

High Prevalence of Abscesses and Cellulitis among Community-Recruited Injection Drug Users in San Francisco

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The prevalence of and risk factors for abscesses and cellulitis were investigated among a community sample of injection drug users (IDUs). Participants were interviewed, and those with symptoms were examined. Of 169 IDUs, 54 (32%) had abscesses ($n = 35$), cellulitis ($n = 5$), or both ($n = 14$); 27% had lanced their own abscesses; and 16% had self-treated with antibiotics they purchased on the street. IDUs who skin-popped (injected subcutaneously or intramuscularly) were more likely to have an abscess or cellulitis than those who had injected only intravenously (odds ratio, 4.9; 95% confidence interval, 2.2–11). The likelihood of abscesses and cellulitis increased with frequency of skin-popping and decreased with increasing duration of injection drug use. Abscesses are extremely prevalent among IDUs in San Francisco. Skin-popping is a major risk factor, and self-treatment is common.

Abscesses and cellulitis are a common problem among injection drug users (IDUs). Few previous studies have examined the prevalence of and risk factors for abscesses among IDUs. In this cross-sectional survey of street-recruited IDUs, we estimated the prevalence of abscesses and cellulitis among IDUs by examining all participants who reported symptoms of local infection. We also examined the risk factors for these infections and estimated the prevalence of related behaviors.

Methods

IDUs were recruited in May 1997 as part of the Urban Health Study (UHS), an on-going study of street-recruited IDUs [1]. By use of targeted sampling methods [2, 3], IDUs were recruited by study outreach workers, collaborating outreach agencies, and

by word of mouth. Eligibility criteria were age ≥ 18 years and physical evidence of drug injection (e.g., track marks) or previous participation in the UHS.

Participants were interviewed by use of a standardized questionnaire and were paid \$20. Serum was tested for HIV antibody. The abscess study was introduced after IDUs presented for enrollment, so that street sampling would not be biased in favor of IDUs who wanted to see a doctor. Of 221 IDUs invited, 192 (87%) agreed to participate. Data for 10 individuals were not complete, and 13 individuals were excluded from the analysis because they had not injected in the previous 30 days.

Participants were asked whether they had pain, swelling, redness, hardness under their skin, heat, pus, or oozing and whether they thought they had an abscess or an infection at or near a place they had injected drugs. If the answers to all these questions were "no," the participant was considered to have a negative clinical history and not to have an abscess or cellulitis. If any answer was "yes" ($n = 87$), the participant was examined by a physician or nurse practitioner who was blinded to the questionnaire responses. This clinical diagnostic algorithm has been validated in a subsequent study in which all participants were examined. Only 3 (1.6%) of 183 IDUs had no symptoms but had an abscess or cellulitis on physical examination (D. Ciccarone, unpublished data).

Bivariate relationships between potential risk factors and the presence of an abscess or cellulitis were examined by use of the Mantel-Haenszel χ^2 test. Independent variables associated with the dependent variable in the bivariate analyses or in previous studies or whose effects could confound those of other variables were included in logistic regression models.

Results

Of 169 IDUs, 126 (75%) were men, 91 (54%) were aged 40–49 years, 88 (52%) were white, 61 (36%) were black, 11 (7%) were

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Table 1. Prevalence of abscess and/or cellulitis on physical examination among 169 street-recruited injection drug users (IDUs) according to participant characteristics and injection practices.

Characteristic or practice	No. (%)	No. (%) with abscess(es) and/or cellulitis	OR (95% CI)
Total injections, past 30 d			
1–29	51 (30)	13 (26)	1
30–89	59 (35)	19 (32)	1.4 (0.6–3.2)
90+	59 (35)	22 (35)	1.7 (0.8–3.9)
Iv injections, past 30 d			
0–29	63 (37)	22 (25)	1
30–89	57 (34)	18 (32)	0.9 (0.4–2)
90+	49 (29)	14 (28)	0.7 (0.3–1.8)
Sc or im injections, past 30 d			
0	131 (78)	31 (24)	1
1–29	20 (12)	18 (45)	2.6 (1–6.8)
30+	18 (11)	14 (78)	11.3 (3.6–35)
Years since started injecting			
0–9	32 (19)	14 (44)	1
10–19	38 (22)	14 (37)	0.8 (0.3–1.9)
20–29	66 (39)	20 (30)	0.6 (0.2–1.3)
30+	33 (20)	6 (18)	0.3 (0.1–0.9)
Licked needle before injecting, past 30 d ^a			
No	121 (72)	36 (30)	1
Yes	46 (28)	17 (37)	1.4 (0.7–2.8)
Cleaned skin before injecting, past 6 mo			
Not always	116 (69)	41 (35)	1
Always	53 (31)	13 (24)	0.6 (0.3–1.2)
Washed hands before injecting, past 30 d ^b			
Never	59 (36)	19 (32)	1
Sometimes	78 (47)	26 (33)	1.0 (0.5–2.2)
Always	28 (17)	8 (29)	0.8 (0.3–2.2)
Injected with used syringe, past 30 d ^b			
No	63 (38)	17 (27)	1
Yes	102 (62)	37 (36)	1.5 (0.8–3)
Shared syringes, past 30 d			
No	123 (73)	37 (30)	1
Yes	46 (27)	17 (37)	1.4 (0.7–2.8)
Used SEP, past 30 d			
No	34 (20)	11 (32)	1
Yes	135 (80)	43 (32)	1.0 (0.4–2.2)

NOTE. Im, intramuscular; iv, intravenous; sc, subcutaneous; SEP, syringe exchange program.

^a Missing data from 2 participants.

^b Missing data from 4 participants.

Latino, 96 (43%) were homeless, and 12 (7%) were HIV seropositive. One hundred and forty-four (85%) of the participants injected heroin, 54 (32%) injected methamphetamine, 49 (29%) injected heroin plus cocaine or methamphetamine (speedballs), and 27 (16%) injected cocaine.

Fifty-four IDUs (32%) had an abscess ($n = 35$), cellulitis ($n = 5$) or both ($n = 14$) on physical examination. Nineteen (11%) had multiple abscesses (median, 2 abscesses; range, 2–20 abscesses). Three participants were judged to require emergency treatment because of systemic signs of infection. Sixteen participants (10%) used the neck as 1 of the 3 most commonly used sites of injection, and 16 (10%) used the groin or buttocks.

One hundred and fifteen IDUs (68%) reported ever having had an abscess (median, 3 times; range, 1–20 times). Of those, 89 (77%) had been treated by a doctor, and 55 (48%) reported at least 1 abscess (median, 2) for which they had not sought

treatment. Forty-five participants (27%) had lanced their own abscess outside a medical setting, and 26 (16%) had treated their own abscess with antibiotics they acquired on the street.

The likelihood of having an abscess or cellulitis did not differ significantly on the basis of sex, age, race/ethnicity, homelessness, educational level, type of drug injected, anatomic site of injection, HIV status (as determined by testing for HIV antibody), or substance abuse treatment. None of the hygiene-related variables were significantly related to the presence of an abscess or cellulitis (table 1).

IDUs who skin-popped (injected sc or im) in the 30 days before interview were more likely to have an abscess or cellulitis (23 [61%] of 38) than those who had injected only iv (31 [24%] of 131; OR, 4.9; 95% CI, 2.2–11.4). The prevalence increased with the frequency of skin-popping (table 1). IDUs were progressively less likely to have an abscess or cellulitis the longer

they had been injecting (linear trend test, $P = .02$; table 1). In multiple logistic regression analysis, having an abscess or cellulitis remained significantly associated with frequency of skin-popping and duration of injection drug use, but was not associated with any other variable. When we controlled for skin-popping and years of injection drug use, the participants who licked their needles before injecting were more likely to have an abscess or cellulitis than those who did not lick their needles (unadjusted OR, 1.4; 95% CI, 0.7–2.8; adjusted OR, 1.9; 95% CI, 0.9–4.3). This effect did not reach statistical significance.

Discussion

To our knowledge, this is the first study of injection-related abscesses and cellulitis to use clinical diagnosis to identify cases among IDUs recruited from the community. Nearly a third of active IDUs in our sample had abscesses, cellulitis, or both. A large proportion of IDUs in this study have attempted medical self-treatment of their abscesses with street-bought antibiotics and self-lancing. These findings underscore the need for improving access to medical attention and for research examining why IDUs delay seeking care.

Our data suggest that skin-popping is a strong risk factor for abscesses and cellulitis. Skin-popping also appears to be a risk factor for the development of tetanus [4] and paralysis associated with *Clostridium botulinum* toxin [5]. The subcutaneous space may be hospitable to multiplying pathogenic organisms that are introduced by nonsterile injection of drugs, contaminants, and fillers, some of which may cause local tissue reactions (e.g., vasoconstriction) that predispose to the development of infections. IDUs skin-pop most often because they are unable to gain access to a vein, but increased duration of injection drug use did not confound the relationship between skin-popping and the presence of abscesses and cellulitis. Education about safe and sterile injection techniques could help IDUs preserve access to their veins and reduce the risk of infections associated with skin-popping, but iv injection is associated with other risks. IDUs should be advised to avoid injecting into the groin and neck where abscesses can have severe complications.

Among our study participants, each successive decade of injection-drug-use experience was associated with a stepwise reduction in the risk of abscesses or cellulitis. Over time, IDUs with frequent infections may die, stop injecting, or learn to avoid these infections. Previous studies of self-reported ab-

scesses showed that IDUs who reported cleaning their skin before injecting had a lower rate of abscesses than those who never cleaned their skin [6, 7]; our study, however, did not show a significant difference. For the prevention of abscesses and cellulitis, alcohol prep pads alone may not be sufficient to clean injection sites. Alcohol lacks the sustained residual antimicrobial activity of chlorhexidine and iodophors, and prep pads are small. Other antiseptic products and techniques should be explored.

Methadone treatment enriched with on-site HIV medical care may reduce hospital admissions related to abscesses and cellulitis [8]. Prompt access to substance abuse treatment should be available to all IDUs, but a comprehensive plan is needed that includes IDUs who are not interested in drug treatment (approximately one-half of our sample) and those who will not stop injecting completely while in treatment. To our knowledge, there are no studies on the effect of decriminalized heroin on the incidence of abscesses.

Our data demonstrate that abscesses and cellulitis are extremely prevalent among IDUs in San Francisco. Targeted, early and respectful health services for treatment of abscesses and cellulitis may reduce morbidity and the need for lengthy hospital admissions.

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