The Science of Harm Reduction

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Addiction and Mental Health Research Laboratory
School of Public Health, University of Alberta
Canadian Academy of Health Sciences, September 19, 2013

Overview

1. What is harm reduction?
2. Effectiveness of harm reduction interventions – State of the evidence
3. Canadian harm reduction services
4. New directions for research

1. What is harm reduction?

Seat belts, emission controls, speed limits, and helmet laws are pragmatic interventions to reduce mortality and morbidity associated with using vehicles and bikes, *without necessarily requiring people to stop driving*.

These can all be understood as **harm reduction** strategies to reduce the risks and harms of motoring.

Harm reduction is an approach to substance misuse that emphasizes pragmatic interventions to reduce mortality and morbidity associated with the use psychoactive substances, *without necessarily requiring people to stop using drugs*.

Pragmatism

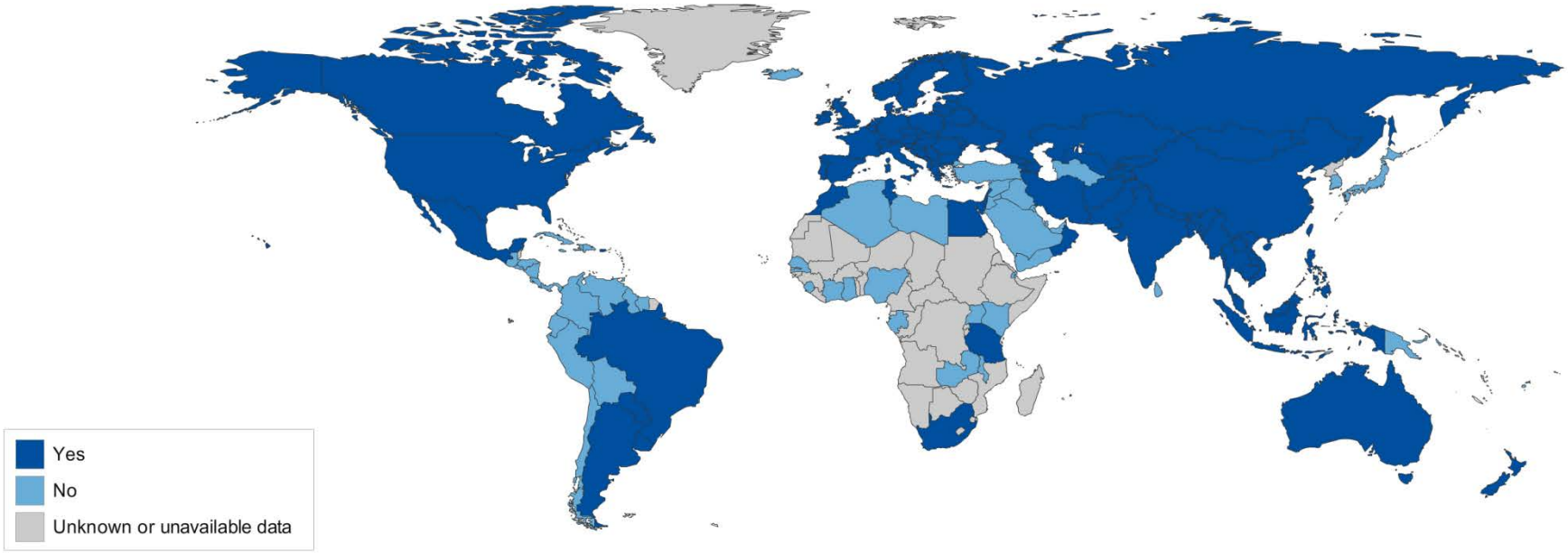
Humanistic Values

Focus on Harms

Hierarchy of Goals

Historical origins of harm reduction

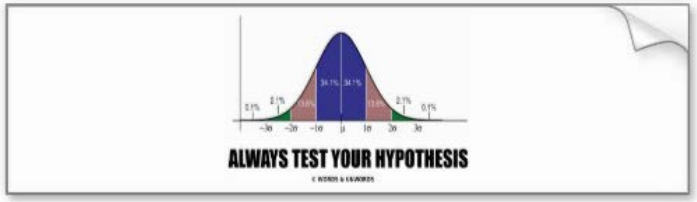
- Primarily developed in response to HIV/AIDS in 1980s
- Pioneered in UK, Netherlands, Australia and Canada
- 'New public health'
- Syringe exchange programs
- Peer-driven



Presence of operational syringe exchange programs in 2012. *Source: Harm Reduction International*

2. Effectiveness of harm reduction interventions

State of the evidence



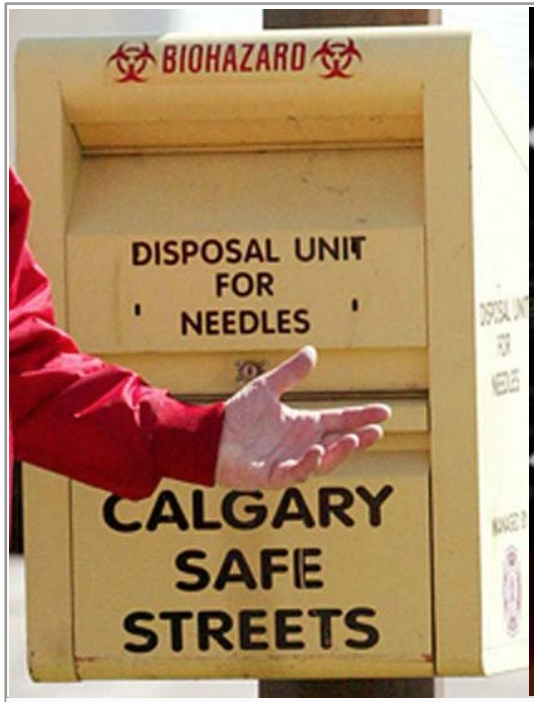
Study designs

Difficult to study all harm reduction interventions solely from a controlled clinical trials perspective.

However, a range of interventions have been examined in an extensive international literature.

Exposure to harm reduction interventions versus comparison groups in …

- Controlled clinical trials
- Cohort studies
- Interrupted time series studies
- Case control studies



Syringe distribution and collection

Evidence

Addiction

REVIEW

doi:10.1111/j.1360-0443.200

Evidence for the effectiveness of sterile injecting equipment provision in preventing hepatitis C and human immunodeficiency virus transmission among injecting drug users: a review of reviews

Norah Palmateer[1], Jo Kimber[2,3], Matthew Hickman[2], Sharon Hutchinson[1,4], Tim Rhodes[3] David Goldberg[1]

Health Protection Scotland, Glasgow, UK,[1] Department of Social Medicine, University of Bristol, Bristol, UK,[2] Centre for Research on Drugs and Health Behaviour, London School of Hygiene and Tropical Medicine, London, UK[3] and Department of Statistics and Modelling Science, University of Strathclyde, Strathclyde, UK[4]

ABSTRACT

Aims To review the evidence on the effectiveness of harm reduction interventions involving the provision of sterile injecting equipment in the prevention of hepatitis C virus (HCV) and human immunodeficiency virus (HIV) transmission among injecting drug users (IDUs). The interventions assessed were needle and syringe programmes (NSP), alternative modes of needle/syringe provision (pharmacies, vending machines and outreach) and the provision of

A recent review of reviews on sterile injecting equipment provision found : (1) strong evidence that sterile injecting equipment provision reduces injection risk behaviour, and 2) more tentative evidence that sterile injecting equipment provision also prevents HIV incidence - Palamateer et al. 2010

Take home naloxone programs

Evidence

MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 61 / No. 6
February 17, 2012

Community-Based Opioid Overdose Prevention Programs Providing Naloxone — United States, 2010

Drug overdose death rates have increased steadily in the United States since 1979. In 2008, a total of 36,450 drug overdose deaths (i.e., unintentional, intentional [suicide or homicide], or undetermined intent) were reported, with prescription opioid analgesics (e.g., oxycodone, hydrocodone, and methadone), cocaine, and heroin the drugs most commonly involved (*1*). Since the mid-1990s, community-based programs have offered opioid overdose prevention services to persons who use drugs,

shelters, and substanc
services include educa
recognition of signs of
to an overdose, and ad

To identify local prog
naloxone distribution,
Coalition e-mailed an o
programs then known to

Since 1996, 53,032 people have been trained to provide naloxone in the US, resulting in 10,171 documented overdose reversals.
-Wheeler et al. 2012

Supervised injection facilities

Evidence

RESEARCH REPORT

doi:10.1111/j.1360-0443.2007.01818.x

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

Evan Wood[1,2], Mark W. Tyndall[1,2], Ruth Zhang[1], Julio S. G. Montaner[1,2] & Thomas Kerr[1,2]

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

ABSTRACT

Background Vancouver, Canada recently opened a medically supervised injecting facility (SIF) where injection drug users (IDU) can inject pre-obtained illicit drugs. Critics suggest that the facility does not help IDU to reduce their drug use. **Methods** We conducted retrospective and prospective database linkages with residential detoxification facilities and used generalized estimating equation (GEE) methods to examine the rate of detoxification service use among SIF participants in the year before versus the year after the SIF opened. In secondary analyses, we used Cox regression to examine if having been enrolled in detoxification was associated with enrolling in methadone or other forms of

The SIF's opening was associated with a 30% increase in detoxification service use, increased rates of long-term addiction treatment initiation and reduced injecting around the SIF.
-Wood et al. 2007

Evidence

Reduction in overdose m
America's first medically
a retrospective populati

Brandon D L Marshall, M-J Milloy, Evan Wood, Julio S G Mo

Summary

Background Overdose from illicit drugs is a lea
more than 65 supervised injecting facilities (S
opened as part of various strategies to reduce
the opening of an SIF in Vancouver, BC, Canad

Methods We examined population-based overd
and after (Sept 21, 2003, to Dec 31, 2005) the
from provincial coroner records. We compared
SIF and for the rest of the city.

Findings Of 290 decedents, 229 (79·0%) were
third (89, 30·7%) of deaths occurred in city

Table 2. Overdose mortality rate in Vancouver between Jan 1, 2001, and Dec 31, 2005 (n=290), stratified by proximity to the SIF

	ODs occurring in blocks within 500 m of the SIF*		ODs occurring in blocks farther than 500 m of the SIF*	
	Pre-SIF	Post-SIF	Pre-SIF	Post-SIF
Number of overdoses	56	33	113	88
Person-years at risk	22 066	19 991	1 479 792	1 271 246
Overdose rate (95% CI)*	253·8 (187·3–320·3)	165·1 (108·8–221·4)	7·6 (6·2–9·0)	6·9 (5·5–8·4)
Rate difference (95%	88·7 (1·6–175·8);	..	0·7 (−1·3–2·7); p=0·490	..
Percentage reduction (95% CI)	35·0% (0·0%–57·7%)	..	9·3% (−19·8% to 31·4%)	..

SIF=supervised injection facility. Pre-SIF period=Jan 1, 2 1, to Sept 20, 2003. Post-SIF period=Sept 21, 2003, to Dec 31, 2005.

* Expressed in units of per 100 000 person-years.

Safer inhalation kits

Evidence

Available online at www.sciencedirect.com
ScienceDirect
ELSEVIER
International Journal of Drug Policy 19 (2008) 255–264
THE INTERNATIONAL JOURNAL OF DRUG POLICY
www.elsevier.com/locate/drugpo

Research Paper

"*I inject less as I have easier access to pipes*" Injecting, and sharing of crack-smoking materials, decline as safer crack-smoking resources are distributed

Lynne Leonard *, Emily DeRubeis [1], Linda Pelude [1], Emily Medd [1], Nick Birkett [1], Joyce Seto [1]

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Received 31 October 2006; received in revised form 23 January 2007; accepted 12 February 2007

Abstract

Among injection drug users (IDUs) in Ottawa, the capital of Canada, prevalence rates of HIV (20.6 percent) and hepatitis C HCV (75.8 percent) are among the highest in Canada. Recent research evidence suggests the potential for HCV and HIV transmission through the multi-person use of crack-smoking implements. On the basis of this scientific evidence, in April 2005, Ottawa's needle exchange programme (NEP) commenced distributing glass stems, rubber mouthpieces, brass screens, chopsticks, lip balm and chewing gum to reduce the harms associated with smoking crack. This study aims to evaluate the impact of this initiative on a variety of HCV- and HIV-related risk practices. Active, street-recruited IDUs who also smoked crack consented to personal interviews and provided saliva samples for HCV and HIV testing at four

Street and/or peer outreach

Evidence

Susan L. Coyle, PhD ■ Richard H. Needle, PhD MPH
Jacques Normand, PhD

Outreach-Based HIV Prevention for Injecting Drug Users: A Review of Published Outcome Data

SYNOPSIS

Objectives. Over the past decade, a body of observational research has accrued about the effects of outreach-based human immunodeficiency virus (HIV) interventions for drug users. The authors reviewed the findings related to postintervention behavior changes and integrated findings across studies to provide the best estimate of program impact.

Methods. The authors conducted a computerized literature

The majority of 36 published evaluations showed that IDUs in a variety of places and time periods changed their baseline drug-related and sex-related risk behaviors following their participation in a outreach-based HIV risk reduction intervention.
-Coyle, Needle, Normand 1998

Low-threshold opioid substitution and heroin-assisted therapy

Evidence

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Diacetylmorphine versus Methadone for the Treatment of Opioid Addiction

Eugenia Oviedo-Joekes, Ph.D., Suzanne Brissette, M.D., David C. Marsh, M.D., Pierre Lauzon, M.D., Daphne Guh, M.Sc., Aslam Anis, Ph.D., and Martin T. Schechter, M.D., Ph.D.

ABSTRACT

BACKGROUND

Studies in Europe have suggested that injectable diacetylmorphine, the active ingredient in heroin, can be an effective adjunctive treatment for chronic, relapsing opioid dependence.

METHODS

In an open-label, phase 3, randomized, controlled trial in Canada, we compared injectable diacetylmorphine with oral methadone maintenance therapy in patients

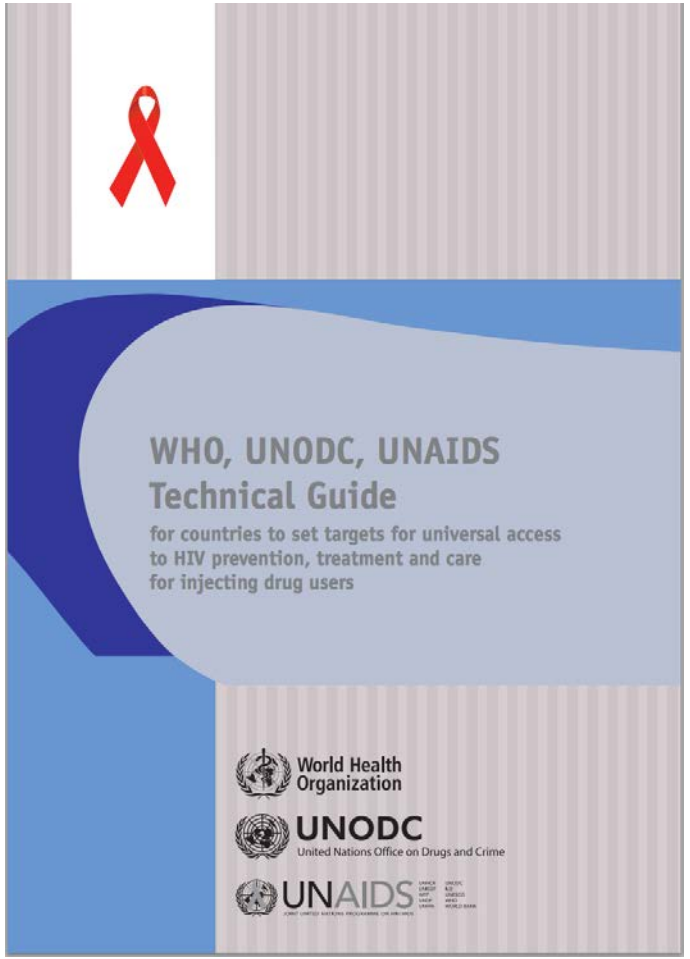
From the School of Population and
lic Health, University of British Col
(E.O.-J., D.C.M., A.A., M.T.S.); the
for Health Evaluation and Outcom
ences, Providence Health Care (
D.C.M., D.G., A.A., M.T.S.); and Va
ver Coastal Health (D.C.M.) — all i
couver, BC, Canada; and the Cen

"On the basis of an intention-to-treat analysis, the rate of retention in addiction treatment in the diacetylmorphine group was 87.8%, as compared with 54.1% in the methadone group. The reduction in rates of illicit-drug use or other illegal activity was 67.0% in the diacetylmorphine group and 47.7% in the methadone group"
- Oviedo-Joekes et al. 2009

Summary

Intervention	**Quantity and quality of evidence**		
	Strong	Promising	Equivocal
Syringe exchange	✓		
Take home naloxone		✓	
Supervised injecting facilities	✓		
Safer inhalation kits			✓
Street/peer outreach	✓		
Opioid substitution	✓		
Heroin assisted therapy		✓	

Harm reduction services are pragmatic, effective interventions for reducing risk amongst illicit drug-using populations.



Popular criticisms (1)

Harm reduction ‘promotes’ drug use and keeps people stuck in a pattern of addictive behaviour

Evidence

Drug and Alcohol Dependence 132 (

Contents lists available at Sc

Drug and Alcohol D

journal homepage: www.elsevier.c

Patterns of injection drug use cessation during syringe exchange services in a Canadian settin

Dan Werb[a], Thomas Kerr[b], Jane Buxton[c], Jeannie Shovelle, Chris Richardson[d], Julio Montaner[a], Evan Wood[b,*]

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ABSTRACT

Background: Needle and syringe prog
who inject drugs (IDUs). However, c
Methods: Individuals reporting inject
were enrolled in the Vancouver Injec
of IDU reporting injecting cessation w

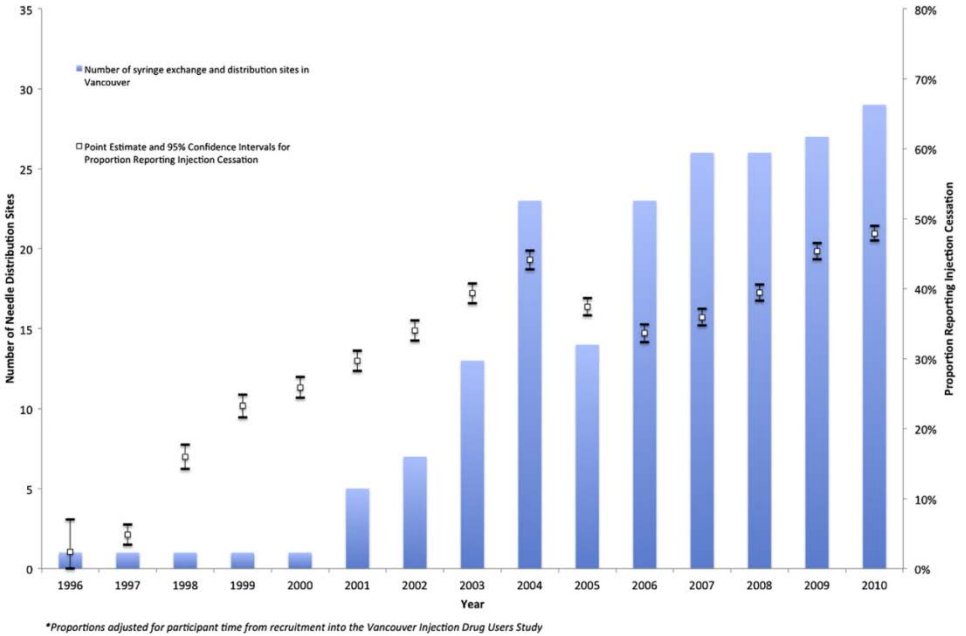
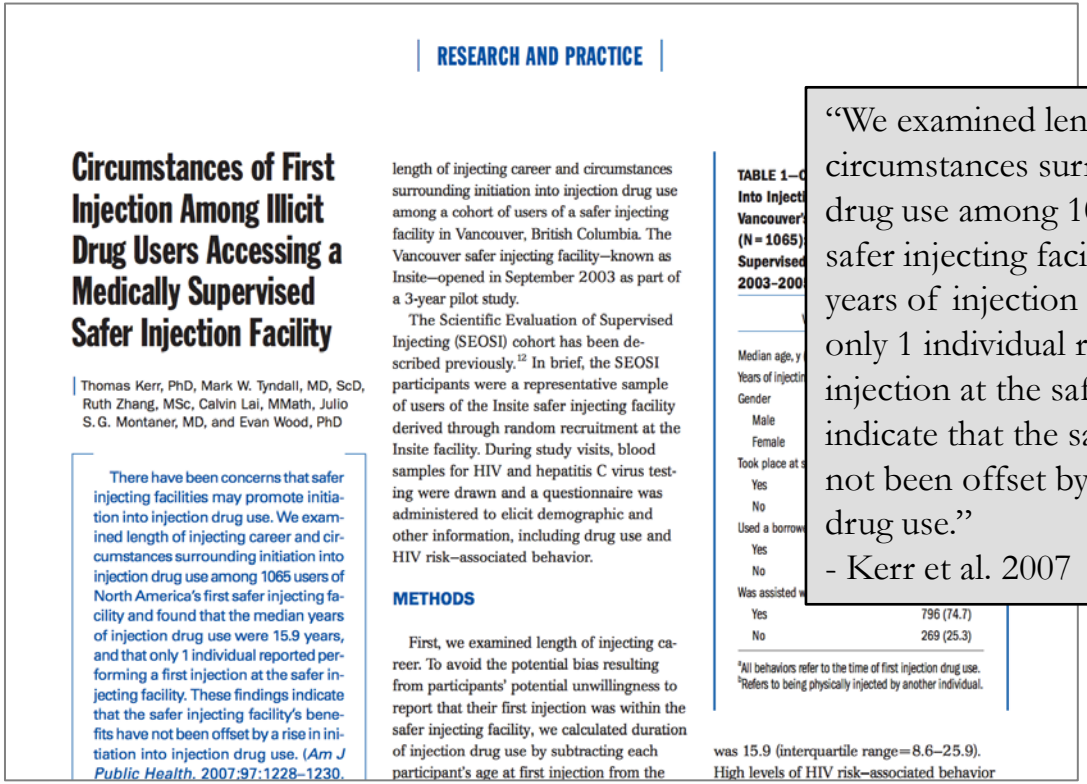


Fig. 1. Proportion of injection drug users reporting injection cessation in past 6 months in Vancouver, Canada, 1996–2010.

Evidence



RESEARCH AND PRACTICE

Circumstances of First Injection Among Illicit Drug Users Accessing a Medically Supervised Safer Injection Facility

Thomas Kerr, PhD, Mark W. Tyndall, MD, ScD, Ruth Zhang, MSc, Calvin Lai, MMath, Julio S. G. Montaner, MD, and Evan Wood, PhD

There have been concerns that safer injecting facilities may promote initiation into injection drug use. We examined length of injecting career and circumstances surrounding initiation into injection drug use among 1065 users of North America's first safer injecting facility and found that the median years of injection drug use were 15.9 years, and that only 1 individual reported performing a first injection at the safer injecting facility. These findings indicate that the safer injecting facility's benefits have not been offset by a rise in initiation into injection drug use. (*Am J Public Health*. 2007;97:1228–1230.

length of injecting career and circumstances surrounding initiation into injection drug use among a cohort of users of a safer injecting facility in Vancouver, British Columbia. The Vancouver safer injecting facility—known as Insite—opened in September 2003 as part of a 3-year pilot study.

The Scientific Evaluation of Supervised Injecting (SEOSI) cohort has been described previously.[12] In brief, the SEOSI participants were a representative sample of users of the Insite safer injecting facility derived through random recruitment at the Insite facility. During study visits, blood samples for HIV and hepatitis C virus testing were drawn and a questionnaire was administered to elicit demographic and other information, including drug use and HIV risk–associated behavior.

METHODS

First, we examined length of injecting career. To avoid the potential bias resulting from participants' potential unwillingness to report that their first injection was within the safer injecting facility, we calculated duration of injection drug use by subtracting each participant's age at first injection from the

TABLE 1—C
Into Injecti
Vancouver's
(N = 1065)
Supervised
2003–200

Median age, y	
Years of injectin	
Gender	
Male	
Female	
Took place at s	
Yes	
No	
Used a borrowe	
Yes	
No	
Was assisted w	
Yes	796 (74.7)
No	269 (25.3)

[a]All behaviors refer to the time of first injection drug use.
[b]Refers to being physically injected by another individual.

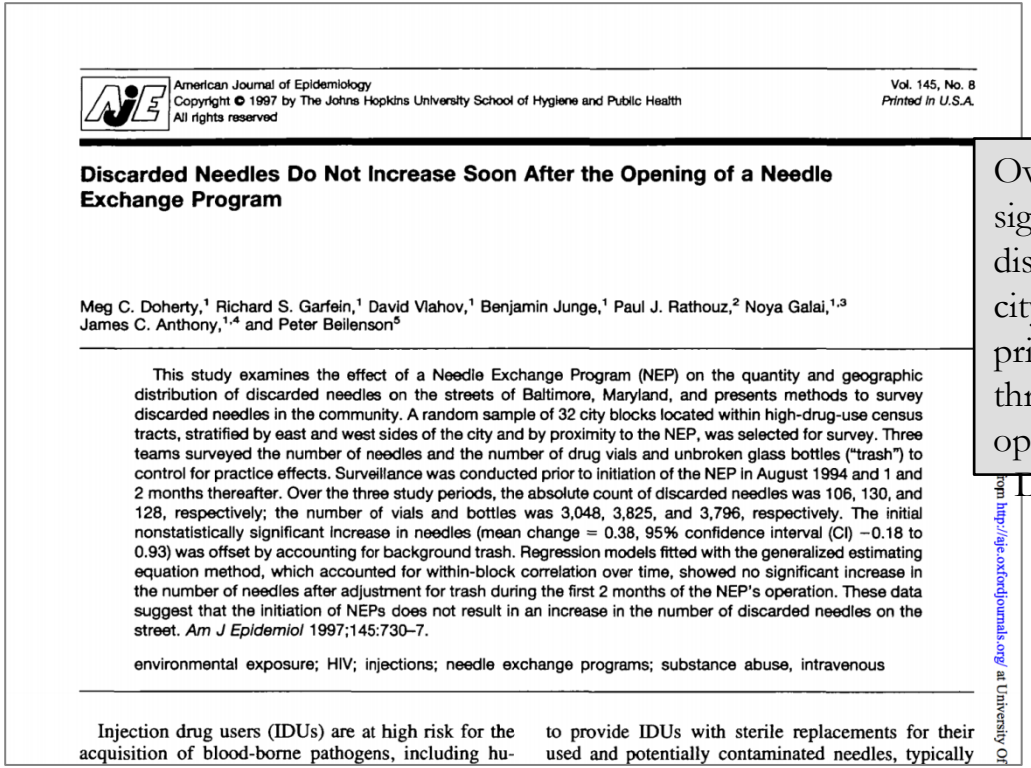
was 15.9 (interquartile range=8.6–25.9). High levels of HIV risk–associated behavior

"We examined length of injecting career and circumstances surrounding initiation into injection drug use among 1065 users of North America's first safer injecting facility and found that the median years of injection drug use were 15.9 years, and that only 1 individual reported performing a first injection at the safer injecting facility. These findings indicate that the safer injecting facility's benefits have not been offset by a rise in initiation into injection drug use."
- Kerr et al. 2007

Popular criticisms (2)

Harm reduction promotes crime and community disorder

Evidence



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Discarded Needles Do Not Increase Soon After the Opening of a Needle Exchange Program

Meg C. Doherty,[1] Richard S. Garfein,[1] David Vlahov,[1] Benjamin Junge,[1] Paul J. Rathouz,[2] Noya Galai,[1,3] James C. Anthony,[1,4] and Peter Beilenson[5]

This study examines the effect of a Needle Exchange Program (NEP) on the quantity and geographic distribution of discarded needles on the streets of Baltimore, Maryland, and presents methods to survey discarded needles in the community. A random sample of 32 city blocks located within high-drug-use census tracts, stratified by east and west sides of the city and by proximity to the NEP, was selected for survey. Three teams surveyed the number of needles and the number of drug vials and unbroken glass bottles ("trash") to control for practice effects. Surveillance was conducted prior to initiation of the NEP in August 1994 and 1 and 2 months thereafter. Over the three study periods, the absolute count of discarded needles was 106, 130, and 128, respectively; the number of vials and bottles was 3,048, 3,825, and 3,796, respectively. The initial nonstatistically significant increase in needles (mean change = 0.38, 95% confidence interval (CI) −0.18 to 0.93) was offset by accounting for background trash. Regression models fitted with the generalized estimating equation method, which accounted for within-block correlation over time, showed no significant increase in the number of needles after adjustment for trash during the first 2 months of the NEP's operation. These data suggest that the initiation of NEPs does not result in an increase in the number of discarded needles on the street. *Am J Epidemiol* 1997;145:730–7.

environmental exposure; HIV; injections; needle exchange programs; substance abuse, intravenous

Injection drug users (IDUs) are at high risk for the acquisition of blood-borne pathogens, including hu- to provide IDUs with sterile replacements for their used and potentially contaminated needles, typically

from http://aje.oxfordjournals.org/ at University Of

Overall, this study found no significant increase in the number of discarded needles over 32 different city blocks in Baltimore City from prior to the opening of the NEP through the first 2 months of its operation.

Doherty et al. 1997

Evidence

Research

Recherche

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

Abstract

Background: North America's first medically supervised safer injecting facility for illicit injection drug users was opened in Vancouver on Sept. 22, 2003. Although similar facilities exist in a number of European cities and in Sydney, Australia, no standardized evaluations of their impact have been presented in the scientific literature.

Methods: Using a standardized prospective data collection protocol, we measured injection-related public order problems during the 6 weeks before and the 12 weeks after the opening of the safer injecting facility in Vancouver. We measured changes in the number of drug users injecting in public, publicly discarded syringes and injection-related litter. We used Poisson log-linear regression models to evaluate changes in these public order indicators while considering potential confounding variables such as police presence and rainfall.

Results: In stratified linear regression models, the 12-week period after the facility's opening was independently associated with reductions in the number of drug users injecting in public ($p <$

ities, where injection drug users (IDUs) can inject
ously obtained illicit drugs under the supervision of m
staff, have been established in an effort to reduce the
munity and public health impacts of illicit drug use.[14]
these facilities IDUs are typically provided with
injecting equipment, emergency care in the event of
dose, as well as primary care services and referral to addic-
tion treatment.[13,15] Although anecdotal reports have sug-
gested that such sites may improve public order,[12] reduce
the number of deaths from overdose[16] and improve access
to care,[17] no standardized evaluations of their impact are
available in the scientific literature.[18]

On Sept. 22, 2003, health officials in Vancouver opened a government-sanctioned safer injecting facility as pilot project. The facility, the first in North America, is centrally located in Vancouver's Downtown Eastside, which is the most impoverished urban neighbourhood in Canada and home to well-documented overdose and HIV epidemics

"In stratified linear regression models, the 12-week period after the facility's opening was independently associated with reductions in the number of drug users injecting in public, publicly discarded syringes and injection-related litter." – Wood et al. 2004

Evidence

Substance Abuse Treatment, Prevention, and Policy

BioMed Central

Short Report

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

Evan Wood*[1,2], Mark W Tyndall[1,2], Calvin Lai[1], Julio SG Montar
Thomas Kerr[1,2]

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[2]Department of Medicine, University of British Columbia, 3300 - 950 West 10th Avene, Vancouver BC V5Z 4E3, Canada

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This article is available from: http://www.substanceabusepolicy.com/content/1/1/13

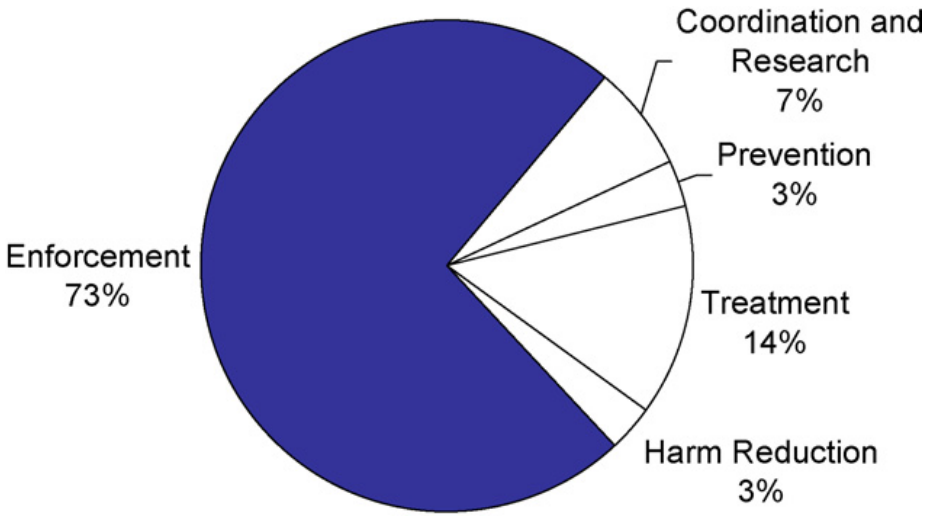
"We examined crime rates in the neighborhood where the SIF is located in the year before versus the year after the SIF opened. No increases were seen with respect to drug trafficking (124 vs. 116) or assaults/robbery (174 vs. 180), although a decline in vehicle break-ins/vehicle theft was observed (302 vs. 227). The SIF was not associated with increased drug trafficking or crimes commonly linked to drug use. –Wood et al. 2006

3. Canadian harm reduction services

Best characterized as a poorly resourced patchwork of provincial and territorial services that are highly variable with respect to types of interventions and governance

Poorly resourced?

- DeBeck et al. (2009) analyzed Canadian federal funding allocations in Canada's Anti-Drug Strategy
- Base Federal drug strategy expenditures for 2004/05 presented
- New allocations provided in 2007 and 2008 still would amount to enforcement receiving ~28 times more funding than harm reduction services



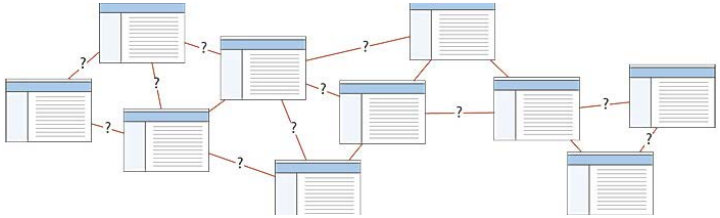
DeBeck et al. (2009). *Int J Drug Policy*, 20, 188-191.

A patchwork of services?

- In Alberta, only six communities have syringe exchange programs
- In Ontario only ~one third of public health units provide syringes
- In large parts of Manitoba and Nunavut, syringe exchange programs are not available at all

Service variation?

- Until recently, naloxone distribution programs only existed in Edmonton, Toronto and Ottawa (BC pilot program underway)
- Canada currently has only two supervised injection facilities, both located in Vancouver
- A recent review of provincial/territorial methadone policies and programs concluded that low threshold opioid substitution programs are not provided consistently across Canada



Governance?

- Little progress has been made integrating harm reduction services within treatment programs and/or other services and supports for illicit drug users

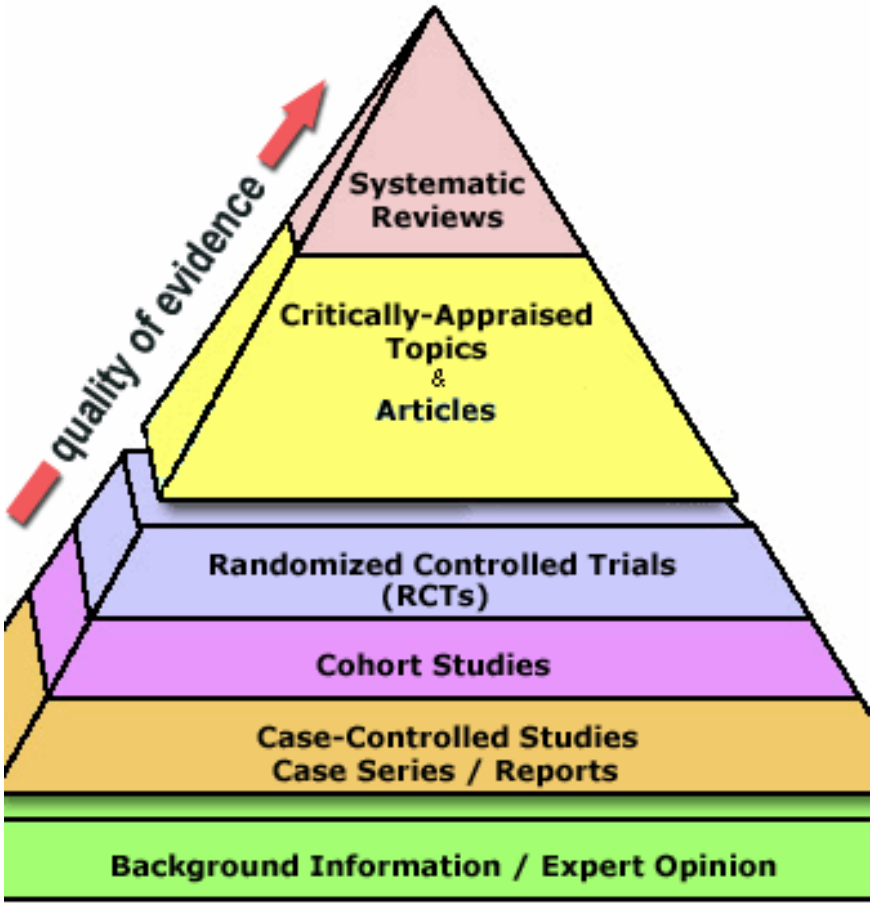
- Except for BC, in most provinces/territories, policy direction and funding for harm reduction services mainly flows from agencies or programs designed to address blood borne pathogens rather than addiction and mental health

4. New research directions

What evidence is most relevant?

Research in this area implicitly adopts an **instrumental-rational** model of health policy making.

This approach, closely associated with evidence-based medicine and health economics, narrowly construes the types of evidence (e.g., efficacy, effectiveness, costs, iatrogenic effects) deemed to be relevant for constructing policies to optimize health services for illicit drug users



Evidence to date…

An impressive (though certainly not complete) international evidence base supports the effectiveness of harm reduction interventions.

For most health topics, this would support relatively unproblematic uptake of these approaches into routine health care via KTE

Yet the approach continues to be poorly supported, variable across jurisdictions, and is not systematically organized. Why?

Harm reduction services are a prototypical example of ***morality policy*** in the health arena, i.e., policy making that involves clashes of core values about the legitimacy of providing certain kinds of health services to a target population.

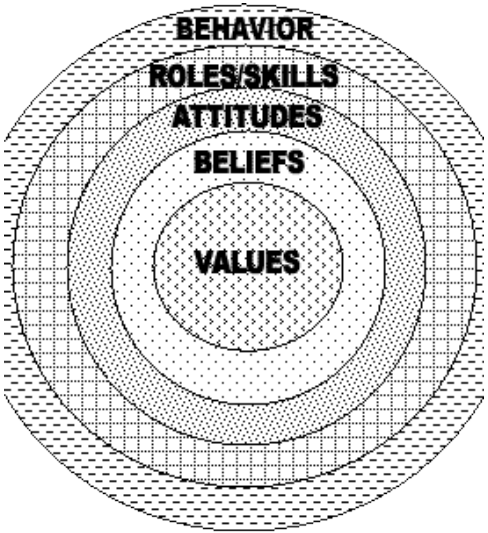
As such, policy-making shaping harm reduction services for illicit drug users is more resistant than other services (e.g., hip replacements) to instrumental-rational data and recommendations advanced in the extant intervention literature.

If harm reduction is an example of morality policy…

Evidence on efficacy, effectiveness, costs, iatrogenic effects) is **necessary**, but not **sufficient** to advance uptake of harm reduction interventions into routine care for addictions.

Data are required to describe how a range of policy stakeholders construe a highly contested moral, value-laden landscape about illicit drug users and their right to access harm reduction services.

Not "KTE" but a coordinated effort to modify attitudes and structural barriers preventing harm reduction from greater uptake



Conclusions

1. There is solid (but not completely conclusive) evidence of the effectiveness of many harm reduction interventions

2. Despite this international evidence base, Canada has a poorly resourced patchwork of provincial and territorial harm reduction services that are highly variable with respect to types of interventions and governance

3. Harm reduction services research challenges traditional models of knowledge transfer and exchange. As a prototypical morality policy making area, traditional KTE is limited