

Drug Use Is Associated With Purulent Skin and Soft Tissue Infections in a Large Urban Jail: 2011–2015

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Background. Skin and soft tissue infections (SSTIs) are a common problem in jails in the United States. This study aimed to identify factors associated with purulent SSTIs in the New York City jail system.

Methods. We conducted a case-control study of purulent SSTIs at the New York City jail. Cases were matched to controls by visit date to the jail's urgent care clinic. Bivariate and multivariable analyses were conducted using conditional logistic regression.

Results. From April 2011 to April 2015, 1010 cases of SSTIs were identified and matched to 1010 controls. In multivariable analyses, report upon entry to jail of current injection drug use (odds ratio [OR], 2.76; 95% confidence interval [CI], 1.77–4.31), current snorting of drugs (OR, 1.50; 95% CI, 1.12–2.00), current heroin use (OR, 1.53; 95% CI, 1.08–2.17), current cocaine use (OR, 1.76; 95% CI, 1.18–2.65), and antibiotic use within the previous 6 months (OR, 4.05; 95% CI, 2.98–5.49) were significantly associated with SSTI diagnosis.

Conclusions. Skin and soft tissue infections were strongly associated with a history of drug use at jail entry. Targeting intravenous drug use may be a preventive strategy for SSTIs in this population. Strategies such as harm reduction programs may be investigated.

Keywords. drug use; incarceration; jail; purulent; skin and soft tissue infections.

The incarceration rate in America is the one of the highest in the world. Despite only 5% of the world's population living in the United States, it has almost 25% of its prisoners [1]. The increasing number of incarcerated individuals over the years has led to crowding in many US prisons and jails, and this may be associated with the high prevalence of skin and soft tissue infections (SSTIs) in this population [2, 3]. Studies conducted in the general population have found recent incarceration to be a risk factor for developing SSTIs [4–6]. Most purulent SSTIs are caused by *Staphylococcus aureus*, with a large proportion of isolates being methicillin-resistant *S aureus* (MRSA) [7–11]. Methicillin-resistant *S aureus* has been found to be responsible for several SSTI outbreaks in jail [12, 13] and prison [12, 14] settings. Whereas individuals in maximum security prisons are typically incarcerated for at least 3–5 years, populations in jails are much more transient, with the length of stay ranging from a few days to 1 year or longer. Each year, approximately 12 million people are admitted to US jails [15], representing an important

target population with far-reaching public health impact. Furthermore, SSTIs among incarcerated populations are costly: Lee et al [16] estimated the economic burden of MRSA in the US jail system to be between 7 and 11 million dollars annually.

Various studies have sought to identify risk factors associated with *S aureus* infection. Detainees with circulatory disease, cardiovascular disease, diabetes, end-stage liver disease, end-stage renal disease, human immunodeficiency virus infection (HIV) or acquired immunodeficiency syndrome, and skin diseases were all found to exhibit higher rates of MRSA infection in the Texas Prison System [17]. These results from 2004 identified risk factors that are largely related to healthcare exposures and may reflect a different era in which healthcare-associated MRSA infections dominated prisons. In a 2003 study conducted in a maximum security prison in Georgia, previous antimicrobial use, self-draining of boils, skin laceration, washing clothes by hand, sharing soap, and recent arrival at the prison were identified as risk factors of MRSA [12]. In 2015, Miko et al [18] found that in 2 New York State maximum security prisons, diabetes and use of oral and topical antibiotics were associated with *S aureus* clinical infection. All of these studies were conducted in prisons, but findings from prisons might not be generalizable to jail settings.

A 2010 case-control study of male detainees in the Los Angeles County Jail identified several factors associated with MRSA skin infection, including MRSA nares colonization, lower educational level, lack of knowledge about “*Staph*” infections, lower rate of showering in jail, recent skin infection, sharing soap with other detainees, and less preincarceration contact with the healthcare

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system [19]. Aside from this study, which focused on behavioral risk factors associated with MRSA, there is limited information about the factors associated with these infections in jails despite their well documented occurrence in these settings [12, 13], and it is unclear whether SSTIs result from factors related to incarceration itself, from factors present before incarceration, or both. Identifying these factors should provide the basis for intervention strategies to reduce the number of such infections in both the jail and the prison system, as well as in the community, because the vast majority of detainees from jails are discharged back into the community. Our objective was to identify factors associated with purulent SSTIs in a large jail system in New York City.

METHODS

Study Design, Setting, and Sample

The New York City jail system includes 11 facilities housing approximately 10 000 detainees at any given time; approximately 60 000 detainees are processed annually. Eight facilities are located on Rikers Island, whereas 3 are located off the island in Manhattan, Brooklyn, and the Bronx. New York City jails contain detained and city-sentenced detainees. The latter are those sentenced for 1 year or less, whereas the former are those awaiting trial, parole, or bail out. Detainee length of stay is relatively short; the average length of stay is approximately 2 weeks, but some individuals can be detained for 1 year or more while on trial.

New York City Health and Hospitals Corporation's Correctional Health Services provides medical and mental healthcare and discharge planning in the jail system. All individuals admitted to jail undergo a full history and physical examination before being housed. The detainees are screened for chronic medical and mental health illnesses, including substance abuse history, and receive follow-up care while incarcerated.

We conducted a case-control study to identify risk factors for SSTIs among detainees incarcerated between April 15, 2011 and April 15, 2015 at the 8 buildings in the jail system located on Rikers Island. Cases were identified using the urgent care clinic log, which contains records of detainees who visited the urgent care clinic for various medical issues. For each case, we randomly selected 1 control who visited the urgent care clinic on the same day as the case for reasons other than an SSTI and who remained SSTI-free throughout the study period. Controls were matched by date of visit. To test the robustness of our results, a sensitivity analysis was conducted in which a second control was randomly selected from the general jail population (ie, the control group included those who did and did not visit the urgent care clinic) using census data for all detainees during the study period. Because detainees are frequently moved within the jail system, we did not match by facility.

Medical Record Review

Case Identification

To identify cases, we reviewed the urgent care clinic database of over 40 000 records. Cases were defined as the first occurrence

of an SSTI for a detainee within the study period and were identified using search criteria including the following terms and any variation in spelling of these terms: abscess, cellulitis, skin infection, boil, carbuncle, folliculitis, and spider bite. For all entries labeled "cellulitis," a medical file review was conducted and only those determined to be purulent were included. To restrict cases to SSTIs more likely to be caused by *S aureus*, occurrences of paronychia, dental, nasal, ear canal, and sub-mandibular abscesses were excluded. Also excluded were obstetrics/gynecology appointments.

Data Source

Each detainee undergoes an intake medical examination upon entry, and the jail system has a well developed electronic health record system. We extracted sociodemographic and health status data from this system, which included the following: age; gender; race/ethnicity; body mass index (BMI); current drug use (including specific drugs used); self-reported mode of drug use (smoked, snorted, injected, or ingested); medical conditions and illnesses (including diabetes, renal failure [dialysis or end-stage renal disease], skin disease [psoriasis and eczema], HIV status [a combination of self-report and test results in medical records]); antecedent use of antibiotics in the previous 6 months (a proxy measure of prior infection); length of stay; and urgent care clinic visit date. Regarding race, participants who answered "Yes" for Hispanic ethnicity were coded as "Hispanic". Participants who answered "White" for race and "No" for Hispanic ethnicity was coded as "Non-Hispanic White," and participants who answered "Black" for race and "No" for Hispanic ethnicity were coded as "Non-Hispanic Black". Regarding drug use, each detainee was asked at intake whether they ever used drugs, were currently using drugs, what drugs they used, and how they used drugs. Antecedent antibiotic use was obtained from the electronic health record system; this included any antibiotics prescribed in the jail within the last 6 months. Length of stay was measured from the date of admission into the jail to the first date within the study period of urgent care visit for an SSTI; it was categorized as 0–3 months, 3–6 months, 6–12 months, and over 12 months. Polydrug use was defined as a report upon entry to jail of the current use of 2 or more drugs. Because the majority of purulent SSTIs are caused by *S aureus* [7, 11], purulent SSTIs were treated presumptively without culture in this setting. As such, we did not have access to microbiological data.

Institutional Review Boards

This study was approved by the institutional review boards of Columbia University Medical Center and Correctional Health Services, under the management of New York City Health and Hospitals Corporation. All data were deidentified. There was no contact with detainees, because this was a retrospective medical record review.

Statistical Analysis

The monthly incidence of infection was calculated by dividing the number of cases identified in the urgent care clinic log by the monthly average daily population of the 8 facilities on Rikers Island that use the urgent care clinic. For the first month of the study period, we only had access to the number of cases occurring in the last half of the month, and for the last month of the study period, we only had access to the number of cases occurring in the first half of the month. For those months, the number of cases was doubled to estimate the monthly incidence of infection. R (version 3.2.3) [20] was used to examine trends in the incidence of infections over the study period.

Cases and the urgent care clinic controls were compared by assessing differences on all variables using bivariate conditional logistic regression to account for matching by date of urgent care clinic visit. For bivariate comparisons of cases and the general jail population controls, χ^2 tests were used. Multivariable analyses were conducted using conditional logistic regression for the urgent care control comparisons and logistic regression for the general jail control comparisons. Separate models were used to examine the type of drug use and mode of drug use variables to avoid multicollinearity. It was decided a priori that all models would be adjusted for gender, age, race/ethnicity, BMI, and length of stay because these factors have been found to be associated with infections in incarcerated populations in previous studies [2, 14, 21, 22]. Additional covariates were selected based on having $P < .10$ in the bivariate analyses. Complete case analyses were performed in which observations with missing values for any of the variables were not included. Associations were tested for consistency by examining the interaction of identified risk factors with time. These analyses were conducted using SAS 9.2, and for the multivariable models $P < .05$ was considered statistically significant.

RESULTS

Characteristics of the Study Sample

We identified 1010 cases between April 2011 and April 2015, and they were matched to 1010 controls by date of urgent care clinic visit. On average, over the 4 years, 21 detainees were identified as having an SSTI each month (range, 7–46). The average monthly incidence of infection was 2.2 infections per 1000 detainees (range, 0.9–4.3). As shown in Figure 1, there was a downward trend in infection incidence over the 4 years ($P < .001$), which coincided with a reduction in the average daily population for each month over the 4 years ($P < .001$) (Figure 2).

The sociodemographic characteristics of cases and controls are summarized in Table 1. The majority were male (90.3%), between the ages of 18 and 39 (57.0%), and non-Hispanic Black (55.5%). Detainees ranged in age from 16 to 81, with a mean age of 35.9 years. Body mass index ranged from 15.3 kg/m² to 59.4 kg/m², with a mean of 25.9 kg/m²; 18.7% had a BMI over

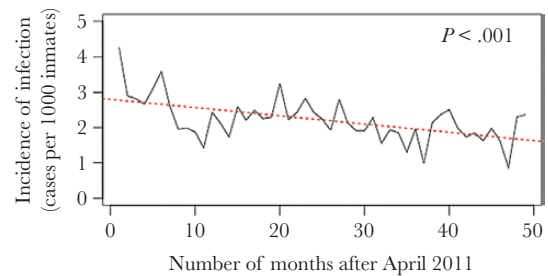


Figure 1. Monthly incidence of infection, April 2011 to April 2015. Overall decline in the monthly incidence of infection among Rikers Island detainees from April 2011 to April 2015. On average, over the 4 years, 21 detainees are identified as having a skin and soft tissue infection each month (range, 7–46). The average monthly infection incidence was 2.2 infections per 1000 detainees (range, 0.9–4.3). There was a downward trend in infection incidence over the 4 years ($P < .001$).

30 kg/m² (ie, classified as obese). Nineteen percent of the study sample had psoriasis or eczema, 10.0% had diabetes, and 7.5% had a positive HIV serostatus. Half of the study population reported at intake that they were currently using illicit drugs (50.4%), with 18.1% reportedly using at least 2 drugs. The types of drugs used varied (17.1% heroin, 24.2% marijuana, 12.2% cocaine, 7.7% methadone, 6.1% crack cocaine) as did the mode of drug use (28.4% currently smoked, 14.8% currently snorted, 13.7% ever injected, 7.8% currently injected, 6.9% currently ingested). The length of stay ranged from 1 day to almost 5 years. The median length of stay was 126 days (4 months).

Bivariate Comparisons

In bivariate analysis, age, current drug use, polydrug use, and use of antibiotics in the previous 6 months were significantly associated with SSTIs (all $P < .001$) (Table 1). Specifically, current heroin ($P < .001$), crack cocaine ($P = .004$), cocaine ($P < .001$), benzodiazepine ($P = .006$), and methadone ($P = .001$) use were significantly associated with having an SSTI. In addition, 2 modes of drug use, snorting ($P < .001$) and current or ever injecting ($P < .001$), were significantly associated with having an SSTI.

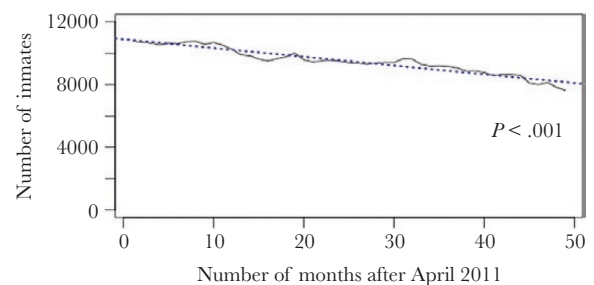


Figure 2. Monthly average daily population of Rikers detainees, April 2011 to April 2015. Overall decline in the monthly average daily population of Rikers Island detainees from April 2011 to April 2015. The monthly average daily population was determined by summing the monthly average daily population of the 8 on-island facilities. On average, over the 4 years, the monthly average daily population was 9497 detainees (range, 7630–10 766). There was a downward trend over the 4 years ($P < .001$).

Table 1. Demographic Characteristics, Medical Conditions and Illnesses, Drug Use Patterns, Antecedent Antibiotic Use, and Length of Stay of Cases and Urgent Care Clinic Controls

Variable	Cases, N = 1010 n (%)	Controls, N = 1010 n (%)	Total, N = 2020 n (%)	P Value ^a
Gender				
Female	105 (10.4)	90 (8.9)	195 (9.7)	.26
Male	905 (89.6)	920 (91.1)	1825 (90.3)	
Age				
Less than 18	26 (2.6)	51 (5.0)	77 (3.8)	<.001
18 to 39	565 (55.9)	587 (58.1)	1152 (57.0)	
40 to 59	404 (40.0)	333 (33.0)	737 (36.5)	
60 to 81	15 (1.5)	39 (3.9)	54 (2.7)	
Race				
Non-Hispanic White	116 (11.5)	87 (8.6)	203 (10.0)	.16
Non-Hispanic Black	546 (54.1)	575 (56.9)	1121 (55.5)	
Hispanic	319 (31.6)	315 (31.2)	634 (31.4)	
Other	29 (2.9)	33 (3.3)	62 (3.1)	
BMI				
Less than 18.5	20 (2.0)	28 (2.9)	48 (2.5)	.32
18.5 to 24.9	458 (46.7)	465 (48.4)	923 (47.6)	
25.0 to 29.9	307 (31.3)	299 (31.2)	606 (31.2)	
More than 30	195 (19.9)	168 (17.5)	363 (18.7)	
Diabetes	100 (9.9)	101 (10.0)	201 (10.0)	.94
Renal failure	5 (0.5)	8 (0.8)	13 (0.6)	.41
Skin disease	191 (18.9)	193 (19.1)	384 (19.0)	.91
HIV	82 (8.4)	63 (6.6)	145 (7.5)	.16
Current drug use	518 (55.9)	401 (44.6)	918 (50.4)	<.001
Current heroin use	217 (21.5)	129 (12.8)	346 (17.1)	<.001
Current marijuana use	251 (24.9)	238 (23.6)	489 (24.2)	.50
Current crack cocaine use	77 (7.6)	46 (4.6)	123 (6.1)	.004
Current cocaine use	159 (15.7)	88 (8.7)	247 (12.2)	<.001
Current benzodiazepine use	43 (4.3)	21 (2.1)	64 (3.2)	.006
Current barbiturate use	2 (0.2)	3 (0.3)	5 (0.2)	.66
Current methadone use	98 (9.7)	58 (5.7)	156 (7.7)	.001
Current crystal meth use	4 (0.4)	1 (0.1)	5 (0.2)	.22
Current pain medication use	19 (1.9)	13 (1.3)	32 (1.6)	.28
Current other drug use	19 (1.9)	15 (1.5)	34 (1.7)	.49
Current smoking	306 (30.3)	267 (26.4)	573 (28.4)	.05
Current snorting	177 (17.5)	122 (12.1)	299 (14.8)	<.001
Current injecting	113 (11.2)	45 (4.5)	158 (7.8)	<.001
Ever injected drugs	164 (17.7)	86 (9.6)	250 (13.7)	<.001
Current ingesting	80 (7.9)	59 (5.8)	139 (6.9)	.06
Antibiotics past 6 months	283 (28.0)	112 (11.1)	395 (19.6)	<.001
Polydrug use	227 (22.5)	138 (13.7)	365 (18.1)	<.001
Length of stay				
0–3 months	421 (41.7)	403 (39.9)	824 (40.8)	.20
3–6 months	193 (19.1)	169 (16.7)	362 (17.9)	
6–12 months	221 (21.9)	234 (23.2)	455 (22.5)	
Over 12 months	175 (17.3)	204 (20.2)	379 (18.8)	

Abbreviations: BMI, body mass index; HIV, human immunodeficiency virus.

^aP values from bivariate conditional logistic regression to account for matching.

Multivariable Conditional Logistic Regression Models

Multivariable conditional logistic regression results are presented in Table 2; 1940 detainees were included in the final multivariable models. Information about HIV was missing for 87 detainees and information about BMI was missing for 80 detainees so those individuals were excluded from the multivariable analyses.

In the model assessing type of drug use (Model 1), detainees with SSTIs were more likely to have taken antibiotics in the previous 6 months (odds ratio [OR], 4.08; 95% confidence interval [CI], 3.01–5.53) and to use heroin (OR, 1.53; 95% CI, 1.08–2.17) and cocaine (OR, 1.76; 95% CI, 1.18–2.65). In the model assessing mode of drug use (Model 2), detainees with SSTIs were more likely to have taken antibiotics in the previous 6 months (OR,

Table 2. Multivariable Conditional Logistic Regression Models

Variable	Model 1 ^a	Model 2 ^b
	OR (95% CI)	OR (95% CI)
Gender		
Female	1.00 ^c	1.00 ^c
Male	0.97 (0.68–1.37)	0.98 (0.70–1.39)
Age		
Less than 18	1.00 ^c	1.00 ^c
18 to 39	1.24 (0.73–2.08)	1.28 (0.76–2.16)
40 to 59	1.29 (0.75–2.19)	1.45 (0.85–2.48)
60 to 81	0.35 (0.15–0.84)	0.40 (0.17–0.96)
BMI		
Less than 18.5	1.00 ^c	1.00 ^c
18.5 to 24.9	1.63 (0.82–3.24)	1.62 (0.81–3.21)
25.0 to 29.9	1.60 (0.80–3.22)	1.62 (0.81–3.27)
More than 30	1.79 (0.88–3.64)	1.86 (0.92–3.78)
Race		
Non-Hispanic White	1.00 ^c	1.00 ^c
Non-Hispanic Black	0.84 (0.58–1.20)	0.89 (0.62–1.28)
Hispanic	0.77 (0.53–1.12)	0.79 (0.54–1.16)
Other	0.81 (0.41–1.57)	0.88 (0.45–1.73)
Antibiotics past 6 months	4.08 (3.01–5.53)	4.05 (2.98–5.49)
Current heroin use	1.53 (1.08–2.17)	—
Current crack use	1.33 (0.82–2.16)	—
Current cocaine use	1.76 (1.18–2.65)	—
Current benzodiazepine use	1.20 (0.61–2.34)	—
Current methadone use	1.29 (0.81–2.05)	—
Polydrug use	0.84 (0.53–1.34)	—
Current smoking	—	1.26 (0.99–1.57)
Current snorting	—	1.50 (1.12–2.00)
Current injecting	—	2.76 (1.77–4.31)
Current ingesting	—	0.89 (0.59–1.35)
Length of Stay		
0–3 months	1.00 ^a	1.00 ^a
3–6 months	1.09 (0.82–1.46)	1.06 (0.79–1.41)
6–12 months	0.89 (0.68–1.16)	0.88 (0.68–1.16)
>12 months	0.74 (0.55–0.99)	0.75 (0.56–1.00)

Bolded values are significant at the $P < .05$ level.

Abbreviations: BMI, body mass index; CI, confidence interval; OR, odds ratio.

^aConditional logistic regression model containing gender, age, BMI, race, antibiotic use in the previous 6 months, and drug use variables significant at the $P < .10$ level in bivariate analyses.

^bConditional logistic regression model containing gender, age, BMI, race, antibiotic use in the previous 6 months, and mode of drug use variables significant at the $P < .10$ level in bivariate analyses.

^cReference category.

4.05; 95% CI, 2.98–5.49), to snort drugs (OR, 1.50; 95% CI, 1.12–2.00), and to inject drugs (OR, 2.76; 95% CI, 1.77–4.31).

Sensitivity analyses examining the interaction of identified risk factors with time showed that the associations remained constant throughout the study period. Overall, the results using the general jail population controls were similar to results using urgent care clinic controls with regards to antibiotics and drug use. However, the general jail population were healthier with a lower prevalence of diabetes, HIV, and renal failure (data not shown).

DISCUSSION

This matched case-control study identified drug use patterns associated with purulent SSTIs in a large urban jail setting. Although other studies examining SSTIs in jail settings have focused on other behavioral risk factors [19] and have compared MRSA to methicillin-susceptible *S aureus* (MSSA) [8], they have not examined extensive drug use patterns associated with SSTIs. Furthermore, the incidence of purulent SSTIs has decreased over the 4-year study period, and this decrease coincided with a reduction in the average daily population for each month over the 4 years (Figure 1 and 2). Because crowding is a known risk factor of SSTIs, a decreasing jail population may partially account for the reduction in infection incidence [2, 3].

Our findings confirm those of Miko et al [18] and Maree et al [19], who found that prior use of oral and topical antibiotics was associated with clinical infection with *S aureus* in prison and jail settings, respectively. This study also identified the use of (1) heroin and cocaine and (2) snorting and injection drug use as significant risk factors for SSTIs. Detainees with a purulent SSTI were almost 3 times more likely to have injected drugs, and this likely accounts for the association between heroin use and purulent SSTIs, because the most common mode of heroin use is injection. Although our study identifies drug injection as a risk factor of purulent SSTIs in a jail population, the association between intravenous drug use and *S aureus* skin infection and colonization has been well documented in the community, among HIV-positive individuals, and among intravenous drug users [5, 23–28].

We are unaware of other studies that have identified snorting drugs as a risk factor of purulent SSTIs. Cocaine use likely drives this association. Few studies have identified cocaine as an independent risk factor of SSTIs, although a study conducted among intravenous drug users found that the injection of a heroin and cocaine mixture increased the risk of abscesses among this population by inducing soft-tissue ischemia [25]. The authors of that study also found that cleaning the skin with alcohol before injection had a protective effect from SSTIs. Furthermore, because the anterior nares is the primary site of *S aureus* colonization, snorting drugs may contribute to abrasion of this region and lead to infection.

This study has several strengths. First, our matched case-control study was conducted within the New York City jail system, one of the largest jails in the country, with 11 facilities housing approximately 10 000 detainees at any given time and approximately 60 000 detainees processed annually. Detainee length of stay is relatively short, with the average length of stay approximately 2 weeks. Thus, detainees often cycle between the jail and back to the community. The jail system also has a well developed electronic health record system, and the requirement for each detainee to undergo a medical examination upon entry allowed for the examination of numerous possible risk factors

using data with high validity and reliability. The study also has several limitations. We controlled for antecedent antibiotic use within the previous 6 months as a proxy for previous infection. We identified cases based on the date of SSTI diagnosis. Because this does not necessarily reflect when infection arose, we were not able to establish temporal relationships, especially between previous antibiotic use and SSTI diagnosis. Specifically, it may be possible in some cases, antecedent antibiotic use within the previous 6 months may have been for treatment of the current SSTI. Furthermore, antibiotic use in the previous 6 months was obtained from the electronic health record system and, as with any information obtained in medical records, may have been under- or misreported. However, this would not result in systematic bias. A second limitation is that we lacked microbiologic data including the culture results and antibiotic susceptibility patterns for each of the cases, so we were unable to identify pathogens that caused the SSTIs or distinguish between MRSA and MSSA. However, a previous study comparing MRSA to MSSA in a large urban jail failed to find significant differences in the risk factors for MRSA and MSSA SSTIs [8]. Furthermore, although incarceration history has previously been identified as a risk factor of SSTIs in state prisons [22], we could not assess previous incarceration history or the number of times detainees moved between facilities and how that may have contributed to the incidence of infection. Finally, information on drug use and HIV status may be underreported in this setting due to stigma and fear of legal repercussions for drug use for both cases and control; thus, the results likely underestimate the true association.

CONCLUSIONS

Nevertheless, the results of this study carry important implications. Injection and snorting of drugs, heroin and cocaine use, and antecedent treatment with antibiotics were identified as risk factors for SSTIs. The association between drug use and SSTIs has been well documented in settings outside of jail [5, 23–28], and criminal justice populations are disproportionately found to use drugs [29]. Methicillin-resistant *S aureus* colonization is also extremely prevalent in these populations [30, 31] and is another risk factor of *S aureus* infection [19]. Because the vast majority of detainees from jail are discharged back into the community or moved to prisons, jails may serve to amplify *S aureus* transmission, and detainees may introduce strains of MRSA into the community or into prison settings as a result of re-entry or transfer [3, 32]. Detainees may also come from areas of the city where MRSA is more likely to be endemic. Jails may be leveraged as an opportunity for the implementation of strategies to prevent and reduce SSTIs among detainees and the communities to which they are released. Due to the high prevalence of known risk factors of SSTIs, injection drug use, and MRSA colonization, among jail detainees [29–31], more research into the effects of systematic screening of detainees

for SSTIs and subsequent MRSA decolonization and/or treatment of SSTIs at entry to jail may be warranted. For example, use of chlorhexidine-impregnated cloths have been found to reduce *S aureus* carriage prevalence in an urban jail [33]. Finally, although harm reduction programs have been shown to reduce hepatitis C and HIV transmission [34, 35], our study provides additional support for their implementation within jails. Addressing drug use, specifically drug injection and snorting, may help to prevent and reduce occurrences of SSTIs upon detainees' release back into the community. Further research should investigate the effectiveness of SSTI prevention strategies in jail settings.

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Potential conflicts of interest. All authors: No reported conflicts of interest.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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