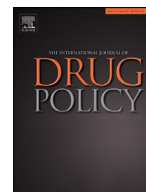




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## Short report

## Using a “Big Events” framework to understand emergency department use among women experiencing homelessness or housing instability in San Francisco during the COVID-19 pandemic



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## ABSTRACT

**Background:** The COVID-19 pandemic created a major public health crisis that disrupted economic systems, social networks and individual behaviors, which led to changes in patterns of health care use. Factors associated with emergency department (ED) visits during the pandemic among especially high-risk individuals are unknown. We used a “Big Events” approach, which considers major disruptions that create social instability, to investigate ED use in people experiencing homelessness or housing instability, many of whom use drugs.

**Methods:** Between July and December 2020, we conducted a community-based San Francisco study to compare homeless and unstably housed (HUH) women who did and did not use an ED during the first 10 months of the pandemic.

**Results:** Among 128 study participants, 34% had  $\geq 1$  ED visit during the pandemic. In adjusted analysis, factors significantly associated with ED use included experiencing homelessness, cocaine use and increased difficulties receiving drug use treatment during the pandemic.

**Conclusion:** These findings build on the “Big Events” approach to considering risk pathways among people who use drugs. They suggest the importance of ensuring access to housing and low-barrier non-COVID health services, including drug treatment, alongside crisis management activities, to reduce the health impacts of public health crises.

## Introduction

Environmental, economic and other major disruptions that create even brief periods of social instability are referred to as “Big Events” (Friedman et al., 2006). They have a variety of direct and indirect influences, such as population displacement, economic disruption, health service shortages, and upticks in violence, which affect normative behaviors and, in some cases, lead to social upheaval (Friedman et al., 2009). Big Events are noted as having especially seriously impacts “on marginalized groups of people, whose social precarity leaves them more vulnerable to the harms engendered by major disruptions” (Zolopa et al., 2021).

Research on the repercussions of Big Events and on how interacting causal pathways are experienced by specific groups can inform interven-

tions aimed at preventing or mitigating harm (Friedman et al., 2009). In their recent review article, Zolopa et al. identify risk pathways resulting from “Big Events” on health and service delivery for people who use drugs (Zolopa et al., 2021). Included in this framework are disruptions of drug treatment and harm reduction services. While empirically based on prior Big Events, Zolopa et al. note an inability to test their framework within the Big Event of the COVID-19 pandemic due to a lack of data. They further suggest that validating their findings within vulnerable subpopulations of people who use drugs, including women and ethnic or racial minorities, are important next steps toward effectively using this model to understand risk pathways for people who use drugs.

Embedded within this framework yet not explicitly described by Zolopa et al. is emergency department (ED) use. After years of contin-

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uous increases in ED use, ED visits dropped precipitously during the COVID-19 pandemic. For example, one study found that visits across 160 EDs dropped by approximately 40% during the early COVID-19 pandemic compared to 2019 (Gutovitz et al., 2021). Similarly large decreases in ED use across multiple U.S. subpopulations have been reported, with the notable exception of people experiencing homelessness, whose ED visit volume was only 4.5% lower than in the prior year (Castillo et al., 2020). Factors associated with ED visits among homeless or unstably housed (HUH) people, such as increasing health needs or barriers to other types of non-ED care during the pandemic, are unknown.

We conducted a study to examine associations between increased challenges obtaining various types of outpatient health care – including treatment for drug use – during the COVID-19 pandemic and emergency department (ED) use among women with a history of homelessness or unstable housing. Our research provides early data from the pandemic to test the framework of risk pathways identified by Zolopa et al. in the context of COVID-19, and potentially apply findings to future pandemics or other Big Events.

## Methods

We conducted a cross-sectional community-based study among 128 women with a lifetime history of homelessness or unstable housing to examine whether increased difficulties obtaining health care, including drug treatment, during the first 10 months of the COVID-19 pandemic, were associated with ED use. Between July and December 2020, participants were recruited from San Francisco homeless shelters, free meal programs, low-income single room occupancy (SRO) hotels, street encampments and the Zuckerberg San Francisco General Hospital HIV clinic (“Ward 86”), the largest public HIV provider in San Francisco. Eligibility criteria included female sex at birth, age  $\geq 18$  years and a history of homelessness (i.e., slept in public or a homeless shelter) or housing instability (stayed temporarily with friends/acquaintances [“couch-surfed”]). Women living with HIV were over-sampled to address HIV-specific aims reported elsewhere. Participants were reimbursed \$50 for completing a study interview.

We asked all interview questions using the start of the pandemic as the reference point (March 2020). The primary outcome was any self-reported use of an ED. Exposures since the pandemic included age, race/ethnicity, homelessness (slept outside or in a shelter), unmet subsistence needs (insufficient access to food, clothing, housing and hygiene needs) (Gelberg et al., 1997); social isolation (feeling isolated and unable to rely on others) (Cornwell & Waite, 2009); increased difficulty managing symptoms of  $\geq 1$  chronic medical condition; and increased difficulty obtaining treatment for mental health, drug use, or a chronic medical condition (HIV, cardiovascular disease, diabetes, asthma or emphysema). We used multiple logistic regression to examine factors independently associated with ED use during the pandemic. Study procedures were approved by the University of California, San Francisco, Institutional Review Board. All study participants provided informed consent prior to participating in study activities.

## Results

### Population characteristics

The median age of study participants was 56 years and 40% were Black. One-third (33%) reported deciding where to sleep during the pandemic based on avoiding violence, and 38% reported experiencing street or shelter homelessness during the pandemic (Table 1). Since the pandemic’s start, 44% of participants had been tested for SARS-CoV-2; none reported testing positive.

### Factors associated with ED use

Overall, one-third (34%) of participants reported at least one ED visit since the start of the pandemic. In adjusted analysis, factors significantly associated with ED use included being multiracial compared to being Black (adjusted odds ratio [AOR]: 5.24; 95% CI: 1.57, 18.80), any cocaine use during the pandemic (AOR: 3.13; 95% CI: 1.12, 9.27), experiencing homelessness during the pandemic (AOR: 5.92; 95% CI: 2.50, 15.07), and experiencing increased difficulties receiving drug use treatment during the pandemic (AOR: 7.96; 95% CI: 1.53, 55.62) (Table 1).

## Discussion

Our findings suggest that the rate of ED use among HUH women during the COVID-19 pandemic (34% during the first 10 months of the pandemic) was similar to that reported in prior research using a similar sample (with the exception that participants of the current study were approximately 10 years older) (Doran et al., 2014). It provides further evidence that HUH women, unlike the general population, did not significantly decrease their ED use during the pandemic (Castillo et al., 2020). Consistent with prior research (Doran et al., 2014), we found that race, recent cocaine use and homelessness were associated with ED use in this population. In addition, while increased difficulties receiving drug use treatment during the pandemic were reported by less than 10% of participants, this factor was strongly linked to ED use, even after accounting for race, housing and cocaine use. This is not as well-documented in the peer reviewed literature, but has implications for ensuring ongoing access to all types of care during a Big Event.

Use of an ED and access to drug treatment were ascertained independently of one another and participants did not provide reasons for ED visits. How reduced access to drug treatment may lead to increased ED use is therefore currently unclear, particularly during a Big Event, and will require further study. For example, while access to certain types of treatment (e.g., telehealth) may have stabilized or expanded access to care for the general population, this treatment modality may not have been broadly accessible to patient populations with more limited access to technology such as people experiencing homelessness. It is possible that study participants were unable to access their usual treatment and/or, among those in or out of treatment, responded to pandemic-related stresses by using drugs more frequently, in greater quantities, or via riskier methods (e.g., used alone). Additionally, disruptions in the drug market may have led to riskier practices such as inconsistent use, use of an unfamiliar product, drug substitution and/or polydrug use, resulting in increased drug toxicity or overdose. Clarification of reasons/pathways for ED visits during the pandemic could help prepare service providers to care for particularly vulnerable individuals during future Big Events.

Results reported here build on the “Big Events” approach to considering risk pathways among people who use drugs, suggesting the utility of examining ED care as a potential “downstream” result of barriers to services. Findings provide insight into the potential role of EDs as a critical service site during “Big Events,” and add support for Zolopa et al.’s theory postulating pathways between treatment availability and health outcomes. Our findings suggest the potential utility of two changes to the risk pathway map for the COVID-19 pandemic. First, they suggest the addition of housing status. Housing status is a strong predictor of health and health services use outside of Big Events, and may become even more important during crises in which multiple, overlapping social determinants of health are impacted (Riley et al., 2020). This possibility has been strongly supported by recent research showing that overdose deaths during the COVID-19 pandemic increased significantly among people experiencing homelessness (Appa et al., 2021). Second, our findings suggest the potential usefulness of disaggregating services when considering “reduction in service coverage/capacity” (e.g., harm reduction services, drug treatment, health care for pre-existing medical conditions and ED care).

**Table 1**  
Study participant characteristics and associations with emergency department (ED) use; July-December, 2020 (N=128).

	Prevalence of Study Characteristics	Unadjusted OR of ED Use (95% CI)	Adjusted OR of ED Use (95% CI)
Age	Median= 56 years	0.97 (0.94-1.00)	
Race/ethnicity			
Black (ref)	51 (40%)	1.0	
White	33 (26%)	1.66 (0.63-4.32)	2.03 (0.68-6.20)
Latina	10 (8%)	2.24 (0.54-8.72)	1.84 (0.37-8.82)
Native American	5 (4%)	2.31 (0.35- 13.37)	0.82 (0.07-8.61)
Asian/Pac. Island.	4 (3%)	3.24 (0.46-23.11)	4.33 (0.44-42.14)
Multiracial	20 (16%)	4.26 (1.51-12.63)*	5.24 (1.57-18.80)*
Other	3 (2%)	0.46 (0.003-5.27)	0.34 (<0.01-4.93)
Homeless (slept in a shelter, on the street or other public place)	49 (38%)	5.00 (2.32-11.15)*	5.92 (2.50-15.07)*
Made decisions about where to sleep based on fleeing or avoiding violence $\square$	42 (33%)	3.91 (1.81-8.64)*	$\diamond$
Any unmet subsistence needs	37 (29%)	3.85 (1.53-9.35)*	NS
Social isolation	68 (53%)	1.35 (0.65-2.83)	
Alcohol use	59 (46%)	1.55 (0.75-3.25)	
Cannabis use	63 (49%)	1.70 (0.82-3.56)	
Cocaine use	31 (24%)	2.73 (1.20-6.27)*	3.13 (1.12-9.27)*
Methamphetamine use	27 (21%)	1.15 (0.29-2.03)	
Heroin, opioid pain medication or opioid pill use	29 (23%)	1.00 (0.42-2.32)	
Any chronic medical condition (HIV, cardiovascular disease, diabetes, asthma, emphysema)	102 (80%)	1.81 (0.71-5.10)	
Increased difficulties getting care or medication for a chronic medical condition <sup>†</sup> since the pandemic	28 (22%)	1.73 (0.73-4.03)	
Increased difficulties managing symptoms of a chronic medical condition <sup>†</sup> since the pandemic	37 (29%)	2.08 (0.95-4.56)	
Increased difficulties getting care or medications for mental health since the pandemic	31 (24%)	2.69 (1.18-6.18)*	NS
Increased difficulties getting drug use treatment since the pandemic	9 (7%)	4.09 (1.10-17.96)*	7.96 (1.53-55.62)*

\*95% CI does not include 1; † HIV, cardiovascular disease, diabetes, asthma, emphysema;  $\diamond$  multicollinearity with homelessness and unmet subsistence needs; NS: not significant in adjusted analysis and not included in the most parsimonious model;  $\square$  Included in the Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) / U.S. Department of Housing & Urban Development (HUD) homeless definition based on McKinney-Vento eligibility.

EDs are open 24/7 and are federally mandated to provide care to all who come through their doors, making them uniquely accessible among U.S. healthcare sites. People experiencing homelessness are known, on average, to use EDs more often than people who are stably housed (Kushel et al., 2002). The extent to which EDs successfully or unsuccessfully filled gaps in drug use treatment for people experiencing homelessness during the pandemic is unknown. While not yet widespread, an increasing number of EDs have begun initiatives to start buprenorphine for patients with opioid use disorder while they are still in the ED, as a bridge to outpatient treatment (D'Onofrio et al., 2015). Other ED-based initiatives have used peer navigators to engage with patients around their drug use (Welch et al., 2019). A study of 25 EDs across the U.S. showed ED visits for overdose increased significantly in 2020 compared to 2018–2019, in contrast to ED visits overall which decreased during the pandemic (Soares et al., 2021). However, to our knowledge, no study has yet examined how ED provision of drug use related services might have changed during various stages of the pandemic.

Our research has several limitations. Data reported here are from a small, single-site study and would be strengthened by replication in ad-

ditional, more comprehensive research. Another limitation of the study is the lack of data on reasons for ED use. Future studies distinguishing reasons for visiting an ED, particularly with respect to linking drug use factors with ED use, could help provide more detail to expand results reported here. However, such results should be considered with caution because symptoms associated with drug use are often non-specific and could be inadvertently misclassified (Riley et al., 2013).

## Conclusion

Our findings suggest that, alongside important efforts to increase SARS-CoV-2 testing and treatment for infection during the COVID-19 pandemic, it is critical to ensure ongoing access to housing and low-barrier, non-COVID health services, including drug use treatment. The findings also reinforce the fact that, in times of crisis or Big Events, EDs continue to provide low barrier access to care for people who may not have access to alternative treatment options, including homeless and unstably housed individuals living in the United States.

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## Declarations of Interest

The authors declare that they have no competing interests.

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