Association of Skin Infections with Sharing of Injection Drug Preparation Equipment among Persons who Inject Drugs

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Introduction

- Skin and soft tissue infections (SSTI) among people who inject drugs (PWID) nearly doubled from 2000 and 2010, and are the most common reason for hospitalization
- >1/3 PWID report a recent SSTI
- Sharing needles, syringes, and injection drug preparation equipment (IDPE) are common among PWID, and well-established risk factors for HIV and HCV transmission
- Most SSTIs arise at recent injection sites, thus, shared needles and IDPE may serve as niduses for SSTI
- Given the rising incidence of SSTIs in PWID, it is critical to understand the risk of SSTI with sharing needles and IDPE

Objective

To determine the association of needle and IDPE sharing on incidence of SSTI in a cohort of PWID

Methods

- Retrospective cohort study using data from the Skin and Needle Hygiene Intervention (SKIN NIH R01DA034957) *randomized* clinical trial to a skin cleaning and needle hygiene intervention versus usual care to reduce incidence of SSTI
- **Population:** N=252 active PWID, English speaking, >18 years old, hospitalized from January 2014 to June 2018

- **Primary Exposure variables:**
  1) self-report of sharing IDPE
  2) self-report of sharing needles or IDPE

- **Outcome variable:** incidence rate of self-reported SSTI at follow up assessments following hospitalization

- **Statistical Analysis:**
  - Descriptive statistics using chi square and Fisher's exact tests for categorical variables and t-tests and Wilcoxon tests for continuous variables
  - Multi-level Poisson regression models to estimate incidence rate ratios (IRR) of the adjusted effect of baseline sharing on the number of SSTIs reported during follow up, controlling for indicator variables for month of follow-up assessment
  - *Covariates for this analysis are age, race, latinX, number of lifetime skin infections reported prior to baseline, and dummy indicators for time or follow-up assessment.

Results

Table 1: Comparisons of PWID who Share IDPE +/- Needles n= 252

	Overall	Shared IDPE		Shared IDPE with or without needles	
		N=159	p-value	N=180	p-value
Age, mean years (sd)	37.9 (± 10.7)	36.4 (10.4)	0.002	36.89 (10.46)	0.014
Gender (male), n (%)		87 (54.7)	0.128	100 (55.6)	0.157
Race, n (%)			0.022		0.053
White, n (%)	150 (59.5%)	105 (66)		115 (63.9)	
Black, n (%)	52 (20.6%)	27 (17)		31 (17.2)	
Other, n (%)	50 (19.8%)	27 (17)		34 (18.9)	
LatinX, n (%)	40 (15.9%)	22 (13.8)	0.247	26 (14.4)	0.326
Primarily injects opioids, n (%)	227 (90.1%)	139 (87.4)	0.065	160 (88.9)	0.318
SSTI Knowledge score, mean (sd)**	7.0 (± 0.9)	7.16 (0.88)	0.004	7.14 (0.90)	0.005
Days of SSTI past 3-Mos, mean (sd)		8.57 (17.17)	0.250	9.11 (18.21)	0.469
Lifetime # Abscesses, mean (sd)		4.09 (8.5)	0.206	4.06 (8.15)	0.114

** Range 1-9 where higher scores indicate increased knowledge about SSTI risk factors

Participant characteristics: mean 37.9 years; 58% male; 90% primarily inject opioids, 43% inject with others, 28% didnt share IDPE or needles, 8% shared needles only, 13% shared IDPE only, 50% shared needles and IDPE

Table 2: Multi-level Poisson Regression Models Estimating the adjusted effect of baseline sharing on number of SSTIs reported during follow up*

	IRR (95% Confidence Interval)	P value
Shared IDPE	1.32 (0.90; 1.95)	0.157
Shared IDPE with or without Needles	2.14 (1.23; 3.72)	0.007

We detected an increased incidence rate of self reported SSTI among those who shared needles or IPDE, but not IDPE alone compared to persons who did not share

Discussion

- IDPE sharing is likely more common because sterile IDPE are less likely to be found and purchased in the community and likely perceived to be less hazardous as an infectious nidus
- PWID who shared needles or IDPE had higher mean SSTI knowledge scores, thus knowledge doesn't drive engaging in risk behaviors, which is consistent in other studies
- Those who sharing behaviors did not vary significantly with prior indicators for SSTIs, likely due to underreporting of infections
- Baseline sharing IDPE and or needles for active PWID should alert clinicians to stress greater access to harm reduction injection supplies so as to avert future SSTIs.
- This could be accomplished by expansion of syringe service programs and the legalization of safe injection facilities (SIFs) in the U.S
- More longitudinal cohort studies evaluating the risk of IDPE on SSTIs are needed to further identify the magnitude of risk of SSTI

Limitations

- Sharing behaviors were derived from composite values from data that was not designed specifically for this purpose
- Outcome variables are self report and at risk for social desirability biases and under-reporting of risk behaviors
- Cohort was recruited from hospitalized PWID at a single urban treatment center in US, may have had more underlying health conditions that predisposed to SSTI

Conclusion

- Our results provide evidence that supplies needed to inject drugs safely need to be more readily accessible to PWID so sharing IDPE and needles can be minimized