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Self-Management of Injection-Related Wounds Among Injecting Drug Users

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Abstract

Injection-related wounds are an important complication of injection drug use. This study describes behaviors related to self-management of injection-related wounds and identifies factors associated with behaviors that may increase the potential for harm. We conducted interviews with 101 injecting drug users in Washington, DC. A total of 82 (81.2%) injecting drug users reported ever having an injection-related wound, and of these 93.9% reported self-management of their wounds. The most commonly reported behaviors were cleaning and applying ointment to wounds; however, several participants engaged in behaviors determined to be more potentially harmful, including acquiring antibiotics without prescriptions and manipulating their wounds. In multivariate analysis, injecting drug users who had ever injected amphetamines were more likely to engage in potentially harmful self-management behaviors (adjusted odds ratio = 4.38; 95% confidence interval = 1.15–16.64). Self-management of injection-related wounds is common and certain behaviors may increase the potential for harm. Further research is needed to best focus efforts to improve wound care for injecting drug users.

Keywords

Injection drug use; injection-related wounds; harm reduction

INTRODUCTION

Injection drug use is a serious public health problem that can lead to substantial morbidity and mortality.^{1–3} Of the many complications attributable to injection drug use, skin and soft tissue infections remain one of the most common problems^{4,5} and are experienced by up to one-third of injecting drug users,⁶ but abscesses, cellulitis, and other infections are not the only injected-related wounds that cause health problems for injecting drug users. Injecting drugs can lead to myriad adverse cutaneous and subcutaneous effects, including thrombophlebitis, venous sclerosis, lymphedema, superficial scarring and discoloration, chronic venous insufficiency, and ulcers.^{3,7} Encompassing the wide array of lesions and infections that can occur, injected-related wounds represent an important clinical and public health complication of injection drug use.

The specific clinical manifestations of injected-related wounds depend on the type of drug or additives, route of injection, particular injection practices, and presence of infectious agents. As a result of repeated injections into a single site, skin and surrounding tissue become damaged

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and susceptible to infection. Both the drugs themselves and various additives (such as quinine, which is commonly used to dilute heroin) can compound the injury by inducing vasospasm and thrombosis, affecting blood flow and promoting tissue death.^{8,9} Injecting intramuscularly or subcutaneously increases the occurrence of infections, as does injecting with a needle that has been previously used and not properly cleaned.¹⁰ Conversely, taking certain precautions before injecting, including cleaning the site with soap and water or alcohol, can help prevent infections.¹¹ Early treatment of wounds is also likely to prevent complications.

Although many injecting drug users are able to self-diagnose injected-related wounds that are easily treated in primary care settings,¹² injecting drug users commonly delay or decline seeking treatment.^{13,14} The reasons for delaying care are not well described, but some hypothesize a complex relationship between social characteristics, drug use behaviors, and access to health care.¹⁵ Furthermore, although it has been reported that injecting drug users often acquire antibiotics without a prescription¹⁶ or cut into their own abscesses,⁶ it is not well known how they might otherwise be self-managing their injected-related wounds. It is possible that certain self-management strategies may lead to otherwise avoidable complications, ultimately requiring more costly or extensive care or both. A better understanding of self-management behaviors that may increase morbidity among injecting drug users can help programs that serve this population to better educate injecting drug users and prevent potential complications of injected-related wounds. Thus, we sought to describe behaviors related to self-management of injected-related wounds and identify factors associated with behaviors that may increase the potential for harm among injecting drug users in Washington, DC.

METHODS

Study Population

The study was conducted at a community-based organization's mobile van that travels to 11 sites in Washington, DC, to provide needle exchange services, human immunodeficiency virus testing and counseling, referrals to drug treatment, and medical and social services. Between July and October 2004, participants of the program who were exchanging needles were approached. Eligible participants were at least 18 years old, spoke English, and had a history of injection drug use. Informed consent was obtained from all participants, and the George Washington University Medical Center Institutional Review Board approved the study.

Data Collection

Participants were anonymously interviewed for 10 to 15 minutes in a private room in the mobile van, using a structured questionnaire containing both open and closed-ended questions. Information collected included demographic characteristics, drug use behaviors, history of injected-related wounds, and behaviors related to self-management of injected-related wounds. Upon completion of the interview, participants were remunerated \$15 for their time.

MEASURES

Injection-Related Wounds

The historical prevalence of injected-related wounds was determined if the participant reported ever having a wound or infection on his or her body related to injecting drugs.

Self-Management Behaviors

Behaviors related to the self-management of injected-related wounds were identified from responses to the following open-ended question: "[In the past,] when you noticed a wound on your skin and dealt with it yourself, what did you do?" Two investigators independently reviewed all responses and created categories to represent participants' responses. Once

categories were established, the investigators independently assigned the responses to the appropriate categories. Multiple categories were possible for each response.

Each category was then classified as presenting “more potential harm” or “less potential harm” based on clinical judgment. We classified the following self-management behaviors to be associated with less potential harm: “doing nothing,” “avoiding injecting at sites [near their wounds],” “soaking,” “cleaning,” “applying ointment,” and “dressing [their wounds].” We classified the following behaviors to be associated with more potential harm: “acquiring antibiotics [without a prescription]” and “manipulating [their wounds].”

Because the number of respondents for each potentially harmful behavior was not large enough to conduct meaningful analyses independently, analyses were performed combining them into a single group. Accordingly, participants who engaged in either of the behaviors presenting “more potential harm” were classified as such, irrespective of whether they also reported other behaviors. Only participants who did not report any of the more potentially harmful behaviors were classified as presenting “less potential harm.”

Data Analysis

Based on our primary interest to describe behaviors related to self-management of injected-related wounds, we first performed simple frequencies. Then, we conducted bivariate analyses using chi-square and Fisher’s exact tests to examine factors associated with behaviors identified as presenting more potential harm. Finally, we conducted multivariate logistic regression analysis to examine whether certain factors were independently associated with the self-management behaviors that presented more potential harm. All variables that were associated with these potentially harmful behaviors with $P < .20$ in bivariate analysis were entered into the multivariate model.

RESULTS

Of the 101 injecting drug users enrolled in this study, 82 (81.2%) participants who reported ever having an injection-related wound were included in this analysis (see Figure 1 for photographs of active injection-related wounds). The majority of participants were 40 years of age or older ($n = 73$; 89.0%), male ($n = 61$; 75.3%), black ($n = 76$; 92.7%), a high school graduate or equivalent ($n = 45$; 54.9%), and reported first injecting drugs before 20 years of age ($n = 50$; 61.0%) (Table 1). The most common drugs injected by participants were heroin ($n = 82$; 100.0%) and cocaine ($n = 64$; 78.0%). The most common routes of injection were intravenously ($n = 82$; 100%), subcutaneously ($n = 70$; 85.4%), and intramuscularly ($n = 55$; 67.1%).

Almost all ($n = 77$; 93.9%) injecting drug users with a history of injection-related wounds reported self-management of their wounds. The behaviors most frequently reported included cleaning ($n = 60$; 73.2%), applying ointment ($n = 39$; 47.6%), and dressing the wound ($n = 16$; 19.5%). Seven participants (8.5%) reported acquiring antibiotics without a prescription and eight (9.8%) reported manipulating their wound. Table 2 displays examples of the types of self-management behaviors participants reported and associated prevalence rates. No participant engaged in both potentially harmful behaviors.

In bivariate analysis, having ever injected amphetamines (57.1% vs. 16.0%, $P < .01$) was positively associated with more potentially harmful behaviors (Table 3). None of the other factors, including behaviors previously associated with an increased risk of infection, were significantly associated with more potentially harmful behaviors at $P < .05$. In multivariate analysis, participants who reported ever injecting amphetamines were significantly more likely

to have engaged in these more potentially harmful self-management behaviors (adjusted odds ratio [AOR] = 4.38; 95% confidence interval [CI] = 1.15–16.64) (Table 4).

DISCUSSION

As a formative look into the self-management of a broad array of injection-related wounds, this study suggests that self-management of injected-related wounds is common and includes certain behaviors that may be potentially harmful. Among 101 injecting drug users in Washington, DC, 82 reported ever having injected-related wounds and nearly all had attempted to manage their wound care on their own, employing various techniques, including cleaning, soaking, dressing, and applying ointment to their wounds. A smaller percentage of injecting drug users also engaged in behaviors that may increase the potential for harm, including acquiring antibiotics without a prescription or manipulating their wounds.

The high rate of self-management of wounds is consistent with evidence that many injecting drug users do not seek out preventive care and often delay necessary medical treatments.^{12, 17–19} Injecting drug users often face an assortment of barriers to accessing health services, including lack of health insurance, high cost, and mistreatment by health care providers.^{20, 21} Although we did not explore the reasons behind the high rates of self-management in this study, we hypothesize that the reasons for injecting drug users managing wounds on their own are similar to those associated with decisions to delay seeking health care.

Consequently, understanding who engages in potentially harmful self-management behaviors may help target harm reduction efforts. Early and appropriate treatment of injected-related wounds can have a positive impact on the health of injecting drug users, but acquiring antibiotics on the street or manipulating wounds may increase the risk for worsening infection or antibiotic resistance.²² In our study, ever having injected amphetamines was positively associated with self-management behaviors determined to be more potentially harmful. It is possible that injecting drug users who report ever injecting amphetamines represent a subpopulation of substance users who may engage in riskier behaviors or may be more isolated from health care and thus prone to more aggressive management of their wounds than injecting drug users who use other drugs. However, given the nature of this small exploratory study, we caution against overgeneralization of this finding and stigmatization of this group. More research is needed to better identify those individuals who are at an increased risk of engaging in potentially harmful self-management behaviors.

There are a few notable limitations to this study. First, the data was gathered by self-report and could not be verified by medical records or other objective means. However, injecting drug users have been shown to be able to properly self-diagnose injected-related wounds,¹² and there were no known incentives for misreporting in this study. Second, the sample was a convenience sample of needle exchange program participants in one major city. It is possible that this population does not accurately represent injecting drug users in Washington, DC, because those who participate in needle exchange programs may deal with their wounds differently than those who do not. Third, as previously noted, although they are combined in this analysis, the two behaviors identified as presenting more potential harm are likely distinct. In fact, in this study no participant reported engaging in both behaviors. Thus, acquiring antibiotics without a prescription and manipulating wounds are different approaches to self-management and may reflect unmeasured factors including type of wound or availability of resources. Because of our small sample size, we combined these self-management strategies in our analysis to highlight factors associated with engaging in any potentially harmful behavior. Further exploration into these behaviors is certainly warranted.

CONCLUSIONS

This exploratory study provides an initial examination into an unstudied issue that holds clinical and public health significance for injecting drug users. We found that self-management of injection-related wounds was common among injecting drug users. Additionally, a small but significant proportion of injecting drug users managed their wounds by employing behaviors that may increase the potential for harm, including acquiring antibiotics without a prescription or manipulating their wounds, which was independently associated with a history of injecting amphetamines. Further research is needed to best focus prevention efforts to reduce morbidity from injection-related wounds and improve wound care for injecting drug users.

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FIGURE 1.
Photographs of participants' injection-related wounds at time of study.

TABLE 1
Demographic and Drug Use Characteristics of 82 Injecting Drug Users Who Reported Ever Having an Injection-Related Wounds

Characteristic	N (%)
Gender	
Male	61 (75.3)
Female	20 (24.7)
Race	
Black	76 (92.7)
White	6 (7.3)
Current age	
< 40 years	9 (11.0)
40–49 years	43 (52.4)
50 years or older	30 (36.6)
Completed high school or obtained GED	45 (54.9)
Age when first injected drugs	
< 15 years	10 (12.2)
15–19 years	40 (48.8)
20–24 years	9 (11.0)
25–29 years	9 (11.0)
30 years or older	14 (17.1)
Heroin use	
Ever injected	82 (100.0)
Injected in past 30 days	79 (96.3)
Cocaine use	
Ever injected	64 (78.0)
Injected in past 30 days	31 (37.8)
Amphetamine use	
Ever injected	16 (19.5)
Injected in past 30 days	1 (1.2)
Intravenous drug use	
Ever injected	82 (100.0)
Injected in past 30 days	78 (95.1)
Intramuscular drug use	
Ever injected	55 (67.1)
Injected in past 30 days	29 (35.4)
Have ever injected subcutaneously	70 (85.4)
Have ever booted or “kicked” ^a	76 (92.7)
Have ever reused needle	79 (96.3)
Have ever injected with others’ used needle	47 (57.3)
Have ever attempted self-management of injected-related wounds	77 (93.9)

^aBooting, or “kicking,” refers to withdrawing blood before injecting drugs or after initially injecting and then re-injecting without removing the needle.

TABLE 2

Identified Behaviors Related to the Self-Management of Injection-Related Wounds Among Injecting Drug Users

Behavior Description	Sample Responses by Participants *	N (%)
Nothing	"Nothing." "Say damn, do nothing, let it come to a head."	5 (6.1)
Avoid injecting at site	"Abstain using in the area, clean and bandage it." "Ointment packets, stop injecting at the site."	2 (2.4)
Soak	"Soak in Epsom salt." "Ointment, wrap in gauze, soak in water."	4 (4.9)
Clean	"Clean it with peroxide, Silvadene, gauze, and sterile water." "Keep it clean with peroxide, alcohol, and antibiotic grease." "Clean it with soap and water."	60 (73.2)
Apply ointment	"Clean it, put on ointment." "Clean it with peroxide and, depending on the depth, with Bacitracin." "Soak in Epsom salts, wrap it up, and use antibiotic cream."	39 (47.6)
Dress	"Try to get some kind of bandage or alcohol on it." "Wipe it with alcohol, push the pus out, use antibiotic ointment and do wet-to-dry dressings." "I bathe it and dress the wounds twice a day."	16 (19.5)
Acquire antibiotics	"Put alcohol on it, then bleach, and see if I have any antibiotics, or I will buy some, try to get some Keflex." "Buy antibiotics in the street, not from a doctor."	7 (8.5)
Manipulate	"Bust it open with a needle." "Squeeze it, get the pus out." "Use hot water to burn the core out." "Pick it."	8 (9.8)

* Underlined portion of response corresponds with coded category. Multiple categories were possible for each response.

TABLE 3

Level of Potential Harm Associated with Self-Management of Injection-Related Wounds by Demographic and Drug Use Characteristics of 82 Injecting Drug Users

Characteristic	More Potential Harm N (%)	Less Potential Harm N (%)
Total	15	67
Male gender	13 (92.9)*	48 (71.6)
Black race	13 (86.7)	63 (94.0)
Current age > 50 years	7 (46.7)	23 (34.3)
Completed high school or obtained G.E.D.	6 (40.0)	39 (58.2)
First injected drugs at < 20 years of age	9 (60.0)	41 (61.2)
Have ever injected heroin	15 (100.0)	67 (100.0)
Have ever injected cocaine	12 (80.0)	52 (77.6)
Have ever injected amphetamines	7 (46.7)**	9 (13.4)
Have ever injected intravenously	15 (100.0)	67 (100.0)
Have ever injected intramuscularly	12 (80.0)	43 (64.2)
Have ever injected subcutaneously	12 (80.0)	58 (86.6)
Have ever booted or "kicked" ^a	13 (86.7)	63 (94.0)
Have ever reused needle	13 (86.7)*	66 (98.5)
Have ever injected with others' used needle	10 (66.7)	37 (55.2)

^a Booting or "kicking" refers to withdrawing blood into the syringe before injecting drugs or after injecting and then re-injecting without removing the needle.

P < .20.

* P < .05.

TABLE 4

Variables Included in the Logistic Regression Model for More Potentially Harmful Self-Management of Injection-Related Wounds Among 82 Injecting Drug Users

Characteristic	Adjusted Odds Ratio (95% CI)
Male gender	3.82 (0.45–32.79)
Have ever injected amphetamines	4.38 (1.15 – 16.64)
Have ever reused needle	0.12 (0.01 – 1.55)