

# The Scientific Evaluation of Vancouver's Safer Injection Facility

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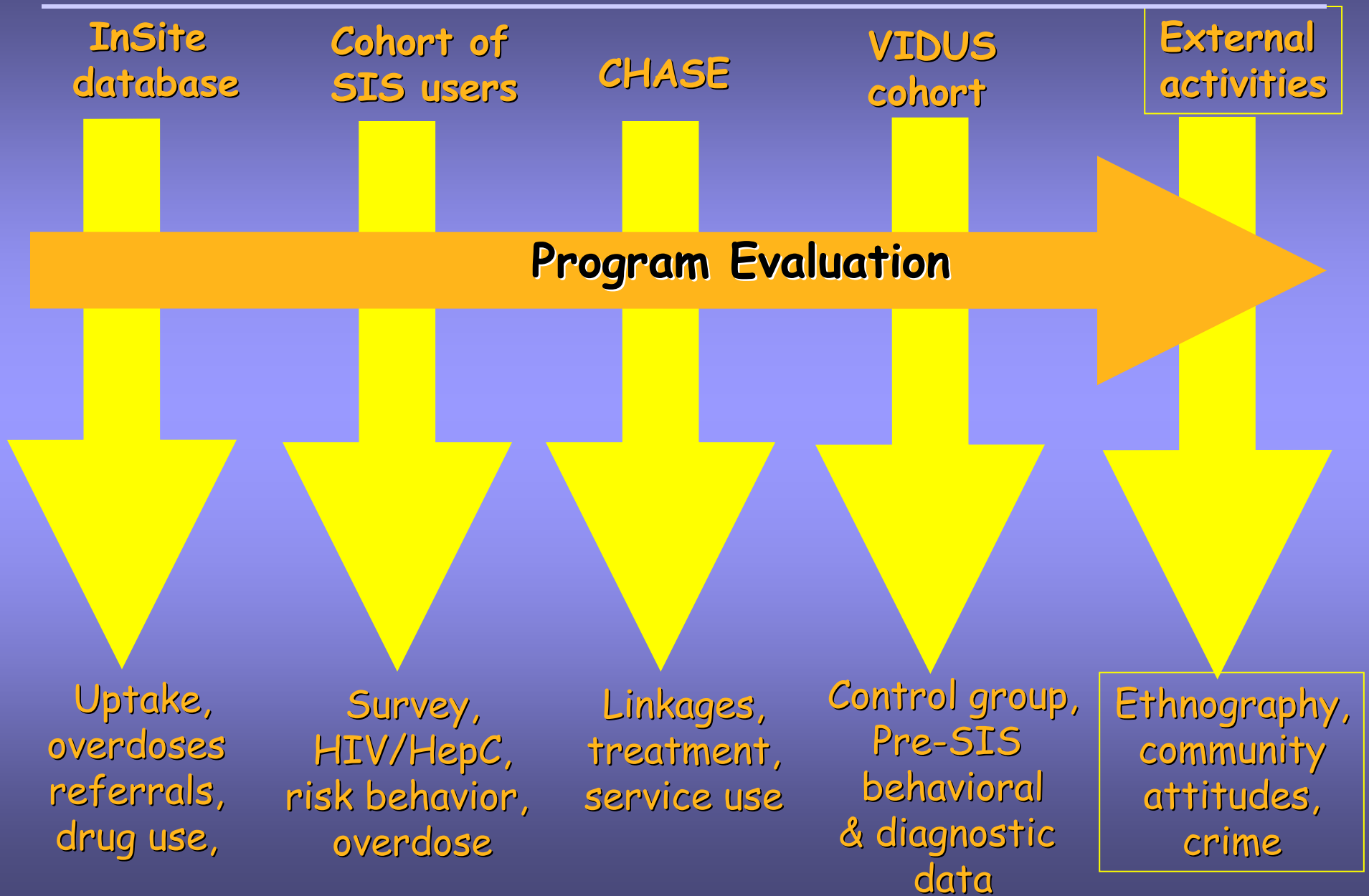
Thomas Kerr  
Mark Tyndall  
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Kathy Li  
Ruth Zhang  
Calvin Lai  
Julio Montaner  
Evan Wood



British Columbia  
Centre *for* Excellence  
*in* HIV/AIDS



# SIS Evaluation Structure



# Evaluating Insite

## Harm Reduction Journal



Methodology

Open Access

### **Methodology for evaluating Insite: Canada's first medically supervised safer injection facility for injection drug users**

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# Published Findings to Date

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## Three Lines of Inquiry:

- Description of processes and operations
- Evidence of positive health and community benefits
- Evidence of adverse health and community impacts

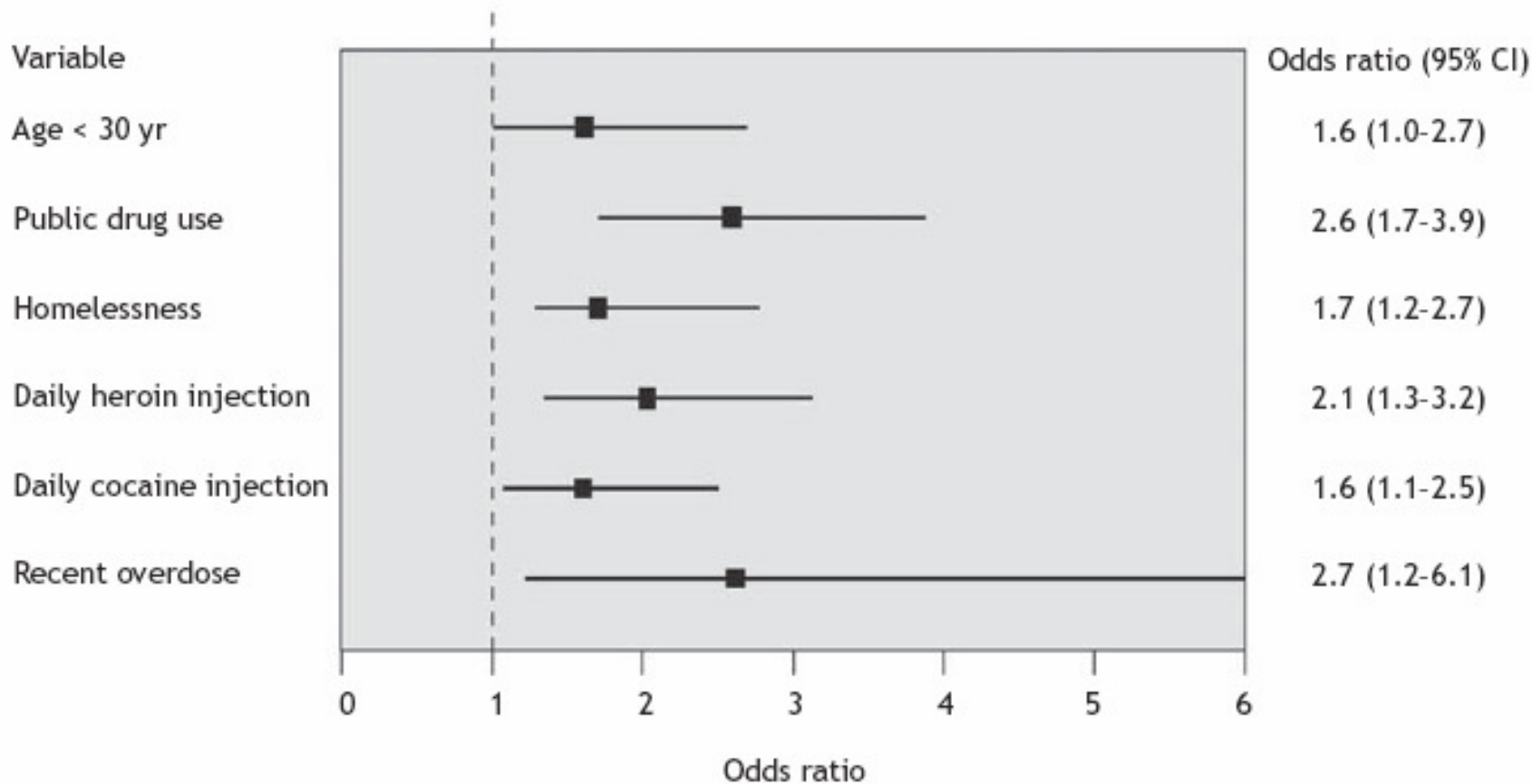
## Brief Reports

# Do Supervised Injecting Facilities Attract Higher-Risk Injection Drug Users?

Evan Wood, PhD, Mark W. Tyndall, MD, ScD, Kathy Li, MSc, Elisa Lloyd-Smith, BSc, Will Small, MA, Julio S.G. Montaner, MD, Thomas Kerr, PhD

**Background:** In Western Europe and elsewhere, medically supervised safer injection facilities (SIFs) are increasingly being implemented for the prevention of health- and community-related harms among injection drug users (IDUs), although few evaluations have been conducted, and there have been questions regarding SIFs' ability to attract high-risk IDUs. We examined whether North America's first SIF was attracting IDUs who were at greatest risk of overdose and blood-borne disease infection.

*American Journal of Preventative Medicine, 2005*



**Fig. 2:** Characteristics of injection drug users (IDUs) measured in the community before the Vancouver safer injecting facility opened, which predicted subsequent initiation of facility use.

# Service Uptake and Characteristics of Injection Drug Users Utilizing North America's First Medically Supervised Safer Injecting Facility

| Evan Wood, PhD, Mark W. Tyndall, ScD, MD, Zhenguo Qui, PhD, Ruth Zhang, MSc, Julio S. G. Montaner, MD, and Thomas Kerr, PhD

May 2006, Vol 96, No. 5 | American Journal of Public Health

Wood et al. | Peer Reviewed | Field Action Report | 1

Those who use of the SIF daily were more likely to:

	Odds ratio	95% CI	p value
Be homeless:	1.84	(1.19 – 2.86)	< 0.006
Frequently inject heroin:	3.01	(2.16 – 4.20)	< 0.001
Frequently inject cocaine:	2.27	(1.60 – 3.23)	< 0.001



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Drug and Alcohol Dependence 83 (2006) 193–198



[www.elsevier.com/locate/drugalcddep](http://www.elsevier.com/locate/drugalcddep)

## Attendance, drug use patterns, and referrals made from North America's first supervised injection facility

Mark W. Tyndall<sup>a,b,\*</sup>, Thomas Kerr<sup>a,b</sup>, Ruth Zhang<sup>b</sup>, Evelyn King<sup>b</sup>,  
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### Abstract

*Drug and Alcohol Dependence, 2005*



# Total number of people attending the SIF each month, including the number of first time SIF users

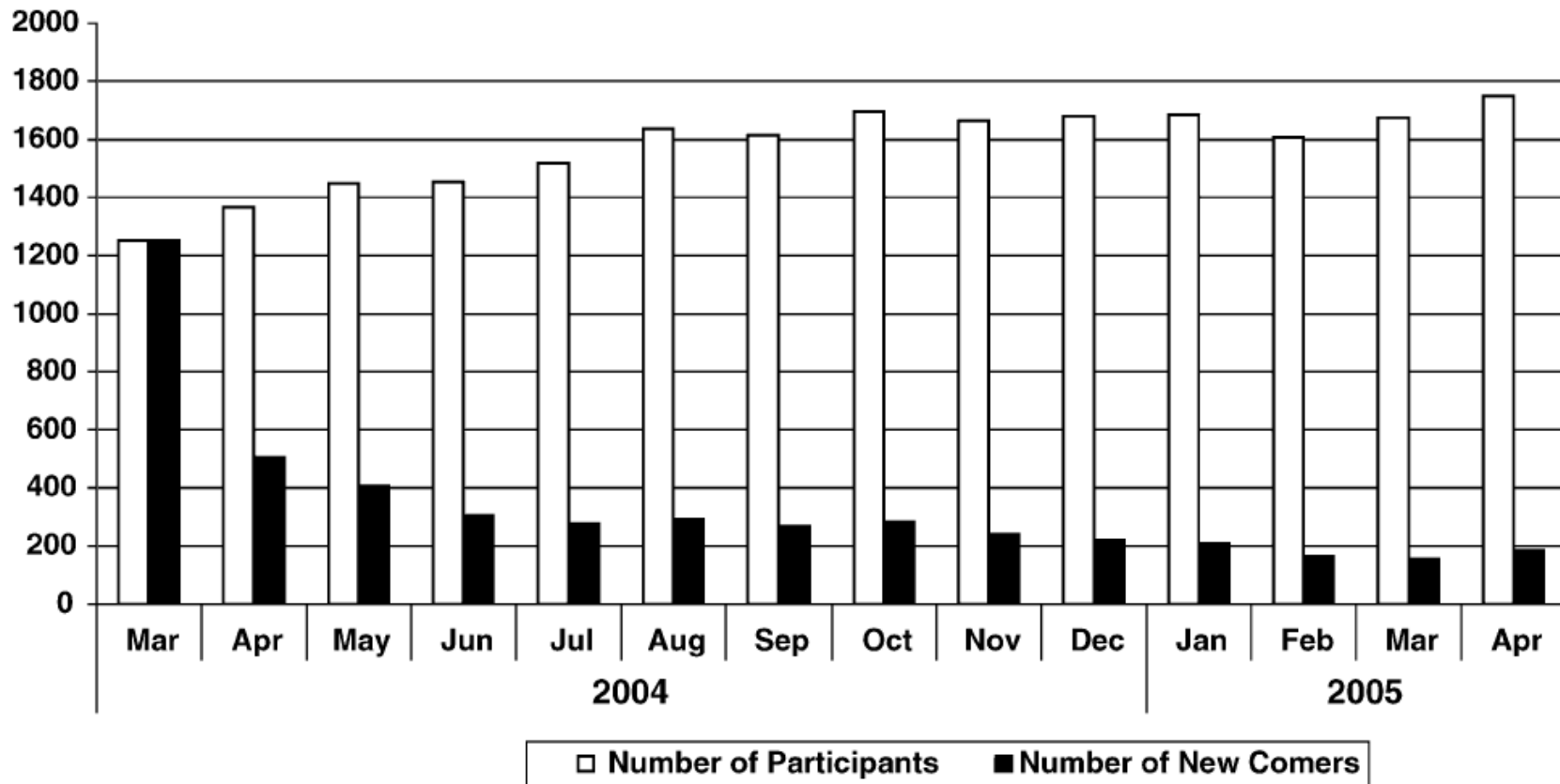
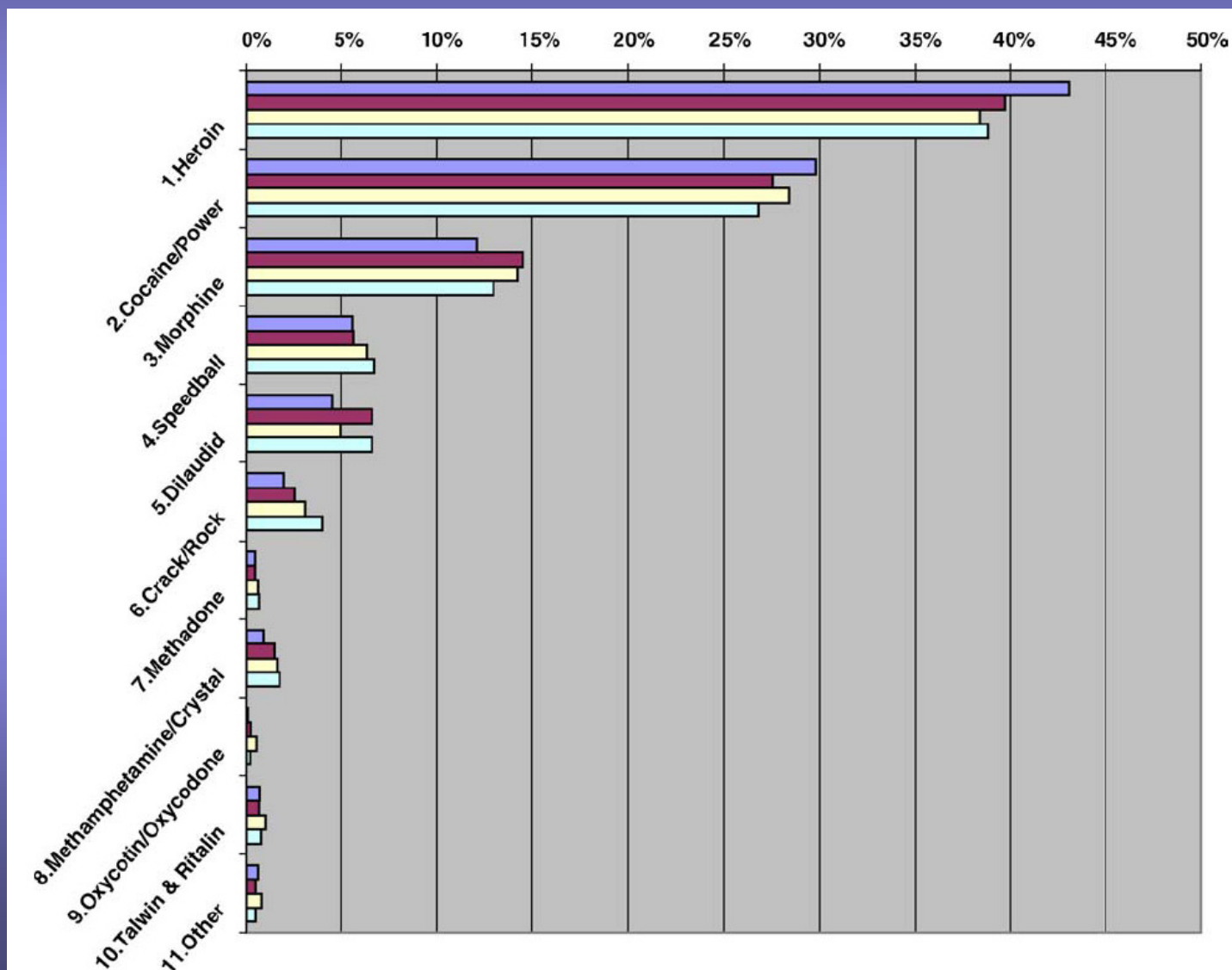


Fig. 1. Total number of people attending the SIF each month, including the number of first time SIF users.

# Type of drugs injected at the SIF stratified by yearly quarter: April 2004-2005



*Research*  
*Recherche*

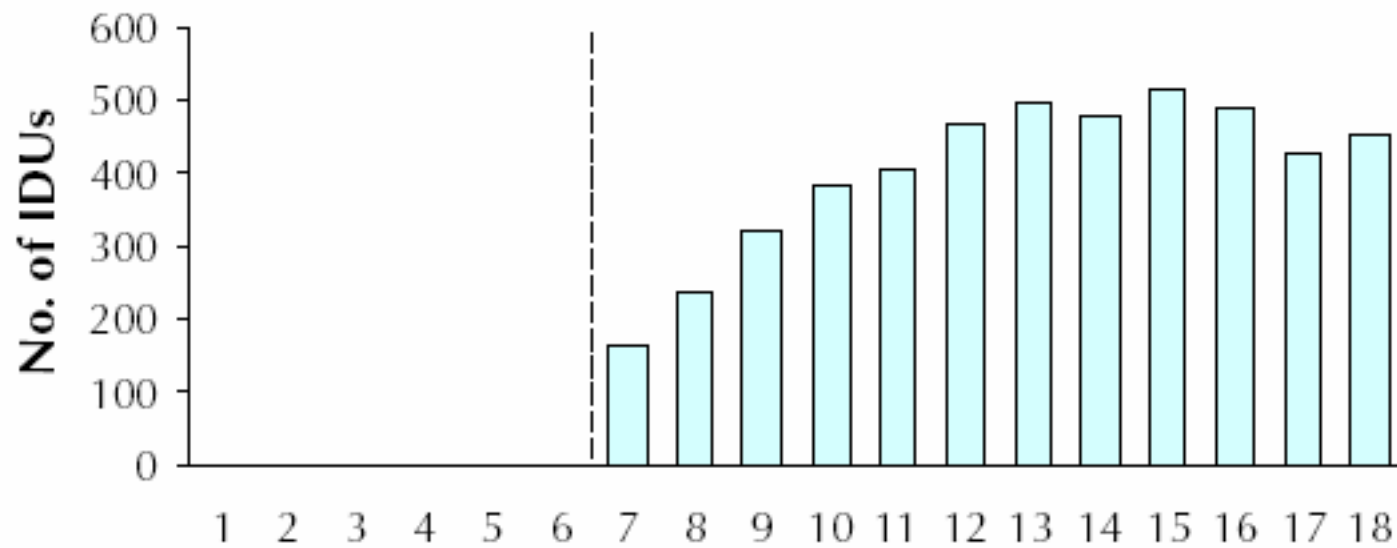
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## **Changes in public order after the opening of a medically supervised safer injecting facility for illicit injection drug users**

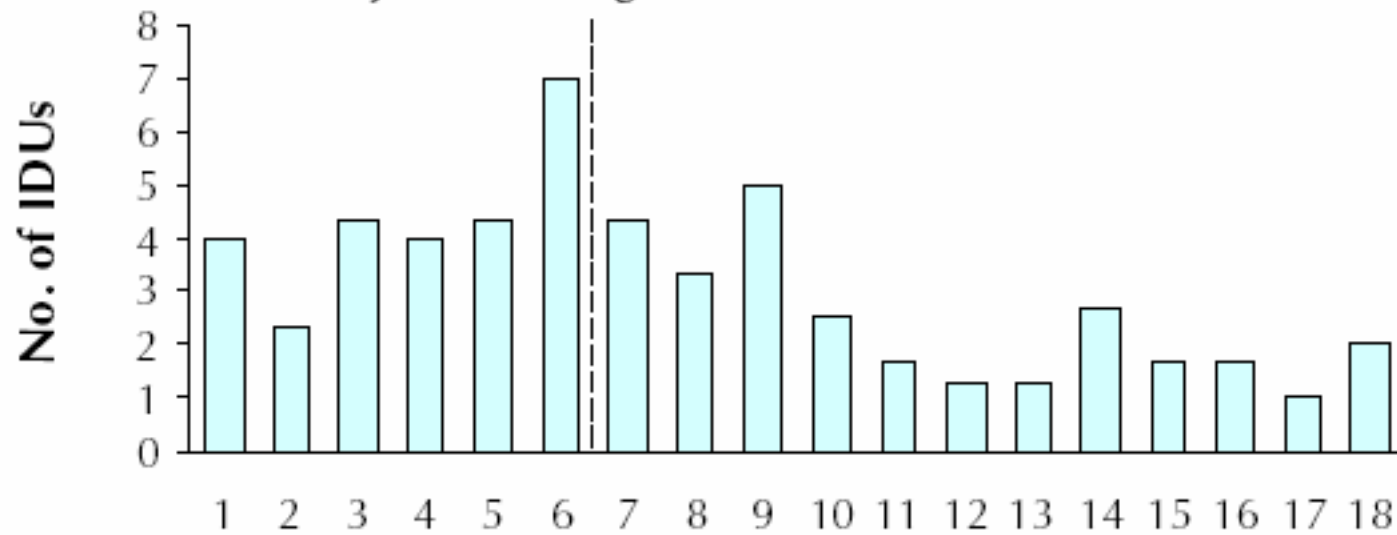
Evan Wood, Thomas Kerr, Will Small, Kathy Li, David C. Marsh, Julio S.G. Montaner,  
Mark W. Tyndall

*Canadian Medical Association Journal. 2004*

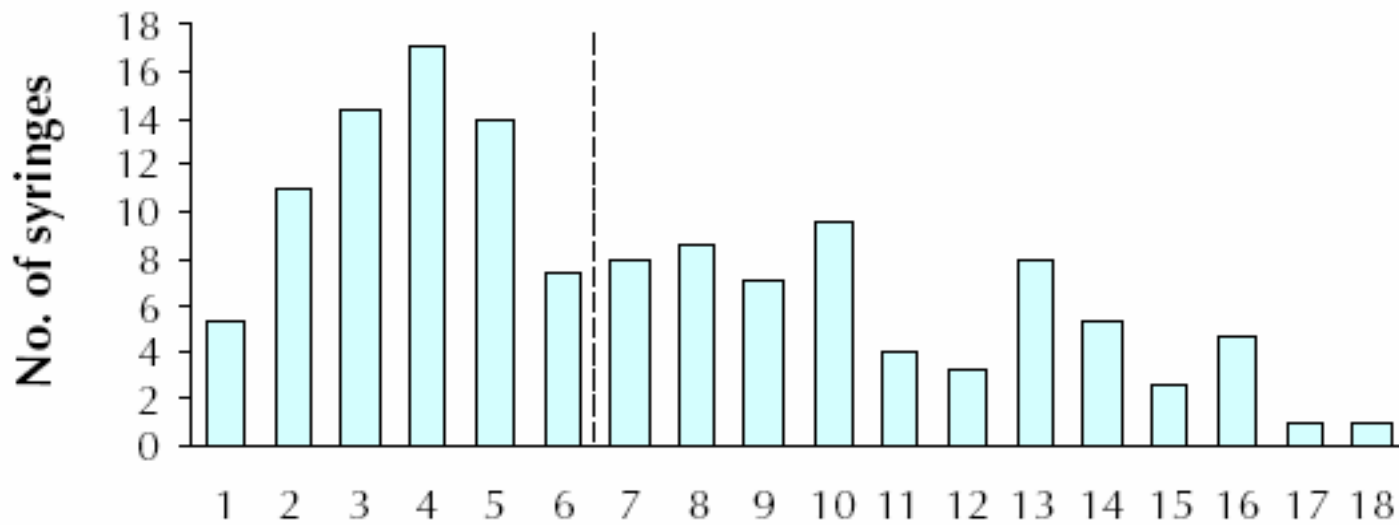
### Daily use of safer injecting facility



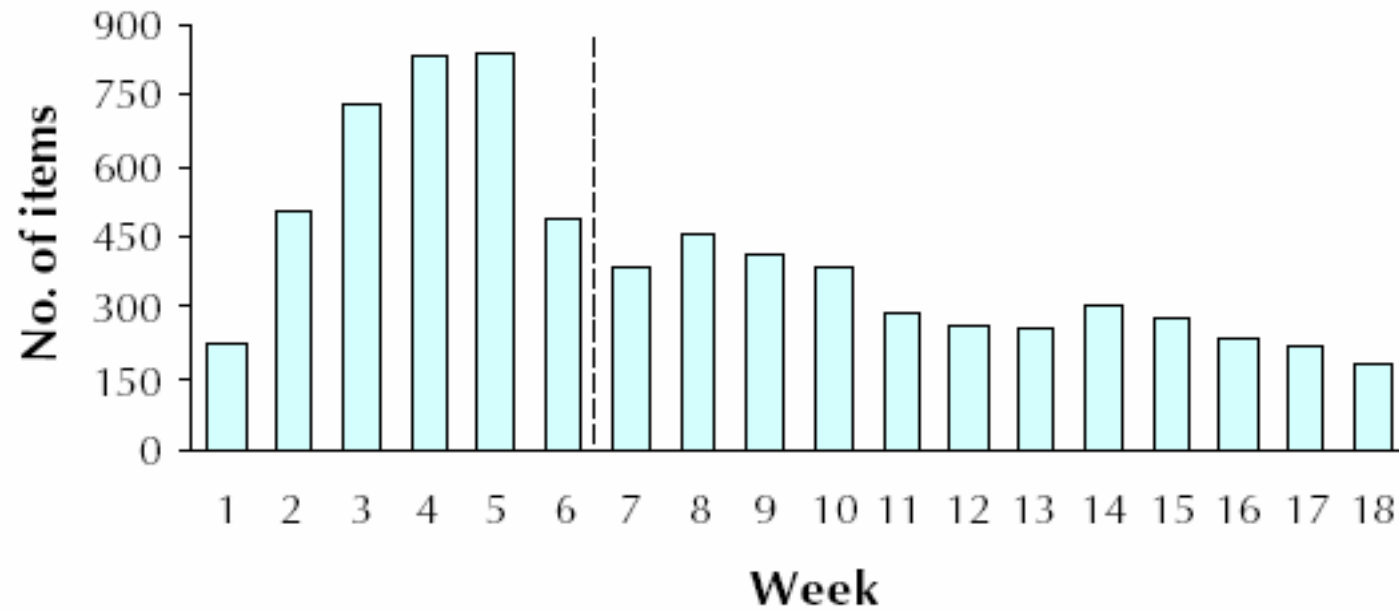
### Public injection drug use



### Publicly discarded syringes



### Injection-related litter



# Conclusions

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- ✓ The opening of the SIF was independently associated with improvements in several measures of public order, including reduced public injection and unsafe disposal of syringes
- ✓ These effects appear to be independent of several potential confounders and our findings were supported by external data sources



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Short Report

## Safer injecting education for HIV prevention within a medically supervised safer injecting facility

Evan Wood<sup>a,b,\*</sup>, Mark W. Tyndall<sup>a,b</sup>, Jo-Anne Stoltz<sup>a</sup>, Will Small<sup>a</sup>, Ruth Zhang<sup>a</sup>,  
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*International Journal of Drug Policy, 2005*

Table 1

Multivariate logistic regression analysis of factors associated with receiving safer injecting education

Characteristic (in the past 6 months)	Adjusted Odds Ratio	95% CI	<i>p</i> -value
Requiring help injecting <sup>a</sup> Yes vs. no	2.20	1.62–2.98	<0.001
Binge drug use <sup>a</sup> Yes vs. no	1.34	0.99–1.83	0.060
Years injecting <sup>a</sup> Per year longer	0.99	0.97–1.00	0.056
Sex-trade involvement <sup>a</sup> Yes vs. no	1.54	1.09–2.16	0.014



# Safer Injecting

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R: Well, I learned how to fix myself properly in there. I knew how to find a vein but I always had problems getting blood. But once they showed me that bevel-up thing, I've had a lot less problems.

I: Before Insite, did you have to get somebody else to doctor you, or could you fix yourself?

I: I paid them to fix me.

**Table 2** Univariate and stratified\* multivariate logistic regression models of changes in injection practices associated with consistent safer injection facility (SIF) use

Variable	Unadjusted odds ratio (OR)			Adjusted* odds ratio (AOR)		
	OR	(95% CI)	P value	OR	(95% CI)	P value
a) Reuse syringes less often (Yes versus no)	2.16	(1.48–3.16)	<0.001	2.04	(1.38–3.01)	<0.001
b) Less rushed during injection (Yes versus no)	2.94	(2.14–4.02)	<0.001	2.79	(2.03–3.85)	<0.001
c) Less injecting outdoors (Yes versus no)	2.99	(2.13–4.21)	<0.001	2.73	(1.93–3.87)	<0.001
d) Use clean water for injecting (Yes versus no)	3.15	(2.26–4.39)	<0.001	2.99	(2.13–4.18)	<0.001
e) Cook/filter drugs prior to injection (Yes versus no)	3.02	(2.03–4.49)	<0.001	2.76	(1.84–4.15)	<0.001
f) Tie off prior to injection (Yes versus no)	2.81	(1.70–4.64)	<0.001	2.63	(1.58–4.37)	<0.001
g) Safer syringe disposal (Yes versus no)	2.22	(1.54–3.20)	<0.001	2.13	(1.47–3.09)	<0.001
h) Easier to get vein first time (Yes versus no)	2.78	(1.93–4.01)	<0.001	2.66	(1.83–3.86)	<0.001
i) Injection in a clean place (Yes versus no)	3.00	(2.22–4.06)	<0.001	2.85	(2.09–3.87)	<0.001

# Safer injection facility use and syringe sharing in injection drug users

*Thomas Kerr, Mark Tyndall, Kathy Li, Julio Montaner, Evan Wood*

*Lancet* 2005; 366: 316–18

Published online

March 18, 2005

<http://image.thelancet.com/extras/04let9110web.pdf>

See [Comment](#) page 271

British Columbia Centre for  
Excellence in HIV/AIDS,  
St Paul's Hospital,

Safer injection facilities provide medical supervision for illicit drug injections. We aimed to examine factors associated with syringe sharing in a community-recruited cohort of illicit injection drug users in a setting where such a facility had recently opened. Between Dec 1, 2003, and June 1, 2004, of 431 active injection drug users 49 (11·4%, 95% CI 8·5–14·3) reported syringe sharing in the past 6 months. In logistic regression analyses, use of the facility was independently associated with reduced syringe sharing (adjusted odds ratio 0·30, 0·11–0·82,  $p=0\cdot02$ ) after adjustment for relevant sociodemographic and drug-use characteristics. These findings could help inform discussions about the merits of such facilities.

*The Lancet, 2005; 365*

	Adjusted odds ratio (95% CI)	p
Age (per year older)	0.95 (0.92–0.98)	0.01
Use of safer injection facility	0.30 (0.11–0.82)	0.02
Need for help injecting	2.95 (1.57–5.55)	0.01
Binge drug use	2.04 (1.02–4.08)	0.04
Intercept (constant)	(–0.79)	0.19

Model adjusted for all variables shown.

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**Table: Multivariate logistic regression of factors associated with syringe sharing**

# Factors Associated with Syringe Sharing in VIDUS

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Were people who started using the SIF less likely to share syringes in the first place? (i.e., is there a selection bias?)

We compared rates of syringe sharing prior to the opening of the SIF among those who did and did not subsequently start using the SIF

There were no differences ( $p = 0.499$ )

American Journal of Infectious Diseases 1 (1): 50-54, 2005

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**Factors Associated with Syringe Sharing  
Among Users of a Medically Supervised Safer Injecting Facility**

<sup>1,2</sup>Evan Wood, <sup>1,2</sup>Mark W. Tyndall, <sup>1</sup>Jo-Anne Stoltz, <sup>1</sup>Will Small, <sup>1</sup>Elisa Lloyd-Smith, <sup>1</sup>Ruth Zhang,  
<sup>1</sup>Julio S.G. Montaner and <sup>1</sup>Thomas Kerr

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*The American Journal of Infectious Diseases, 2005*



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International Journal of Drug Policy 17 (2006) 436–441



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Research paper

## Drug-related overdoses within a medically supervised safer injection facility

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Received 9 May 2006; accepted 25 May 2006

*International Journal of Drug Policy, 2006*

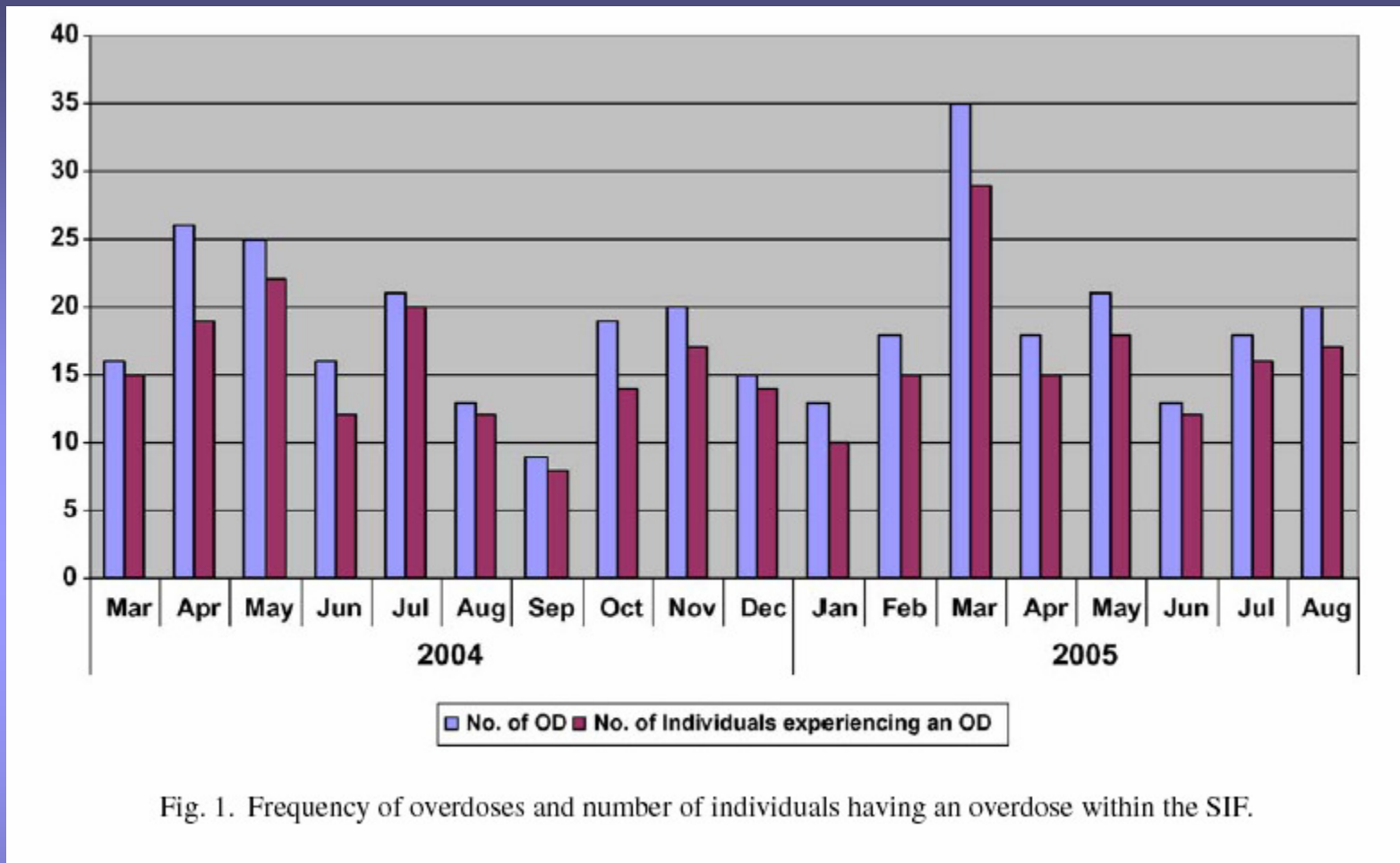


Fig. 1. Frequency of overdoses and number of individuals having an overdose within the SIF.

- ✓ There were 366 overdoses between 1 March 2004 and 30 August 2005 = 1.33 overdoses per 1000 injections
- ✓ No one has died



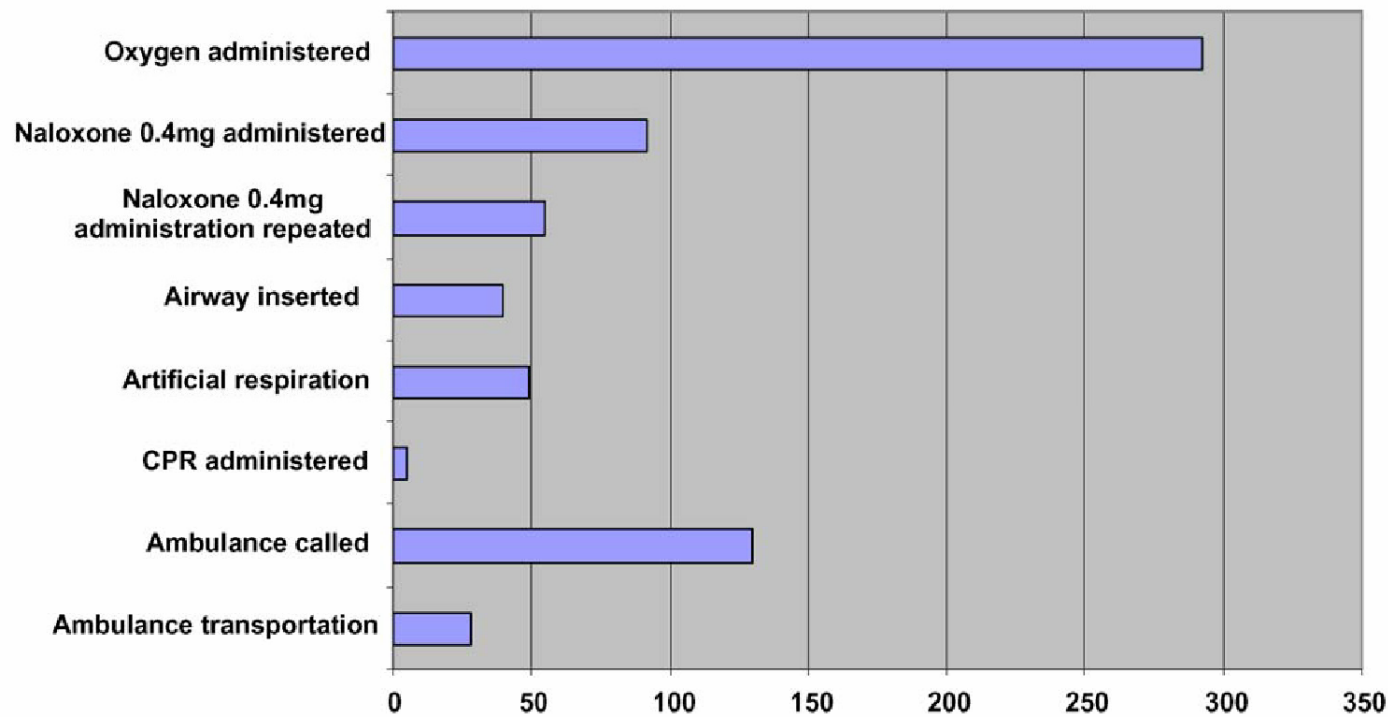


Fig. 3. Interventions undertaken in response to overdoses within the SIF. Three hundred and thirty-six overdoses were included in this analysis. More than one intervention may apply to each overdose.

- 39% involved an ambulance call
- 28% involved a transfer to hospital



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International Journal of Drug Policy 18 (2007) 37–45



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Research paper

# A micro-environmental intervention to reduce the harms associated with drug-related overdose: Evidence from the evaluation of Vancouver's safer injection facility

Thomas Kerr<sup>a,b,\*</sup>, Will Small<sup>a</sup>, David Moore<sup>c</sup>, Evan Wood<sup>a,b</sup>

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# Reducing Risk for Overdose

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I can take my time and...in the alley I would just pour it in the rig, shake it up, and throw [inject] it. Get it into me. Just as quick as I can.....That's another thing I... ever since I've been going there [the SIF]...I practice safe — Yeah, I've started practicing a lot safer and cleaner...for sure. Now I stop and think, right? It's like, "Well, I don't have to rush." ... In the alley, you just don't have time to do that.

– *Male Participant #40*

# Saving Lives

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R: I have lost a lot of friends to overdoses. Lot of friends, and I know a lot of friends who have been saved from overdoses because of InSite. Specifically because of InSite...I know one specific woman who comes in there and just about every time she comes in, she overdoses, and I mean every time she goes in there. She's had at least ten overdoses in there. And they've saved her butt every time. I've watched her go blue, I've watched her stop breathing. If she'd been at home, she'd be dead. Plain and simple, she'd be dead. - **Male Participant #27**

The NEW ENGLAND JOURNAL of MEDICINE

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## Attendance at Supervised Injecting Facilities and Use of Detoxification Services

**TO THE EDITOR:** In September 2003, the first safer injecting facility in North America opened in Vancouver, British Columbia. In the first 12 months, 4764 persons used the facility and 1194 randomly selected repeat attendees were invited to

**Table 1. Univariate and Multivariate Cox Proportional-Hazards Analysis of the Time to Entry into a Detoxification Program among 1031 Users of Injection Drugs after the Opening of a Supervised Injecting Facility (SIF).\***

Variable	Unadjusted Relative Hazard (95% CI)	P Value	Adjusted Relative Hazard (95% CI)	P Value
Homelessness (yes vs. no)†	1.43 (1.07–1.91)	0.02	1.42 (1.06–1.90)	0.02
Binge drug use (yes vs. no)†	1.44 (1.05–1.97)	0.02	1.35 (0.98–1.85)	0.06
Ever in treatment (yes vs. no)‡	2.70 (1.56–4.65)	<0.001	2.43 (1.41–4.22)	0.002
Weekly use of SIF (yes vs. no)§	1.84 (1.34–2.52)	<0.001	1.72 (1.25–2.38)	0.001
Addictions counselor (yes vs. no)†§	2.41 (1.55–3.77)	<0.001	1.98 (1.26–3.10)	0.003

\* Use of a detoxification service was identified on the basis of database linkage. The model was adjusted for all variables that were significant ( $P < 0.05$ ) in unadjusted analyses, including all variables shown, as well as residence in the neighborhood of the supervised injecting facility (yes vs. no). Time zero was the date of recruitment, and participants who remained persistently out of a detoxification program were censored as of March 1, 2005. CI denotes confidence interval.

† The variable refers to activities during the previous six months.

‡ The “ever in treatment” category refers to current or historical use of addiction-treatment services.

§ Data for the “weekly use of SIF” category were derived from the database of the SIF, and weekly use was determined according to the average use before the censoring or event date.

# Rate of detoxification service use and its impact among a cohort of supervised injecting facility users

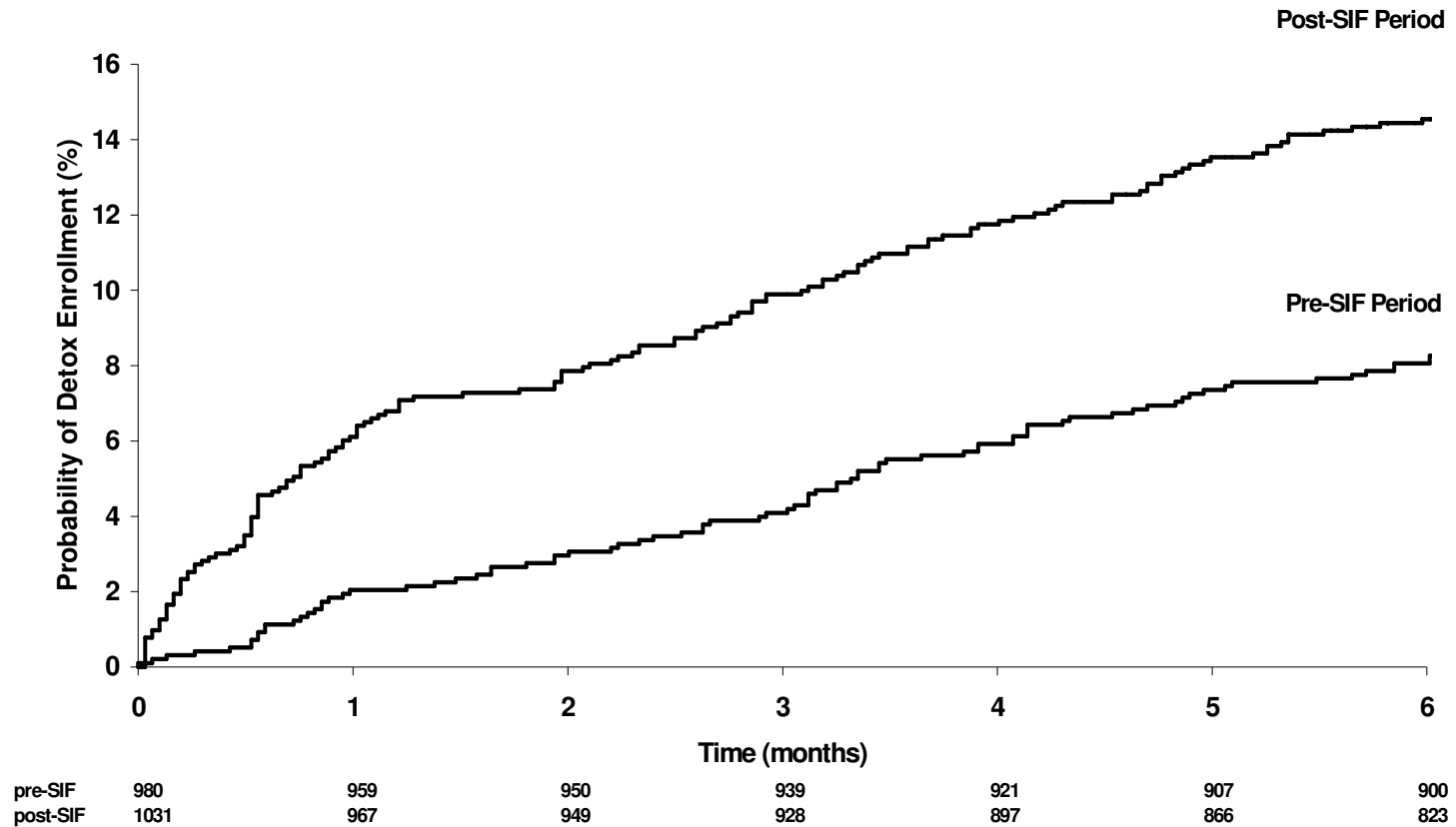
**Evan Wood<sup>1,2</sup>, Mark W. Tyndall<sup>1,2</sup>, Ruth Zhang<sup>1</sup>, Julio S. G. Montaner<sup>1,2</sup> & Thomas Kerr<sup>1,2</sup>**

British Columbia Centre for Excellence in HIV/AIDS, St. Paul's Hospital<sup>1</sup> and Department of Medicine, University of British Columbia, Canada<sup>2</sup>

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## ABSTRACT

**Figure1: Cumulative incidence of detoxification program initiation during the periods before and after the SIF's opening**





**Table 1** Univariate and multivariate GEE analysis of factors associated with initiating detoxification during a 24-month period spanning the year before and after the SIF opened.

Variable	Unadjusted relative hazard (RH)			Adjusted relative hazard (RH)		
	OR	(95% CI)	P-value	OR	(95% CI)	P-value
Year of interest (post versus pre-SIF)	1.32	(1.11–1.57)	0.002	1.32	(1.11–1.58)	0.002
Age (per year older)	0.99	(0.98–1.00)	0.076	0.99	(0.98–1.02)	0.985
Gender (male versus female)	1.20	(0.85–1.68)	0.298	1.31	(0.92–1.89)	0.139
Years injecting (per year longer)	0.98	(0.97–0.99)	0.010	0.98	(0.96–0.99)	0.035
Injecting previously* (yes versus no)	0.68	(0.39–1.19)	0.178	0.91	(0.50–1.65)	0.747

\*Injecting previously refers to whether participants were injecting during the full year prior to the SIF's opening. GEE = generalized estimating equation; SIF = supervised injecting facility. Detoxification service use was identified based on a database linkage with one of the city's three residential detoxification facilities.

# Results

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- In turn, detoxification was independently associated with elevated rates of methadone initiation (relative hazard = 1.56 [95% CI: 1.04 – 2.34];  $p = 0.031$ ) and elevated initiation of other addiction treatment (relative hazard = 3.73 [95% CI: 2.57 – 5.39];  $p < 0.001$ ).
- Use of the SIF declined after enrolment into detoxification ( $p = 0.002$ ).

# Conclusions

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- The SIF's opening was independently associated with a >30% increase in detoxification service use
- This behaviour was associated with increased rates of long-term addiction treatment initiation and reduced injecting at the SIF.

# Substance Abuse Treatment, Prevention, and Policy



Short Report

Open Access

## Impact of a medically supervised safer injecting facility on drug dealing and other drug-related crime

Evan Wood\*<sup>1,2</sup>, Mark W Tyndall<sup>1,2</sup>, Calvin Lai<sup>1</sup>, Julio SG Montaner<sup>1,2</sup> and Thomas Kerr<sup>1,2</sup>

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# Practice

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## Impact of a medically supervised safer injection facility on community drug use patterns: a before and after study

Thomas Kerr, Jo-Anne Stoltz, Mark Tyndall, Kathy Li, Ruth Zhang, Julio Montaner, Evan Wood

### Abstract

**Problem** Illicit use of injected drugs is linked with high rates of HIV infection and fatal overdose, as well as community concerns about public drug use. Supervised injecting facilities have been proposed as a potential solution, but fears have been raised that they

HIV infection and overdose despite an array of interventions.<sup>6,7</sup>

### Strategy for change

In an effort to reduce the community and public health impacts of injected drug use, health authorities in Van-

# Summary of Findings to Date

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- The SIS has been associated with reductions in public disorder related to injection drug use
  - Wood et al., Canadian Medical Association Journal, 2004*
  - Petrar et al., Addictive Behaviors, Stoltz et al., Journal of Public Health, 2007*
- The SIS has attracted and retained a high risk population of IDU who are at heightened risk for HIV infection and overdose
  - Wood et al., American Journal of Preventative Medicine, 2005*
  - Wood et al., American Journal of Public Health, 2006*
- Use of the SIS has been associated with reductions in HIV risk behaviour (syringe sharing)
  - Kerr et al., The Lancet, 2005, Wood et al., American Journal of Infectious Diseases, 2005*
- SIS staff have successfully managed hundreds of overdoses
  - Kerr et al., IJDP, 2006,*
  - Kerr et al., IJDP, 2007*

# Summary of Findings to Date

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- Many individuals at risk for HIV infection are receiving safer injection education at the SIS, and increases in safe micro-injecting practices have been observed  
*Wood et al., International Journal of Drug Policy, 2005, Stoltz et al., Journal of Public Health, 2007*
- Use of the SIS has been associated with increased uptake of detoxification services and other addiction treatments  
*Wood et al., New England Journal of Medicine, 2006, Wood et al., Addiction, 2007*
- The establishment of the SIS has not prompted adverse changes in community drug use patterns  
*Kerr et al., British Medical Journal, 2006*
- The establishment of the SIS has not prompted initiation into injection drug use  
*Kerr et al., American Journal of Public Health, 2007*
- The establishment of the SIS has not led to increases in drug-related crime  
*Wood et al., Substance Abuse Treatment, Prevention, and Policy, 2006*



# REVIEW

## Summary of findings from the evaluation of a pilot medically supervised safer injecting facility

Evan Wood, Mark W. Tyndall, Julio S. Montaner, Thomas Kerr

∞ See related article page 1395

### ABSTRACT

In many cities, infectious disease and overdose epidemics are occurring among illicit injection drug users (IDUs). To reduce these concerns, Vancouver opened a supervised safer injecting facility in September 2003. Within the facility, people inject pre-obtained illicit drugs under the supervision of medical staff. The program was granted a legal exemption by the Canadian government on the condition that a 3-year scientific evaluation of its impacts be conducted. In this review, we summarize the findings from evaluations in those 3 years, including characteristics of IDUs at the facility, public injection drug use and publicly discarded syringes, HIV risk behaviour, use of addiction treatment services and other community resources, and drug-related crime rates. Vancouver's safer injecting facility has been associated with an array of community and public health benefits without evidence of adverse impacts. These findings should be useful to other cities considering supervised injecting facilities and to governments considering regulating their use.

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federal government that allowed operation of the facility was limited to 3 years and was granted on the condition that an external 3-year scientific evaluation of its impacts be conducted. Given the controversial nature of the program,<sup>14</sup> stakeholders agreed that all findings from the evaluation, including this report, should be externally peer-reviewed and published in the medical literature before dissemination. In this review we report on the 3 years' findings.

### Program and evaluation methods

As described previously,<sup>13</sup> the Vancouver safer injecting facility has 12 injection stalls where IDUs inject pre-obtained illicit drugs under the supervision of nurses. Nurses respond to overdoses and address other health needs (e.g., treating injection-site abscesses), and the facility has an addiction counsellor and support staff who seek to meet the needs of IDUs or refer them to appropriate community resources (e.g., housing services, addiction treatment).<sup>13</sup>

Although the best strategy for evaluating the safer injecting facility would be to randomly assign IDUs to either full access or no access to the program, interventional study de-



# Conclusions

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- A great deal of scientific evidence on the impact of InSite has demonstrated significant positive impacts and ruled out potential negative effects
- Given the positive public health and community impacts of Insite that have been observed, it is clear that Insite should remain open
- The closure of the site could result in a deterioration of public order, the potential for elevated HIV incidence, and lives lost due to fatal overdose
- The SIS should continue to be rigorously evaluated

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