



# HHS Public Access

Author manuscript

*AIDS Care*. Author manuscript; available in PMC 2017 October 01.

Published in final edited form as:

*AIDS Care*. 2016 October ; 28(10): 1312–1315. doi:10.1080/09540121.2016.1178698.

## **Integrated respondent driven sampling and peer support for persons who inject drugs in Haiphong, Vietnam: A case study with implications for interventions**

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**Abstract**

Combined prevention for HIV among persons who inject drugs (PWID) has led to greatly reduced HIV transmission among PWID in many high-income settings, but these successes have not yet been replicated in resource-limited settings. Haiphong, Vietnam, experienced a large HIV epidemic among PWID, with 68% prevalence in 2006. Haiphong has implemented needle/syringe programs, methadone maintenance treatment, and antiretroviral (ART) treatment, but there is an urgent need to identify high risk PWID and link them to services. We examined integration of respondent driven sampling (RDS) and strong peer support groups as a mechanism for identifying high risk PWID and linking them to services. The peer support staff performed the key tasks that required building and maintaining trust with the participants, including recruiting the RDS seeds, greeting and registering participants at the research site, taking electronic copies of participant fingerprints (to prevent multiple participation in the study) and conducting urinalyses. A 6-month cohort study with 250 participants followed the RDS cross-sectional study. The peer support staff maintained contact with these participants, tracking them if they missed appointments, and providing assistance in accessing methadone and antiretroviral treatment. The RDS recruitment was quite rapid, with 603 participants recruited in 3 weeks. HIV prevalence was 25%, HCV prevalence 67%, and participants reported an average of 2.7 heroin injections per day. Retention in the cohort study was high, with 86% of participants re-interviewed at 6-month follow-up. Assistance in accessing services led to half of the participants in need of methadone enrolled in methadone clinics, and half of HIV positive participants in need of ART enrolled in HIV clinics by the 6-month follow up. This study suggests integrating large-scale RDS and strong peer support may provide a method for rapidly linking high-risk PWID to combined prevention and care, and greatly reducing HIV transmission among PWID in resource-limited settings.

## Keywords

HIV; Persons who inject drugs (PWID); Vietnam; Respondent driven sampling (RDS)

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Large-scale implementation of “combined HIV prevention and care” for people who inject drugs (PWID) including needle/syringe programs (NSP), medication-assisted treatment (MAT) for substance use disorders, and antiretroviral treatment (ART) for HIV infection, has reduced HIV incidence among PWID to near zero in several high-income settings, including Amsterdam (Van den Berg, Smit, Van Brussel, Coutinho, & Prins, 2007), New York City (Des Jarlais, Arasteh, & Friedman, 2011), Vancouver (Montaner J., 2012) and much of Western Europe (EMCDDA, 2010). It should be possible to replicate these successes in low/middle-income and transitional countries in Eastern Europe, Central Asia and Southeast Asia, where injecting drug use is driving many HIV epidemics (El-Bassel, Shaw, Dasgupta, & Strathdee, 2014). Large-scale implementation of combined prevention and care for PWID in these settings should prevent large number of HIV infections and eventually be cost-saving, (Kato et al., 2013; Vickerman, Martin, Turner, & Hickman, 2012) but requires a substantial initial investment. Unfortunately, this need for substantial initial investment comes when international support for HIV prevention is declining (Cook C. BJ, 2014).

The implementation of combined HIV prevention and care for PWID in a resource-limited setting requires more than having resources for NSP, MAT and ART. Multiple factors may keep PWID from accessing HIV prevention and care services, including not knowing

services are available, not being aware of the needs for services (particularly not knowing HIV serostatus), administrative barriers to accessing services, and stigma associated with seeking services. These barriers exist in high-income settings, but may be particularly important in resource-limited settings (Kamarulzaman & McBrayer, 2015).

Highly effective implementation of combined prevention and care includes mechanisms to: 1) identify large numbers of PWID not receiving services and at high risk for acquiring HIV or transmitting HIV and 2) provide for continuing contact with and assistance in obtaining services. It also would be desirable to have mechanisms that 3) can be implemented rapidly, as the sooner HIV transmission is reduced, the sooner a cost-savings point would be reached, and 4) are relatively inexpensive. We would suggest that large-scale respondent driven sampling (RDS) (Heckathorn, 1997, 2002) surveys integrated with strong PWID community peer support groups (Marshall, Dechman, Minichiello, Alcock, & Harris, 2015) have the potential for achieving these qualities. We present a feasibility study of such integration conducted in Haiphong, Vietnam.

Haiphong has an estimated 10,000 PWID and experienced a very high prevalence HIV epidemic among PWID with prevalence reaching 68% in 2006 (Ahmed, Long, Huong, & Stewart, 2015). Haiphong currently has relatively good coverage of NSP, with PWID able to purchase sterile injection equipment at pharmacies; MAT, with 3500 persons in methadone treatment, and Vietnam has recently adopted a policy that HIV positive members of “key populations” (PWID, commercial sex workers and men who have sex with men (MSM)) be offered ART.

## Methods

### Research Team

The team consisted of scientists from Vietnam, France and the United States, the Society for the Community Development Initiatives, a non-governmental organization in Vietnam, and three community/peer support groups in Haiphong (Friendship Arms for PWID, Virgin Flowers for commercial sex worker-PWID and White Sands for MSM-PWID). The peer groups participated as full partners in developing the study procedures and provided expert knowledge of the local PWID situation. All decisions were made by consensus. The Friendship Arms offices served as the primary research site.

### Eligibility criteria

The eligibility criteria were 1) age 18 or older, 2) capable of giving informed consent, 3) current injecting drug use, verified by skin marks or knowledge of injecting practices, and by positive urine test for heroin and/or methamphetamine.

### RDS recruiting

Participants were recruited using RDS (Heckathorn, 1997, 2002). Twelve initial ‘seeds’ were selected to ensure the representation of gender, age group, HIV status, being MSM, and participation in sex work. Each seed first participated in study procedures and then was given 3 coupons to distribute to potentially eligible participants. Persons presenting coupons

at the research site were invited to participate in the study; after participating, they were given coupons to recruit new participants. RDS recruiting continued until the N = 600-target sample size was reached.

### **RDS study data collection**

Data collected included RDS coupon numbers and RDS network questions, eligibility determination, a questionnaire (covering demographics, injecting and sexual behavior, and use of services) developed from previous studies conducted by the researchers, and blood samples for HIV and HCV testing. Testing was conducted by the Haiphong Provincial HIV/AIDS Center using Alere Determine 12.0 (Abbott) and HCV ELISA 3.0 (SD Bioline). HIV confirmation tests were done according to the National guidelines and used HIV1/2 3.0 rapid test (SD Bioline) plus the MUREX HIV Ag/Ab Combination test (Diasorin).

Participants were compensated 150,000 Vietnamese dong (VND) (\$7.50 USD) for their time and contribution. The incentive for recruiting new participants was 50,000 VND (\$2.5 USD).

### **Cohort Study**

After completion of the RDS study, 250 participants were enrolled in a cohort study to develop local follow-up procedures and for assisting participants in obtaining methadone treatment and HIV care-antiretroviral treatment. These included 50 new injectors (injecting for < 2 years), 30 female sex worker-PWID, 30 MSM-PWID and 140 “regular” PWID, randomly selected from participants in the RDS study who were not on methadone maintenance or ART at the time of the RDS study. We oversampled new injectors, sex workers and MSM and excluded persons on MMT or ART in order to gain experience in follow-up with persons likely to be difficult to retain in the cohort study. Follow-up was conducted at 4, 8, 12, and 24 weeks. Participants were compensated 150,000 VND for each visit.

### **Activities of the Peer Support Groups**

In the RDS survey, the peer support groups: 1) identified and recruited the seeds, 2) registered participants, including validating coupons and using a fingerprint reader to prevent multiple participation by a single individual, 3) gave an overview of the study prior to formal informed consent, 4) determined eligibility, including examination of skin marks or knowledge of injecting practices and administering the urinalysis, 5) paid honoraria, and 6) distributed coupons for further recruitment.

During the cohort study, the peer support groups: 1) maintained contact with cohort participants, reminding them of upcoming appointments, and locating them in the community if the participants missed scheduled appointments, 2) provided harm reduction supplies (condoms, syringes), and 3) provided support for obtaining methadone and HIV treatment.

## **Institutional Review Board Approvals**

The study was approved by the IRBs of the Haiphong University of Medicine and Pharmacy and Mount Sinai Beth Israel.

## **Results**

### **Pace of RDS recruitment**

In the first weeks of the study, starting 16 September 2014, we distributed 3 new recruitment coupons to each participant. By 20 September 2014 we had 200 participants and changed to distributing 2 new coupons per participant. By 2 October 2014 we had 490 participants and changed to distributing 1 new coupon per participant. The numbers of coupons distributed per participant were reduced to limit the total coupons circulating in the community and moderate new participants coming to the research site. By 7 October 2014 we had 580 participants and stopped RDS recruiting. An additional 23 MSM and commercial sex worker participants were directly recruited by peer support staff to oversample these groups. During the height of recruitment 50 new participants were enrolled per day.

### **Demographic characteristics and HIV, HCV prevalence of the RDS subjects**

Table 1 shows the demographic characteristics, recent drug use and recent sexual behavior of participants. The sample was predominantly heterosexual males and all used heroin. Self-reported injecting and sexual risk behaviors were low with the exception of unsafe sex with a primary partner. Participants reported a mean of 2.7 injections per day. Observed HIV prevalence was 25% and observed HCV prevalence was 67%. Using RDSAT to adjust HIV and HCV prevalence led to only minor changes—23% for HIV and 69% for HCV.

### **Retention in the cohort study**

A high retention rate was achieved for the 250 subjects in the cohort study. At 6-month follow-up, interviews and blood sampling were conducted with 86% of participants. There were 5 deaths, 9 persons moved from Haiphong to other provinces, and 10 were incarcerated.

### **Assistance with receiving services during follow-up**

During the 6 month cohort study, approximately half of participants not initially on MMT were enrolled in MMT clinics and approximately half of HIV positive participants not initially in HIV care were enrolled in HIV clinics. The assistance in obtaining services is continuing beyond the 6-month follow up and rates should increase. (A paper with detailed information of providing assistance is in preparation.) Qualitative interviews with participants indicated they were generally quite grateful for the assistance (Nguyen Thi Phuong Thao J-RM, 2015).

## **Discussion**

Integration of the RDS survey and the peer support groups accomplished all four of the desirable factors for linking PWID to prevention and care services.

A relatively large (603) group of PWID who were injecting very frequently were recruited in a short time (three weeks). Contact was maintained with a very high percentage of participants and substantial numbers of participants in the cohort study were placed in HIV care and MMT. While we do not have cost data, RDS is a highly cost-effective method for establishing contact with PWID in low/middle-income countries (Iguchi et al., 2009), and peer support workers were much less expensive than health professionals would have been.

Injecting drug use is driving HIV epidemics in many areas in Eastern Europe, Central Asia and Southeast Asia (El-Bassel, Shaw, Dasgupta, & Strathdee, 2014). Ending HIV epidemics among PWID in these areas will require providing NSP, MAT and ART, while developing cost effective mechanisms for rapidly linking PWID to these services. Our experience in Haiphong suggests that integration of RDS with strong peer support groups may be a potentially important mechanism for such linkages.

## Acknowledgments

This work was supported by grants from the ARNS (France) 12299 and NIDA (US) P30DA011041 & R01 DA041978

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**Table 1**  
**Demographic characteristics, drug use and sexual behaviors and HIV and HCV serostatus among PWID in Haiphong, Vietnam, 2014**

	N (%)
Total Sample Size	603 (100)
Gender:	
Female	61 (10)
Non-MSM Males	492 (82)
MSM	49 (8)
Drug injection characteristics: total (%)	
Heroin (alone)	602 (~100)
Heroin (with other drugs)	3 (<1)
(Meth)Amphetamine	3 (<1)
Receptive sharing	32 (5)
Distributive sharing	19 (3)
Sexual risk behaviors	
Unsafe sex with primary partner	172 (29)
Unsafe sex with casual sex partner	15 (2)
Exchanged sex for money	75 (12)
Avg. Age (SD)	37 (8)
HIV and HCV serostatus	
HIV seropositive	152 (25)
HCV seropositive	403 (67)