Interactive Versus Video-Based Training of Police to Communicate Syringe Legality to People Who Inject Drugs: The SHIELD Study, Mexico, 2015–2016

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Objectives. To assess how instructional techniques affect officers' intent to communicate syringe legality during searches in Tijuana, Mexico, where pervasive syringe confiscation potentiates risk of HIV and HCV among people who inject drugs (PWID) and of occupational needle-stick injury among police.

Methods. Using the SHIELD (Safety and Health Integration in the Enforcement of Laws on Drugs) model, Tijuana police underwent training to encourage communication of syringe possession legality to PWID. Trainees received either passive video or interactive role-play exercise on safer search techniques. We used logistic regression to assess the training's impact on self-reported intent to communicate syringe legality by training type and gender.

Results. Officers (n = 1749) were mostly men (86%) assigned to patrol (84%). After the training, intent to communicate the law improved markedly: from 20% to 39% (video group) and 20% to 58% (interactive group). Gender and training type significantly predicted intent to communicate syringe legality. Male and female officers' adjusted odds ratios in the interactive group were 5.37 (95% confidence interval [CI] = 4.56, 6.33) and 9.16 (95% CI = 5.88, 14.28), respectively, after the training.

Conclusions. To more effectively persuade police to endorse harm reduction and occupational safety practices, police trainings should include interactive elements. (*Am J Public Health.* 2019;109:921–926. doi:10.2105/AJPH.2019.305030)

See also Davis, p. 839.

Lack of access to sterile syringes remains a major driver of infectious disease risk among people who inject drugs (PWID), their sexual partners, and the community.[1] Under the banner of drug control, laws that restrict syringe access can fuel injection-related risk and result in collateral public health consequences. Even in jurisdictions where syringe possession and purchase are legal, extrajudicial confiscation and destruction of syringes by police are issues of emerging public health concern. These practices can simultaneously increase the risk of infection of HIV and viral hepatitis among PWID[2] while also elevating the risk of occupational needle-stick injuries (NSIs) among police officers.[3] Gaps between syringe law and its enforcement—measured by levels of extrajudicial confiscation or arrest for syringe possession—have been documented in the United States, Mexico, Eastern Europe, and other global settings.[4,5] In the Mexican context, arbitrary policing and syringe confiscation in Ciudad Juarez and Tijuana were associated with riskier PWID behaviors, including needle sharing, groin injections, and injections in public places.[6,7]

Tijuana has one of the highest levels of injection drug use in Mexico,[8] contributing to a highly elevated seroprevalence among PWID of chronic HCV infection (95%) and HIV (3.5% among men and 10% among women).[9] Despite the legality of syringe possession, 83% of PWID believe that carrying syringes is illegal.[10] Confusion about the law flows from PWID's encounters with police, as extrajudicial syringe confiscation, extortion, and arrest for syringe possession are pervasive.[11] Such encounters, and resulting misunderstanding of the law, constitute structural drivers of health risk among PWID.[6] In this context, nearly all PWID (98%) perceive police practices to be divorced from formal law. Aside from a direct detriment to public health, this contributes to a low perception of police legitimacy and community confidence in a stable legal environment.[10]

Notably, police themselves are harmed by such extrajudicial practices and by PWID's confusion about the law that they engender. Individuals are prone to conceal syringes they deem a legal or financial liability, thus increasing the risk of NSI for the police.[12] Previous research among Tijuana police officers found that nearly 1 in 6 officers reported experiencing NSI while on duty; the practice of breaking used syringes doubled the odds of experiencing an occupational NSI.[13] Overall, a large proportion of police reported always

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or sometimes confiscating syringes (49%), arresting individuals for syringe possession (36%), and conducting risky occupational practices such as breaking or transporting syringes to be submitted as evidence.[11] Another study uncovered shockingly low levels of officers' policy knowledge as it relates to syringes: only slightly more than half (56%) knew that it was legal to carry unlimited numbers of syringes and fewer than 10% were aware of provisions decriminalizing amounts of drugs in volumes that may be found in syringe residue.[14] These low levels of knowledge also interface with negative attitudes toward syringe legality and syringe service programs that predominate police culture.[15]

In light of the importance of legal knowledge as a contributor to interlocking public health and occupational safety harms, we deployed a training that combined syringe safety content with information about HIV and HCV transmission, the legality of syringes and drug possession, and community-based harm reduction strategies.[16] Our goal was to utilize an occupational safety framework to persuade police to adopt practices that promote both officer safety and PWID health (the Safety and Health Integration in the Enforcement of Laws on Drugs, or SHIELD, model). Among other objectives, we aimed to increase officers' endorsement and communication of the drug and syringe possession laws. We designed the SHIELD training to highlight the occupational safety value of communicating syringe and drug legality during search encounters, thus discouraging extrajudicial syringe confiscation and destruction, while avoiding NSI among officers.

Best practices in policing emphasize the need for effective communication and conflict avoidance, especially during encounters with marginalized populations, such as PWID.[17] To illustrate the occupational safety benefit of communicating drug and syringe laws, our original curriculum offered an instructional video on the "dos and don'ts" of frisking, with special focus on syringe safety. Preliminary assessment of the initial training sessions suggested that this video element had limited impact, so we augmented the curriculum in subsequent training cohorts to include an interactive role-play exercise. This element was designed to further reinforce the importance of communicating syringe legality to suspects prior to frisking. Role-play exercises have proven effective educational tools in other pedagogical settings.[18–21]

This analysis assessed the implementation of an interactive training versus a video training on officers' intent to communicate syringe law to suspects during frisking encounters.

METHODS

Tijuana is a city in Mexico's northwesternmost state of Baja California, a major hub for drug trafficking with the busiest land border crossing in the world.[19] The Tijuana municipal police force is among the most professionalized and largest in Mexico, with an estimated 2100 officers; the average annual turnover is relatively low at 6.2%, and police salaries are among the highest in the country (US $12 000 annually).[22] Almost 79.7% of the force is male, with a mean age of 38 years and 11 years of law enforcement experience.[20]

Intervention Design

The design and conceptual framework of the training have been described in detail elsewhere.[15] Briefly, the SHIELD model (ESCUDO in Spanish) is an occupational safety training program that uses a collaborative approach to harmonize police practices with harm reduction and other health programs and policies. In this case, we integrated SHIELD into the annual in-service training structure of the municipal police academy. Each weekend from February 2015 to May 2016, a cluster of police officers from different ranks and precincts received the intervention, for a total of 38 sessions. This program featured a 3-module structure that covered (1) basic occupational safety information, including epidemiology, prevention, and treatment of HIV and HCV; (2) key provisions of Mexico's federal, state, and municipal drug and syringe possession laws; and (3) elements and occupational safety and population health benefits of harm reduction measures. The training emphasized the legality of syringe possession and the risk of syringe confiscation and destruction as a leading cause of police occupational NSIs.[23] This message was reinforced with a video vignette (video training) that focused on correct and incorrect search techniques that could expose police officers to NSIs: "the dos and don'ts of frisking."

Ongoing collaborative efforts by academy leadership and our study team to improve the training led to the formulation and subsequent implementation of a role-play exercise (interactive training). Designed to underscore the importance of communicating syringe legality during searches as a strategy to avoid NSIs, this exercise was based on a real-life simulation of a frisking encounter with PWID in lieu of the video vignette. No participant received both the video and the interactive training. The exercise was loosely scripted, with 1 volunteer trainee playing the role of a suspect with a syringe while the other acted as the officer and conducted the search. After the initial role-play, the class critiqued the search encounter. The instructor emphasized the need to communicate the law to suspects regarding the legality of syringes to prevent NSI. The role-play was then repeated, reinforcing desired operational and communication strategies. The exercise lasted an average of 10 to 15 minutes and was implemented by trained instructors in every class after the 14th session.

Survey Design and Data Collection

Police officers who provided written informed consent (n = 1788) self-administered paper surveys immediately before and after the training. We generated unique identifiers for each officer to match pretraining and posttraining data. Our final sample included 1749 officers for whom we had matched pretraining and posttraining surveys (we could not match information for 37 officers and so excluded them). All information was confidential, and we underscored the voluntariness by informing officers that there would be no negative consequences for nonparticipation.

We adapted the questionnaire from instruments used in previous trainings.[24] Trained interviewers piloted the instrument for cultural appropriateness, clarity, and other elements with officers from the Tijuana Police Academy. Elements of the survey are described in detail elsewhere.[14,15] It covered sociodemographic data, legal knowledge of drug and syringe possession and other relevant

public health knowledge, and attitudes and behaviors promoting harm reduction and health, such as referring PWID to treatment. We also collected information related to intended practices to avoid NSIs.

Measures

Officers could select 6 non–mutually exclusive actions to avoid NSIs, which included protective behaviors (using needle-stick resistant gloves, asking suspects to volunteer possession of sharp objects, informing PWID about syringe legality) and risk behaviors (breaking syringes, throwing syringes into the trash, separating the needle from the syringe body). In this analysis, the main outcome of interest was officers' intent to communicate the law about syringe and drug legality before and after the training. To parse out the utility of specific training elements, we compared the training's impact across 2 training groups (video vs interactive). Independent sociodemographic variables included age, total years in law enforcement, gender, level of education, and rank.

Data Analysis

We defined intent to communicate the law as a dichotomous outcome variable, with the value of 1 if the respondent selected the syringe law communication option in response to the scenario "to avoid being stuck with a needle" and 0 otherwise. Our primary predictor variable was receipt of the interactive training occupational safety module versus training with the video. For each of the training groups, we compared officers who expressed intent to communicate the law to avoid NSI with officers who did not, controlling for demographic and occupational characteristics. We generated descriptive statistics and used the χ^2 test for comparisons involving categorical variables and the Mann–Whitney test for comparisons involving continuous variables.

We used logistic regression with generalized estimating equations with an exchangeable correlation structure to evaluate the relationship between the outcome (reported intent to relay the law) and the primary predictor (type of training) using pretraining and posttraining data for each officer, controlling for potential confounders. Preliminary baseline analyses from our research group found differences by gender with respect to demographic and behavioral characteristics, so we evaluated the outcome variable separately for men and women. To ensure the correct assessment of the relationship between the outcome variable and the main predictor variable, we evaluated all interactions between the independent variables. The full model included training group (video vs training), time (pretraining vs posttraining), gender, and the 2 interactions: time by training group and time by gender. We also calculated simple main effects for women and men on the 2 types of training. We conducted all statistical analyses using Stata version 14 (StataCorp LP, College Station, TX).

RESULTS

Overall, 1806 officers were trained; 1788 (over 99%) agreed to participate in the evaluation and 18 declined to do so. We were unable to match the pre–post survey information for 37 officers, whom we therefore excluded from the analysis. In total, 438 officers received the video-only training, whereas 1311 officers received the training with the interactive component. Baseline characteristics are detailed elsewhere.[13,14] The training included officers from all ranks; however, the majority were patrol officers (84%), reflecting the makeup of the agency. The sample was mostly male (86%) with a

TABLE 1—Sociodemographic Variables for "Inform All Suspects About Law" Before and After Police Education Program Training, by Type of Training (Video vs Interactive): Tijuana, Mexico, 2015–2016

	Pretraining		Posttraining	
Variable	Informing All Suspects About Laws, No. (%) or Median (IQR)	Not Informing All Suspects About Laws, No. (%) or Median (IQR)	Informing All Suspects About Laws, No. (%) or Median (IQR)	Not Informing All Suspects About Laws, No. (%) or Median (IQR)
Video training group[a]				
Total	88 (20.1)	350 (79.9)	171 (39.4)	263 (60.6)
Median age, y	38 (31–44)	36 (31–42)	36 (31–43)	36 (31–42)
Median y in law enforcement	11 (8–19)	9.3 (5–16)	9.6 (7–15)	10 (5–17)
Men	71 (19.5)	294 (80.5)	136 (37.5)	226 (62.5)
< high school education	16 (20.0)	64 (80.0)	29 (36.7)	50 (63.3)
Patrol officer	72 (19.5)	298 (80.5)	142 (38.8)	224 (61.2)
Interactive training group[b]				
Total	257 (19.6)	1054 (80.4)	766 (58.4)	544 (41.5)
Median age, y	38 (33–44)	38 (33–44)	38 (33–44)	38 (33–44)
Median y in law enforcement	11.5 (9–18)	12 (9–19)	12 (8–19)	11 (9–18)
Men	225 (19.8)	908 (80.2)	646 (57.2)	485 (42.8)
< high school education	53 (21.9)	188 (78.0)	124 (51.7)	116 (48.3)
Patrol officer	218 (19.8)	883 (80.2)	635 (57.7)	465 (42.3)

Note. IQR = interquartile range. The overall sample of police officers in the program was n = 1749.

[a]The pretraining sample size was n = 438; the posttraining sample size was n = 434.

[b]The pretraining sample size was n = 1311; the posttraining sample size was n = 1310.

median age of 38 years (interquartile range [IQR] = 32–42) and a median of 11 years of work experience (IQR = 8–18). Although Mexican police requirements mandate high school graduation as a minimum level of education, nearly 20% of grandfathered officers did not meet this standard.

At baseline (Table 1), only 20% of police officers reported the intent to communicate syringe legality as a protective occupational safety measure. This proportion was uniform across video and interactive training groups. Directly after the SHIELD training, intent to communicate syringe legality to suspects increased to 39% in the video-only group and 58% in the interactive training group.

Results derived from the logistic regression generalized estimating equations analysis are presented in Figure 1 and Table 2. Two interactions were significantly associated with time in the full model: training groups ($P \leq .01$) and gender ($P \leq .05$). There were no statistically significant gender differences on intent to communicate the law at baseline (Figure 1). According to the interaction effects derived from the main model, both men and women increased their odds of intending to communicate the law after their participation in the training. The adjusted odds of male participants' intent to communicate the law were 2.49 times higher in the video-only group after the training than before the training (95% confidence interval [CI] = 1.91, 3.23). In the interactive training group, men were 5.37 more likely to support such an action after the training (95% CI = 4.56, 6.33).

Women exhibited a similar but more pronounced effect: the odds of intending to communicate the law to suspects after the training were 3.20 times higher for the video-only group (95% CI = 1.84, 5.57). In the interactive training group, these odds were 9.16 times greater than before the training (95% CI = 5.88, 14.28).

DISCUSSION

Laws facilitating access to syringes are vital to community health, but their potential benefit is mediated by accurate legal knowledge, both among those who are charged with law enforcement and among PWID. In the latter high-risk population, knowledge of the law flows primarily from their interactions with police. It is therefore highly salient that only a slight majority in our comprehensive sample of Tijuana police officers knew about the legality of syringe possession.[14] Before the training, only 20% considered informing suspects of the law prior to frisking. Following the training, officers were more likely to intend communicating the law as a way to reduce the risk of an occupational NSI. The inclusion of the interactive role-play element in the SHIELD training was associated with a marked improvement in such intention. In view of the SHIELD training's goal to improve knowledge of the law among police and PWID, the inclusion of an interactive role-play element appears to substantially improve the impact of the training. Gaps between drug and syringe laws and their enforcement are pervasive throughout the world,[4] so better tools are urgently needed to help translate formal law to police practice; better knowledge of the law is requisite to that translation.

Informing suspects about the drug and syringe possession laws has a dual benefit. First, it can improve PWID's willingness to acquire and carry sterile syringes, reducing risky injection.[25,26] Previous interventions have implemented such an approach by integrating legal knowledge with harm reduction programming for PWID, but the impact of these interventions is shaped by knowledge and practices of law enforcement.[27] Second, improving officers' willingness to communicate syringe legality may reduce their own occupational safety risk. PWID may conceal syringes out of fear of punishment or extortion, with risk cascading to law enforcement officers during searches and other encounters.[28]

Culturally appropriate training interventions based on the SHIELD framework can simultaneously promote well-being among police officers and lead to a reduction of health risks for PWID.[27] The integration of an interactive element into the training drew directly on established collaboration with instructors and police academy management—a central feature of the multi-level SHIELD model. This organic innovation appeared to substantially improve the training's impact as it relates to legal knowledge and intent to communicate the law, but the insight has broader

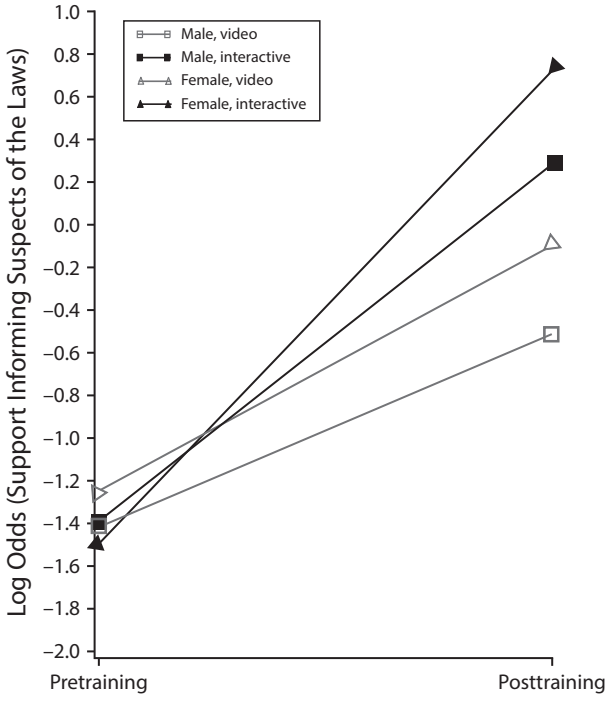

FIGURE 1—Log of Odds of Police Officers' Intent to Communicate the Law to All Suspects, by Gender and Training Group (Video vs Interactive): Tijuana, Mexico, 2015–2016

TABLE 2—Effect of Training Type (Video vs Interactive) on Intent to Inform to All Suspects of the Laws Related to Syringe and Drug Possession Before and After Police Education Program Training: Tijuana, Mexico, 2015–2016

Training Type and Time	Intent to Inform, No.		OR (95% CI)
	Yes	No	
Men			
Video			
Pretraining	71	294	1 (Ref)
Posttraining	136	226	2.49 (1.91, 3.23)
Interactive			
Pretraining	225	908	1 (Ref)
Posttraining	646	485	5.37 (4.56, 6.33)
Pretraining			
Video	71	294	1 (Ref)
Interactive	225	908	1.03 (0.76, 1.38)
Posttraining			
Video	136	226	1 (Ref)
Interactive	646	485	2.22 (1.74, 2.83)
Women			
Video			
Pretraining	16	56	1 (Ref)
Posttraining	34	37	3.20 (1.84, 5.57)
Interactive			
Pretraining	32	142	1 (Ref)
Posttraining	118	57	9.16 (5.88, 14.28)
Pretraining			
Video	16	56	1 (Ref)
Interactive	32	142	0.79 (0.40, 1.55)
Posttraining			
Video	34	37	1 (Ref)
Interactive	118	57	2.26 (1.29, 3.97)

Note. CI = confidence interval; OR = odds ratio.

implications for the design of other elements of the SHIELD training model, as well as pedagogical innovation in policing and other domains.

Although it was not contemplated as a principal outcome, the gender dynamic we observed deserves special mention. Figure 1 illustrates that female trainees showed markedly superior improvement in their intent to communicate the law compared with men. This effect was significantly enhanced by the introduction of the interactive component. Previous research has documented that female officers are less likely than men to use force or other extreme controlling behavior such as searches and arrests, resulting in less risky situations for both the officer and the community members.[29] However, these differences should be viewed in the context of other factors, such as the officers' particular beats (i.e., community policing vs patrol) and the differential ways in which community members react to female police.[29] Our results support the notion that female officers may be more amenable to adopting communication strategies that can help improve both police and community health. This reinforces the importance of the feminization of policing as a public health imperative.[30]

Limitations

Although the results of our study are encouraging, they are also subject to several limitations. Self-administered surveys likely reduced social desirability bias, but an interviewer-administered survey would have allowed for probes to help ensure that officers fully understood the questions. Costs and logistical difficulties of obtaining data from participants in a large classroom precluded this mode of survey administration.[31] A randomized assignment of our modified intervention could have provided more robust results about the effects of the interactive exercise; however, the logistics of our preprogrammed training schedule made this unfeasible. By controlling for key demographic factors, we minimized the likelihood of systematic bias between the groups. Taking advantage of a natural experiment made possible by the implementation of the training provided a unique opportunity to assess specific elements of this larger intervention, with timely implications for the calibration and optimization of the SHIELD training model. Although our study focused on normative questions about a supported protective action, further analyses are needed to determine whether these changes also translate into actual behavioral changes from prospectively collected data. Lastly, our results represent only 1 police force in northwestern Mexico and may not be generalizable to other settings.

CONCLUSIONS

Although syringe possession is legal in Mexico, many police officers and PWID are unaware of or unconvinced by the law. Persuading police to communicate syringe legality during search encounters can close this knowledge gap while improving officer safety and the health of PWID. The inclusion of an interactive role-play element in the SHIELD program effectively boosted the training's impact and should be considered in future efforts to align police practices with formal policies. AJPH

CONTRIBUTORS

J. Arredondo and L. Beletsky contributed equally. J. Arredondo conceptualized the analysis and led all activities, including design literature review, analysis, interpretation and scientific writing. L. Beletsky, a principal investigator on the Escudo Project, conceptualized and designed the police education program that was implemented in Tijuana; he provided expert knowledge and context necessary for the analysis and assisted with drafting and editing the article at all stages. P. Baker drafted substantial portions of all sections of the article, edited full revisions, and assisted with literature review and data interpretation. D. Abramovitz, the lead biostatistician for the analysis, provided statistical expertise and support for the design and conduct of data analysis and assisted with drafting and editing the Methods and Results sections. I. Artamonova organized and manipulated data sets, conducted the biostatistical analysis, and assisted with drafting and editing the Methods and Results sections. E. Clairgue provided essential context and insight into study procedures and research population and assisted with drafting and editing the Methods section. M. L. Mittal provided essential literature review and data interpretation and assisted with drafting and editing the introduction and Methods and Results sections. T. Rocha-Jimenez assisted with data interpretation, including creation of tables and figures, and drafted and edited the Results and Conclusion sections. T. Kerr provided expert consultation for the analysis; he assisted with framing and editing the introduction and the Discussion section. A. Banuelos was heavily involved in the police education program and continued collaborations between the Project Escudo and the municipal police department in Tijuana; he assisted with editing the Methods section. S. A. Strathdee, a principal investigator on the Escudo Project, helped conceptualize the design for this analysis and provided expert guidance on data interpretation and contextual considerations; she assisted with drafting and editing the introduction and the Results and Conclusion sections. J. Cepeda provided expert knowledge and context necessary for the analysis and assisted with drafting and editing the article at all stages.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

The study protocol and consent documentation was approved by the Human Research Protections Program of the University of California, San Diego, and by the institutional review board at Universidad Xochicalco, Tijuana.

REFERENCES

1. Beyrer C. HIV epidemiology update and transmission factors: risks and risk contexts—16th International AIDS Conference epidemiology plenary. *Clin Infect Dis*. 2007; 44(7):981–987.

2. Pollini RA, Brouwer KC, Lozada RM, et al. Syringe possession arrests are associated with receptive syringe sharing in two Mexico–US border cities. *Addiction*. 2008; 103(1):101–108.

3. Beletsky L, Thomas R, Shumskaya N, Artamonova I, Smelyanskaya M. Police education as a component of national HIV response: lessons from Kyrgyzstan. *Drug Alcohol Depend*. 2013;132:S48–S52.

4. Beletsky L, Agrawal A, Moreau B, Kumar P, Weiss-Laxer N, Heimer R. Police training to align law enforcement and HIV prevention: preliminary evidence from the field. *Am J Public Health*. 2011;101(11): 2012–2015.

5. Des Jarlais DC, Grund JP, Zadoretzky C, et al. HIV risk behaviour among participants of syringe exchange programmes in central/eastern Europe and Russia. *Int J Drug Policy*. 2002;13(3):165–174.

6. Beletsky L, Lozada R, Gaines T, et al. Syringe confiscation as an HIV risk factor: the public health implications of arbitrary policing in Tijuana and Ciudad Juarez, Mexico. *J Urban Health*. 2013;90(2):284–298.

7. Rhodes T. Risk theory in epidemic times: sex, drugs and the social organisation of "risk behavior." *Sociol Health Illn*. 1997;19(2):208–227.

8. Brouwer KC, Strathdee SA, Magis-Rodríguez C, et al. Estimated numbers of men and women infected with HIV/AIDS in Tijuana, Mexico. *J Urban Health*. 2006; 83(2):299–307.

9. Robertson AM, Garfein RS, Wagner KD, et al. Evaluating the impact of Mexico's drug policy reforms on people who inject drugs in Tijuana, BC, Mexico, and San Diego, CA, United States: a binational mixed methods research agenda. *Harm Reduct J*. 2014;11(1):4.

10. Beletsky L, Wagner KD, Arredondo J, et al. Implementing Mexico's "Narcomenudeo" drug law reform: a mixed methods assessment of early experiences among people who inject drugs. *J Mixed Methods Res*. 2016;10(4): 384–401.

11. Cepeda JA, Strathdee SA, Arredondo J, et al. Assessing police officers' attitudes and legal knowledge on behaviors that impact HIV transmission among people who inject drugs. *Int J Drug Policy*. 2017;50:56–63.

12. Bluthenthal R, Lorvick J, Kral A, Erringer E, Kahn J. Collateral damage in the war on drugs: HIV risk behaviors among injection drug users. *Int J Drug Policy*. 1999;10(1): 25–38.

13. Mittal ML, Beletsky L, Patiño E, et al. Prevalence and correlates of needle-stick injuries among active duty police officers in Tijuana, Mexico. *J Int AIDS Soc*. 2016; 19(4 suppl 3):20874.

14. Arredondo J, Strathdee SA, Cepeda J, et al. Measuring improvement in knowledge of drug policy reforms following a police education program in Tijuana, Mexico. *Harm Reduct J*. 2017;14(1):72.

15. Strathdee SA, Arredondo J, Rocha T, et al. A police education programme to integrate occupational safety and HIV prevention: protocol for a modified stepped-wedge study design with parallel prospective cohorts to assess behavioural outcomes. *BMJ Open*. 2015;5(8):e008958.

16. Strathdee SA, Beletsky L, Kerr T. HIV, drugs and the legal environment. *Int J Drug Policy*. 2015;26(suppl 1): S27–S32.

17. Birzer ML, Tannehill R. A more effective training approach for contemporary policing. *Police Q*. 2001;4(2): 233–252.

18. Skolnick JH, Fyfe JJ. *Above the Law: Police and the Excessive Use of Force*. New York, NY: Free Press; 1993.

19. Fyfe JJ. Training to reduce police-civilian violence. In: Geller WA, Toch H, eds. *Police Violence: Understanding and Controlling Police Abuse of Force*. New Haven, CT: Yale University Press; 1996:165–179.

20. Krameddine Y, DeMarco D, Hassel R, Silverstone PH. A novel training program for police officers that improves interactions with mentally ill individuals and is cost-effective. *Front Psychiatry*. 2013;4:9.

21. Bucardo J, Brouwer KC, Magis-Rodríguez C, et al. Historical trends in the production and consumption of illicit drugs in Mexico: implications for the prevention of blood borne infections. *Drug Alcohol Depend*. 2005;79(3): 281–293.

22. Shirk D. Justiciabarómetro: diagnóstico Integral de la Policía Municipal de Tijuana. Justice in Mexico Project. 2015. Available at: https://justiceinmexico.org/wp-content/uploads/2015/03/2015_JUSTICIABAROMETRO-Tijuana.pdf. Accessed January 2017.

23. Chan DKC, Hagger MS. Autonomous forms of motivation underpinning injury prevention and rehabilitation among police officers: an application of the trans-contextual model. *Motiv Emot*. 2012;36(3):349–364.

24. Beletsky L, Macalino GE, Burris S. Attitudes of police officers towards syringe access, occupational needlesticks, and drug use: a qualitative study of one city police department in the United States. *Int J Drug Policy*. 2005; 16(4):267–274.

25. Lawton E, Riseberg R, Bogin-Farber GM, Knight R, Cohen J, Smith LA. Disparities in health, disparities in law: the global potential of individual advocacy. In: Cholekwa PA, Motlagh MM, eds. *Health Capital and Sustainable Socioeconomic Development*. New York, NY: CRC Press; 2008:419–440.

26. Tarantola D. Foreword: public health, public policy, politics and policing. *Harm Reduct J*. 2012;9:22.

27. Jürgens R, Csete J, Amon JJ, Baral S, Beyrer C. People who use drugs, HIV, and human rights. *Lancet*. 2010; 376(9739):475–485.

28. Midford R, Acres J, Lenton S, Loxley W, Boots K. Cops, drugs and the community: establishing consultative harm reduction structures in two Western Australian locations. *Int J Drug Policy*. 2002;13(3):185–192.

29. Rabe-Hemp CE. Female officers and the ethic of care: does officer gender impact police behaviors? *J Crim Justice*. 2008;36(5):426–434.

30. Poteyeva M, Sun IY. Gender differences in police officers' attitudes: assessing current empirical evidence. *J Crim Justice*. 2009;37(5):512–522.

31. Vuillemin A, Oppert JM, Guillemin F, et al. Self-administered questionnaire compared with interview to assess past-year physical activity. *Med Sci Sports Exerc*. 2000;32(6):1119–1124.