity pod among adult ED patients 2016–2019, stratified by chief complaint. Controls included for age, age squared, age categories (18–44 years, 45–64 years, 65+ years), ED death and admission. "Other" and "Unknown" racial categories omitted for clarity. STEMI and stroke-alert patients were uniformly triaged to a high-acuity setting and, therefore, regression analysis was not possible. Results reported as adjusted odds ratios with 95% confidence intervals.

**2A. Adjusted odds of triage to high-acuity pod by race**

| Chief complaint | All patients | Chest pain | Dyspnea | Pain | Fever | Hypotension | AMS |
|---|---|---|---|---|---|---|---|
| Black | 0.76*** | 0.77*** | 0.79** | 0.83*** | 1.08 | 0.99 | 1.06 |
| | (0.73, 0.79) | (0.67, 0.88) | (0.68, 0.92) | (0.75, 0.92) | (0.85, 1.37) | (0.70, 1.41) | (0.44, 2.54) |
| Hispanic | 0.87*** | 0.88* | 0.84* | 0.89** | 1 | 0.99 | 1.07 |
| | (0.84, 0.90) | (0.78, 0.99) | (0.72, 0.99) | (0.82, 0.97) | (0.77, 1.30) | (0.76, 1.29) | (0.46, 2.51) |
| Asian | 1.06* | 1.07 | 1.15 | 1.13 | 1.24 | 1.33* | 2.63 |
| | (1.01, 1.12) | (0.88, 1.30) | (0.92, 1.44) | (0.99, 1.30) | (0.84, 1.82) | (1.01, 1.75) | (0.74, 9.30) |
| Multiracial | 0.91* | 1.15 | 0.9 | 1.05 | 0.69 | 1.05 | 2.32 |
| | (0.85, 0.98) | (0.88, 1.50) | (0.68, 1.20) | (0.88, 1.26) | (0.44, 1.06) | (0.62, 1.78) | (0.27, 20.20) |
| Gender (male) | 1.26*** | 1.55*** | 1.27*** | 1.58*** | 1.03 | 1.21* | 1.23 |
| | (1.23, 1.28) | (1.43, 1.68) | (1.18, 1.38) | (1.50, 1.67) | (0.91, 1.18) | (1.04, 1.40) | (0.82, 1.84) |
| BIBA[a] | 3.01*** | 2.66*** | 1.78*** | 2.59*** | 2.16*** | 2.39*** | 1.80** |
| | (2.95, 3.07) | (2.45, 2.88) | (1.64, 1.93) | (2.45, 2.73) | (1.88, 2.48) | (2.04, 2.81) | (1.20, 2.69) |
| Observations | 297,034 | 16,171 | 13,150 | 73,486 | 4,108 | 6,331 | 638 |

**2B. Adjusted odds of initial lower-acuity triage for patients requiring high-acuity resources prior to disposition by race**

| Chief complaint | All patients | Chest pain | Dyspnea | Pain | Fever | Hypotension | AMS |
|---|---|---|---|---|---|---|---|
| Black | 1.47*** | 1.68*** | 1.3 | 1.47*** | 1.15 | 0 | 1.28 |
| | (1.33, 1.63) | (1.25, 2.26) | (0.90, 1.89) | (1.18, 1.83) | (0.49, 2.70) | (0.00, Inf) | (0.64, 2.55) |
| Hispanic | 1.27*** | 1.08 | 1.54* | 1.11 | 1.34 | 1.28 | 1.17 |
| | (1.15, 1.40) | (0.79, 1.47) | (1.06, 2.24) | (0.90, 1.37) | (0.72, 2.48) | (0.12, 13.10) | (0.52, 2.63) |
| Asian | 1.09 | 1.09 | 1.01 | 1.15 | 1.23 | 2.3 | 1.52 |
| | (0.94, 1.26) | (0.70, 1.72) | (0.57, 1.79) | (0.85, 1.56) | (0.65, 2.35) | (0.26, 20.40) | (0.53, 4.37) |
| Multiracial | 1.11 | 1.64 | 1 | 1.59* | 1.68 | 0 | 2.06 |
| | (0.91, 1.36) | (0.98, 2.77) | (0.45, 2.19) | (1.08, 2.35) | (0.53, 5.26) | (0.00, Inf) | (0.70, 6.05) |
| Gender (male) | 0.91** | 1.03 | 0.77* | 0.91 | 0.94 | 0.35 | 1.34 |
| | (0.86, 0.96) | (0.85, 1.25) | (0.63, 0.95) | (0.80, 1.03) | (0.66, 1.35) | (0.08, 1.48) | (0.90, 2.02) |
| BIBA[a] | 0.65*** | 0.52*** | 0.87 | 0.65*** | 0.84 | 0.62 | 0.61* |
| | (0.61, 0.69) | (0.43, 0.63) | (0.71, 1.07) | (0.57, 0.74) | (0.57, 1.23) | (0.15, 2.52) | (0.40, 0.94) |
| Observations | 51,902 | 5,535 | 4,564 | 7,845 | 932 | 419 | 1,895 |

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

*AMS*, altered mental status; *BIBA*, brought in by ambulance.

high-acuity pod) for patients ultimately requiring high-acuity care (Table 2b). Logistic regression was performed to assess the relationship between these outcome variables and self-reported race, across both the full sample and by chief complaint. Controls were included for gender, age (including squared and bin terms), method of arrival (ambulance vs walk-in), and final disposition (admission, observation, discharge, or death). We performed analysis was performed in R 4.1.0 (R Foundation for Statistical Computing, Vienna, Austria),[19,20] with results reported as odds ratios for ease of interpretation. Although moderate collinearity was identified among our control variables, variance inflation factors were <2 in all cases, and main effects were robust to multiple model specifications. (See Appendix 1 for representative sensitivity analyses.) The study was reviewed and approved by the hospital Institutional Ethics Review Board.

## RESULTS

Of 297,355 adult ED visits analyzed, 66% (196,040) were of patients who identified as White, approximately 10%

(29,214) who identified as Black, and 13% (38,396) who identified as Hispanic. Patients were 48% (143,079) female, 52% (154,268) male, and had a mean age of 51 years.

Overall, the adjusted odds of triage to the high acuity pod were lower for Black (adjusted odds ratio [aOR] 0.76, 95% confidence interval [CI] 0.73-0.79 and Hispanic patients aOR 0.87, 95% CI 0.84-0.90). Among our identified chief complaints, this effect was only demonstrated for patients with subjective chief complaints, including chest pain (aOR 0.76, 95% CI 0.73, 0.79 for Black, and aOR 0.88, 95% CI 0.78, 0.99 for Hispanic patients), dyspnea (aOR 0.79, 95% CI 0.68-0.92 for Black, and aOR 0.84, 95% CI 0.72-0.99 for Hispanic patients), and any pain (aOR 0.83, 95% CI 0.75-0.92 for Black, and aOR 0.89, 95% CI 0.82-0.97 for Hispanic patients). No differences were detected across observed, numeric, or protocolized complaints.

We performed analysis of need for up-triage on the subset of patients located in the high-acuity pod at time of ED disposition (death, hospital admission, or discharge), constituting approximately 16% of adult visits (51,959). Patients were considered to have required up-triage if they were initially assigned to a lower acuity pod and required reassignment to the high-acuity pod during their ED course. Racial differences were also identified in this measure, with Black and Hispanic adults experiencing higher rates of up-triage. This was demonstrated across the full all-complaint study sample (aOR of 1.47, 95% CI 1.3-1.63 for Black, and aOR of 1.27, 95% CI 1.15-1.40 for Hispanic adults), as well as for Black patients presenting with chest pain (aOR 1.68, 95% CI 1.25-2.26), or any pain (aOR 1.47, 95% CI 1.1-1.83) and Hispanic patients presenting with dyspnea/shortness of breath (aOR 1.54, 95% CI 1.06-2.24). No differences were observed for observed, objective, or protocolized complaints.

## DISCUSSION

In our analysis we found that Black and Hispanic adults in our population were disproportionately triaged to lower acuity areas, and that this phenomenon was more pronounced for patients presenting with subjective chief complaints. Further analyses demonstrated that of patients requiring critical care/high-acuity resources at the time of ED discharge, Black and Hispanic patients tended to have been disproportionately triaged to lower acuity pods during initial assessment. These findings suggest that the pattern of lower acuity triage cannot be explained by true differences in resource requirements over the ED course (ie, accurate prediction of lower resource requirements related to less severe clinical presentations), but rather a tendency to consistently underestimate the needs of Black and Hispanic adults. This pattern is also more pronounced for patients presenting with subjective chief complaints, suggesting that triage clinicians' assessments of the severity of patient-reported symptoms for Black and Hispanic patients may have played a role in this underestimation.

Many potential mechanisms may underlie this pattern, possibly including racially correlated differences in patients' descriptions of their symptoms,[21,22] differences in affective communication and stoicism,[23] differences in symptom presentation from "canonical" cases historically used in medical education,[24,25] differences in style or content of report or in actions taken by prehospital personnel,[26] differential impact of clinicians' cognitive "heuristics" regarding disease presentation,[27–29] and differences in patient-clinician interaction style or other forms of bias.[30–32] These phenomena may also have been exacerbated by structural factors (such as ease of access to interpreter services when needed, crowding, clinician fatigue or cognitive burden, time of day, etc), which are beyond the scope of our analysis. Reassuringly, we did not observe racially correlated triage differences in protocolized chief complaints.

## LIMITATIONS

This was a single-center study that used an acuity-based triage system to identify race-related differences in triage assignment, potentially limiting generalizability of this finding. This analysis also focused on a subset of ED chief complaints that represent approximately 32% of total ED presentations and were developed based on frequency, acuity, and ease of identification in our data. It is possible that these patterns would not emerge in a dataset where other chief complaints were more common, more frequently represented high-acuity presentations, or were more readily identifiable. This analysis was also performed on data collected under hospital-developed triage guidelines but prior to the 2021-2022 implementation of a formalized Emergency Severity Index (ESI) assignment protocol within our system, which may alter these patterns.

In addition to the potential structural factors listed above, we did not control for other interpersonal or individual factors that may contribute to pod selection within this system (including current staffing, hourly throughput time, relative crowding, recent triage to the same pod, etc). Neither did we assess nursing factors (including race, age, seniority, languages spoken, etc.). Thus, further work will be needed to both assess these additional factors and to identify potential mechanisms underlying our findings.

## CONCLUSION

Overall, our analysis identifies a pattern of significant racial differences in triage accuracy, which tends to underestimate the critical-care needs of Black and Hispanic adults, especially those with symptom-based complaints, potentially compromising both the timeliness and appropriateness of their care. These findings suggest that further work to better understand and improve triage encounters and the nature of the interactions within them may be important in helping to reduce disparities in ED care.

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# Does Housing Status Matter in Emergency Medical Services Administration of Naloxone? A Prehospital Cross-sectional Study

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**Introduction:** Persons experiencing homelessness (PEH) use emergency medical services (EMS) at disproportionately high rates relative to housed individuals due to several factors including disparate access to healthcare. Limited access to care is compounded by higher rates of substance use in PEH. Despite growing attention to the opioid epidemic and housing crisis, differences in EMS naloxone administration by housing status has not been systematically examined. Our objective in this study was to describe EMS administration of naloxone by housing status in the City of Los Angeles.

**Methods:** This was a 12-month retrospective, cross-sectional analysis of electronic patient care reports (ePCRs) for all 9–1–1 EMS incidents attended by the Los Angeles Fire Department (LAFD), the sole EMS agency for the City of Los Angeles during the study period, January-December 2018. During this time, the City had a population of 3,949,776 with an estimated 31,825 (0.8%) PEH. We included in the study individuals to whom LAFD responders had administered naloxone. Housing status is a mandatory field on ePCRs. The primary study outcome was the incidence of EMS naloxone administration by housing status. We used descriptive statistics and logistic regression models to examine patterns by key covariates.

**Results:** There were 345,190 EMS incidents during the study period. Naloxone was administered during 2,428 incidents. Of those incidents 608 (25%) involved PEH, and 1,820 (75%) involved housed individuals. Naloxone administration occurred at a rate of 19 per 1,000 PEH, roughly 44 times the rate of housed individuals. A logistic regression model showed that PEH remained 2.38 times more likely to receive naloxone than their housed counterparts, after adjusting for gender, age, and respiratory depression (odds ratio 2.38, 95% confidence interval 2.15–2.64). The most common impressions recorded by the EMS responders who administered naloxone were the same for both groups: overdose; altered level of consciousness; and cardiac arrest. Persons experiencing homelessness who received naloxone were more likely to be male (82% vs 67%) and younger (41.4 vs 46.2 years) than housed individuals.

**Conclusion:** In the City of Los Angeles, PEH are more likely to receive EMS-administered naloxone than their housed peers even after adjusting for other factors. Future research is needed to understand outcomes and improve care pathways for patients confronting homelessness and opioid use. [West J Emerg Med. 2023;24(5 Supplement)176-183.]

## INTRODUCTION

### Background

Opioid overdoses have reached epidemic proportions in the United States (US), and overdose deaths continue to increase.[1,2] Opioid overdose is now among the leading causes of accidental deaths.[3] The incidence of overdose deaths has increased with the introduction of fentanyl and other synthetic opioids and the aftermath of the COVID-19 pandemic.[1,2,4–6] Although opioid use disorders (OUD) and other substance use disorders (SUD) affect individuals of all socioeconomic statuses, persons experiencing homelessness (PEH) are at particular risk.[7–9] In 2021, 9% of all opioid overdose-related deaths were among PEH.[10]

The housing crisis is another public health epidemic facing the US; it has contributed to a rapidly growing population of PEH with more than 1.5 million individuals experiencing homelessness each year.[11,12] Los Angeles County, which has one of the highest housing costs and the second largest population of PEH nationally, is no exception.

Persons experiencing homelessness have higher rates of chronic medical conditions, substance abuse, and psychiatric diagnoses, as well as an overall increase in morbidity and mortality.[13–16] Drug overdoses, specifically those associated with opioids, are a common cause of death in PEH.[16–18] In one Boston-based study, drug overdose was the leading cause of death and was responsible for one in three deaths in adults experiencing homelessness under the age of 45.[17] Further, PEH are less likely to have a regular source of medical care and have increased emergency department (ED) utilization and engagement with emergency medical services (EMS).[19]

Persons experiencing homelessness use EMS at disproportionally high rates compared to their housed counterparts. Prior research found that PEH call EMS at a rate 14 times that of their housed counterparts.[20] At the same time, EMS calls for opioid overdose appear to be on the rise with naloxone administration occurring on almost half a million EMS runs over a two-year period.[21] As the housing crisis and opioid epidemic collide, it is important to describe how housing status affects EMS utilization and prehospital care for presumed opioid overdose. These findings may lead to recognition of bias in care, identification of opportunities for interventions for those with OUD and limited access to care, and improvement in EMS responders' education.

### Importance

Despite growing attention to the opioid epidemic and housing crisis, differences in use of 9–1–1 EMS resources for treatment of presumed opioid overdose by PEH and subsequent treatment by EMS has not been described.

### Goals of this Investigation

The primary outcome of interest in this study was how the prevalence of EMS administration of naloxone varies by housing status in the City of Los Angeles. This has important implications for understanding and addressing public health disparities at the intersection of housing, opioids, and poverty.

*Population Health Research Capsule*

What do we already know about this issue?
*Persons experiencing homelessness (PEH) have higher rates of chronic medical conditions and are disproportionately represented among opioid overdose deaths.*

What was the research question?
*Does the prevalence of naloxone administration by emergency medical services (EMS) vary by housing status?*

What was the major finding of the study?
*Naloxone was administered at a higher rate to PEH (19 vs 0.4/1000). The adjusted OR of naloxone administration was 2.38 times than that of housed peers (95% CI 2.15–2.64).*

How does this improve population health?
*These findings can help drive EMS education and field interventions and identify a target for community risk reduction in this vulnerable population.*

## METHODS

### Study Design

This was a 12-month retrospective, cross-sectional analysis of electronic health records (EHR) for all 9–1–1 EMS incidents attended by the Los Angeles Fire Department (LAFD) from January 1–December 31, 2018. Study design and reporting adhered to best practices per Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) and Reporting of Studies Conducted using observational routinely collected health data (RECORD) statements.[22,23]

### Study Setting

The LAFD is the sole entity providing 9–1–1 EMS responses for the City of Los Angeles, the second most populous city in the US. The LAFD receives more than one million 9–1–1 calls and responds to almost 400,000 EMS incidents annually. The City of Los Angeles spans 480 square miles and has 3,949,776 inhabitants, with a homeless population of 31,285 (0.8%).[24,25]

The LAFD provides EMS care under the guidance of the LA County EMS Agency and its treatment protocols. At the time of the study, the treatment protocol for "overdose/poisoning/ingestion" included intranasal, intramuscular or intravenous naloxone administration for suspected opioid overdose with altered mental status and hypoventilation/apnea.[26]

### Selection Criteria

We included all 9–1–1 EMS calls that resulted in a unique incident number and a completed electronic patient care report (ePCR) with documentation of EMS-administered naloxone during the study period. The LAFD has been using the same ePCR and EHR system (HealthEMS, Stryker, Redmond, WA) since 2011. The EHR includes information from dispatch, the ePCR, and billing information. Responder impressions consist of 64 standardized options, which remained stable over the study period.[27] Housing status is a mandatory field on ePCRs. Prehospital EMS responders are trained to assess the question "Is the patient homeless?" (yes vs no) on every LAFD-attended 9–1–1 EMS incident by asking the patient or, if the patient is unable or unwilling to respond, by applying their best judgment.

### Data Extraction

Data was extracted electronically from HealthEMS. We merged clinical data and EMS responder data using call number and booklet number, which are unique identifiers. Cases in which both the service date and call number were identical were dropped beyond the first instance. A sample of these cases were checked to ensure they were truly duplicates. We included cases in which "Narcan" or "Narcan nasal spray" were listed as medication that was administered during the incident. We stored all data was stored in a password-protected electronic spreadsheet (Microsoft Excel; Microsoft Corporation, Redmond, WA). The authors did not have access to the study population.

### Variable Definition and Modeling

To assess housing status, EMS responders asked each patient whether they were currently experiencing homelessness. If the patient was unable to answer, the EMS responder was instructed to use their best judgment based on their training.

We chose to define respiratory depression *a priori* as bradypnea with a respiratory rate of less than 12 breaths per minute, based on the LA County EMS Agency protocol and prior work evaluating prehospital naloxone administration.[28,29] Although respiratory depression may also present as hypopnea, it is subjective and not reliably documented in the prehospital care report.

We extracted transport status from the disposition field on the ePCR. No transport was defined as an entry of "no transport/refused care," "treated/no transport," or "treated/no transport (AMA)." Transport was defined as an entry of "treated/transported."

We modeled these variables as binary: housing status (currently unhoused yes/no, per EMS responder), identified as female (yes/no per EMS responder), respiratory depression (<12 breaths per minutes: yes/no) and transported (yes/no). The EMS responder's impression and patient's age were modeled as categorical.

The primary outcome was the prevalence of EMS administration of naloxone by housing status. Secondary outcomes included incidence of naloxone by patient characteristics, EMS responder's impression, and transport status. We also examined whether disparate rates of naloxone administration remained robust after controlling for patient demographic and clinical characteristics in a regression model.

### Analysis

Our analyses used standard procedures for calculating descriptive statistics for the population of incidents. As our descriptive analyses were drawn from a complete compilation of calls rather than a sample, we followed the standard practice of excluding $P$-values for evaluating inferences about whether the sample statistics (eg, sample means) provided a reasonable estimate of the corresponding population parameters.

To understand whether the observed effect was explainable by core clinical or demographic factors, we performed a logistic regression analysis. Our model included age categories, gender, and clinical indication of respiratory depression because these factors were shown to have an effect in prior literature.[20,29] The logistic regression formalized this, allowing us to test whether observed differences by PEH status were 1) reducible to clinical need or 2) reducible to other demographics. The logistic regressions do not provide a complete model of all possible explanations or establish causality, but rather help rule out alternative explanations of scientific and policy significance and to quantify important effects.

The descriptive statistics used the set of data for cases where naloxone was administered and for which we had data on housing status. Regression models provided information on the magnitude and direction of demographics and clinical effects on naloxone administration for the full population of EMS incidents. These models were used to describe associations in our data, not imply causality. Missing values were accounted for by list-wise deletion– a common strategy for large datasets without high levels of missing data. All data were assembled, cleaned and modeled in STATA 14 (Stata Corp, College Station, TX). We produced figures using the ggplot2 package in R (The R Project for Statistical Computing, Vienna, Austria).

The study was reviewed and approved as exempt by the Institutional Review Board of the University of Southern California (HS-19-00472).

## RESULTS

Of the 345,190 unique, recorded 9–1–1 EMS incidents during the study period, 2,428 incidents met inclusion criteria (Figure 1). In the 2,428 incidents in which EMS administered naloxone, 608 (25%) incidents involved PEH, and 1,830 (75%) involved housed individuals. Incidents that resulted in naloxone administration occurred at a rate of 19 per 1,000 PEH compared to 0.4 per 1,000 housed individuals, or roughly 44 times the rate of housed individuals (Figure 2).

The study population had a mean age of 45 years (SD 19.4) and was 70.7% male. Of the patients who received EMS-administered naloxone, PEH were younger (mean 41.4 years [SD 14.1] vs 46.2 years [SD 20.7]) and more often male (81.9 vs 66.9%). The prevalence of patients who declined transport was higher for PEH than for housed individuals (17.3 vs 7.2%). The top three most common EMS responder impressions for which naloxone was administered were the same in both PEH and housed groups: overdose/poisoning/ingestion, altered level of consciousness and cardiac arrest (Table 1). Among those patients who received naloxone, a slightly greater proportion of the housed individuals were in cardiac arrest when compared to those experiencing homelessness (6.9 vs 4.3%). This does not change the primary finding or account for a substantial portion of the effect. Introducing the cardiac arrest variable in the model decreases the odds ratio [OR] from 2.38 to 2.35.

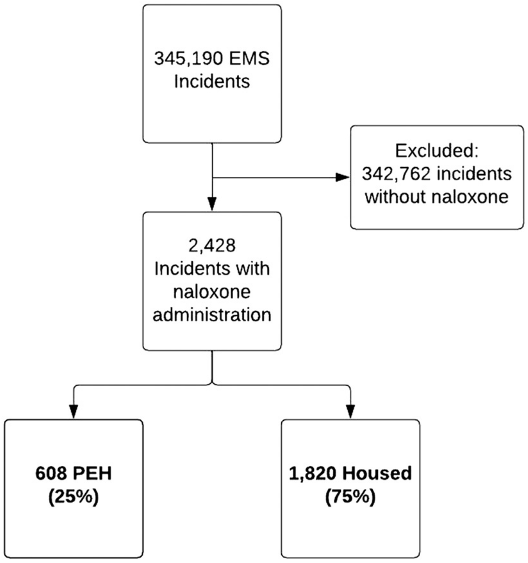

**Figure 1.** Study flow diagram.
*EMS*, emergency medical services; *PEH*, persons experiencing homelessness.

The logistic regression shown in Table 2 demonstrates that even after accounting for key covariates (ie, age, respiratory depression, and gender), the odds of PEH being administered naloxone was 2.38 that of housed peers (95% confidence interval [CI] 2.15–2.64). This is visualized in Figure 3, which shows the post-adjustment odds of naloxone administration by group.

This data shows that even after adjusting for gender, age, and respiratory depression, 1) respiratory depression had the largest effect on whether naloxone was administered (OR 49.32, 95% CI 45.17–53.873) and 2) PEH had 2.38 higher odds of receiving EMS-administered naloxone relative to housed peers. This suggests that while administration mapped on to clinical factors on average, EMS responders administered naloxone at higher rates to PEH than to their housed counterparts irrespective of condition.

## DISCUSSION

In this study, PEH in the City of Los Angeles received EMS-administered naloxone at substantially higher rates than the housed population. While some of this may reflect need, PEH were still over two times more likely to receive the drug when all else was equal.

Secondarily, PEH who received naloxone tended to be younger and more often male when compared to their housed counterparts, although this did not explain the effect. This is consistent with prior studies documenting EMS utilization by PEH and the general differences in demographics between

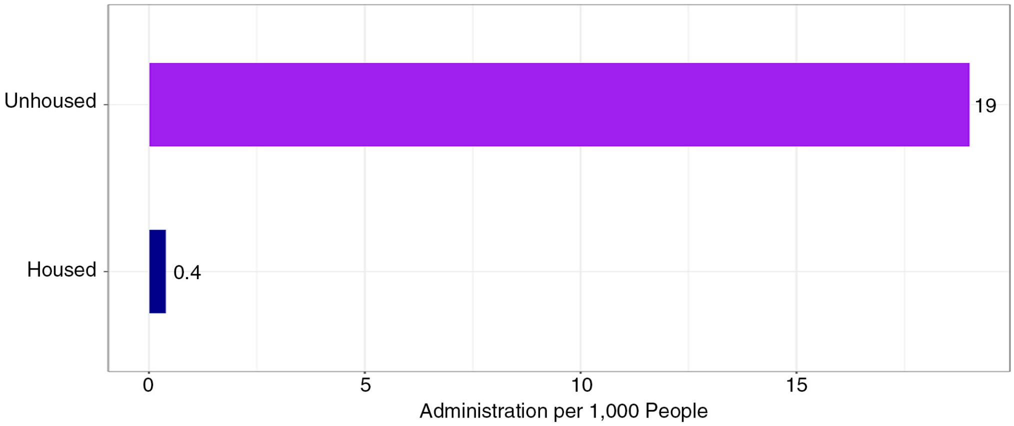

**Figure 2.** Naloxone administration rate by population.

**Table 1.** Patient characteristics by housing status.

| | **All (N = 2,428)** | | **PEH (n = 608)** | | **Housed (n = 1,820)** | |
|---|---|---|---|---|---|---|
| Mean age (years) | 45 (SD 19.4) | | 41.4 (SD 14.1) | | 46.2 (SD 20.7) | |
| Median age (years) | 53 (IQR 37) | | 47 (IQR 23) | | 54 (IQR 40) | |
| | n | % | n | % | N | % |
| Gender | | | | | | |
| Female | 712 | 29.3 | 110 | 18.1 | 602 | 33.1 |
| Male | 1,716 | 70.7 | 498 | 81.9 | 1218 | 66.9 |
| Respiratory depression (RR < 12) | 1,136 | 46.8 | 302 | 49.7% | 834 | 45.8 |
| Not transported | 236 | 9.7 | 105 | 17.3% | 131 | 7.2% |
| EMS professional impression[1] | | | | | | |
| Overdose/poisoning/ingestion | 1,373 | 56.3 | 399 | 66.2% | 974 | 53.6% |
| Altered level of consciousness | 695 | 28.5 | 153 | 25.4% | 542 | 29.8% |
| Cardiac arrest | 154 | 6.3 | 27 | 4.5% | 127 | 7.0% |

[1] For EMS impression, eight charts were missing values (n = 2,420). There were no missing values for gender, respiratory depression, nor transport status.

*PEH,* persons experience homelessness; *IQR*, interquartile range; *RR*, respiratory rate.

**Table 2.** Odds ratios for selected associations with naloxone administration.

| Variable | OR (95% CI) | Adjusted OR (95% CI) |
|---|---|---|
| Homeless | 2.61* (2.38, 2.88) | 2.38* (2.15, 2.64) |
| Female | | 0.65* (0.59, 0.71) |
| Respiratory depression | | 49.32* (15.16, 53.87) |
| Age | | |
| 0–24 | | – |
| 25–49 | | 1.11 (0.98, 1.27) |
| 50–74 | | 0.54* (0.47, 0/62) |
| >75 | | 0.28* (0.23, 0.33) |

*$P < .01$.

*OR*, odds ratio; *CI*, confidence interval.

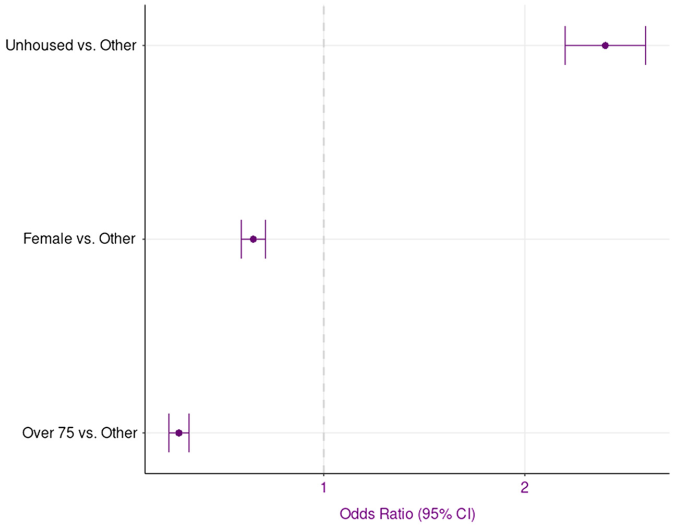

**Figure 3.** Adjusted odds of naloxone administration.
*CI*, confidence interval.

homeless and housed communites.[19,20,30,31] However, it is notable that the mean age of our study population was younger than the average EMS user in the City of Los Angeles (45 vs 52 years). This difference is maintained for both the PEH and housed groups, 46.2 vs 52.6 years and 41.4 vs 46.1 years, respectively, suggesting that those receiving naloxone may be younger than the general population.[20]

Persons experiencing homelessness were more than two times as likely to refuse transport than their housed counterpart who received EMS-administered naloxone. However, prior studies in Los Angeles have demonstrated that overall, PEH were less likely to refuse transport against medical advice.[20] Further, independent of housing status, refusal of transport was higher in patients receiving EMS-administered naloxone than overall refusal of treatment and/or transport against medical advice rate in Los Angeles during this study period.[20] This highlights that there may be differences in clinical presentation, EMS care, patient-EMS interaction, and social situations associated with the management of presumed opioid overdose and OUD.

Our findings describe disproportionately high rates of administration of naloxone to PEH compared with their housed counterparts. The logistic regression suggests that experiencing homelessness is a predictor of naloxone administration net of other factors. This data highlights the discrepancy that persists even after controlling for age, gender, and respiratory status. However, this model does not distinguish whether this difference is due to a variation in clinical presentations or another factor that is leading EMS responders to administer naloxone when the patient's medical emergency is related to an etiology other than opioid overdose. Future studies are needed to understand the differences in care provided by EMS to PEH vs housed individuals and to evaluate patient outcome data. These findings can help drive future EMS education and field interventions, and potentially help develop specialized prehospital programs that focus on opioid overdose and risk reduction in this vulnerable population.

Although this study does not address patient outcomes, we must discuss the potential clinical impact of higher rates of naloxone administration on patient outcomes. Naloxone is a relatively safe drug. However, there are risks associated with administering high doses of naloxone given the dose-dependent relationship between naloxone and pulmonary edema. A recent prehospital study demonstrated higher rates of pulmonary complications, such as pulmonary edema and need for ventilatory support, in cases in which higher doses of out-of-hospital naloxone were administered.[32] Further, administering naloxone in cases where patients have OUD, but opioid overdose is not the etiology of their symptoms, may unnecessarily precipitate acute opioid withdrawal, vomiting, and aspiration. Finally, administering excessive or unnecessary naloxone detracts from EMS responders' ability to critically assess the situation and treat the primary medical emergency. Thus, PEH are at potentially higher risk for poor outcomes given the higher rates of EMS-administered naloxone. Further studies are needed that incorporate patient outcome as well as patient and EMS responders' experiences to elucidate potential biases in care.

Further, this study identifies a potential target for patient-centered interventions. Prior studies have suggested that by increasing access to naloxone, opioid overdose mortality can be decreased.[33–35] However, in California only 6% of local EMS agencies had EMS-based outreach programs and 9% oversaw naloxone distribution.[36] Given that EMS may be the first, or only, medical care that an individual receives, this interaction provides the potential for OUD-related care, medication-assisted therapy, naloxone administration, and/or linkage to care. The EMS agency is in a unique position of having situational awareness and regular contact with PEH, which can be leveraged to address the needs of this at-risk population. Through prehospital interventions and novel care pathways, there may be opportunities to improve patient outcomes in a more cost-effective and culturally acceptable manner.

Finally, this study is the first step in describing the disparities of EMS-administered naloxone by housing status. Persons experiencing homelessness were administered naloxone at a substantially higher rate than the population as a whole (19 vs 0.4 per 1,000 members of the population). Much of this reflects differences in need. However, our analyses show that unhoused individuals remained more than twice as likely as housed peers to be administered naloxone even after adjusting for clinical and demographic factors. Future research will be necessary to determine the cause and scope of these patterns.

## LIMITATIONS

Because this was a retrospective observational study it has limitations inherent to study design and clinical documentation. The available data is subject to reporting errors and missing data points. Nor were we able to assess temporality of the respiratory rate in relation to the patient receiving naloxone, since the timing of vitals and interventions were documented by the EMS responders in retrospect and, therefore, were not precise enough. Additionally, it is possible that additional clinical characteristics other than bradypnea impact an EMS responder's decision to administer naloxone. Given the variability in documentation, assessment of neurologic status and airway compromise were not included in this analysis but may have impacted whether a patient received naloxone. Further, this study relies upon observation data and was not designed to establish causality. While the effect of homelessness was not eliminated in models adjusting for core clinical indications or demographics (age, gender), it is possible that the effect is reducible to latent variables or confounders that are absent from our data.

Further, homelessness is a complex and sometimes transient issue. The EMS responders were responsible for documenting the patients' housing status. Given the binary option in the ePCR and the training provided, it is possible that patients' housing status could potentially have been inaccurately coded in either direction. The decision to document housing status as homeless may be biased by appearance, environment, presence of paraphernalia, and even the use of naloxone itself.

Additionally, this study only accounts for naloxone administration by EMS and does not include naloxone administered by bystanders or other first responders, such as law enforcement or street medicine teams. Further, although this study captures all patients who were administered naloxone by EMS, it does not capture all patients who may have had opioid or substance use disorders. Given the existing body of literature that suggests a high incidence of SUD, including OUD, in the unhoused population, it is likely that an even larger number of EMS patients who are homeless may be experiencing an emergency related to OUD/SUD even when not explicitly labeled with an EMS responder's impression related to overdose or intoxication or administered naloxone. While this cannot be further extrapolated due to limitations in the ePCR data, this relationship has previously been described in the emergency medicine literature.[30] Thus, an even larger number of patients could potentially benefit from outreach programs or other interventions.

Finally, the study was conducted in a single city. As a city with one of the largest populations of PEH, Los Angeles was used as a lens to evaluate the evolving situation at the intersection of the opioid epidemic, the housing crisis, and EMS. While Los Angeles may have unique characteristics, prior studies suggest that the demographics of its homeless population are similar to other major US cities.[31] Given national trends, Los Angeles may serve as a bellwether for other metropolitan areas in the US.

## CONCLUSION

Persons experiencing homelessness in the City of Los Angeles received EMS-administered naloxone at higher rates than their housed counterparts, even when accounting for differences in age, gender, and respiratory depression. Future research is needed to validate these findings in other settings and to understand this difference in administration rates, characterize patient outcomes, and identify potential targets for alternative care pathways for patients confronting homelessness and opioid use disorder.

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