PEER-DRIVEN INTERVENTION

1. Summary of Intervention
A Peer-Driven Intervention (PDI) is a “chain-referral” outreach methodology to prevention the spread of HIV and related diseases developed in the 1990s by Robert S. Broadhead and Douglas D. Heckathorn at the University of Connecticut, through support from the National Institute on Drug Abuse (NIDA) (R01-DA05517, R01-DA08014, R01-DA12112 and R01-DA14691). An Independent Scientist Award to Robert Broadhead from NIDA (K02-DA17615) provided further support for the adaptation and development of the model in Russia, Vietnam, China, and Ukraine.

The PDI was created as an alternative to the “provider-client” outreach model dominating HIV prevention efforts for injection drug users (IDUs) (Broadhead and Heckathorn 1994). The latter, called “traditional outreach,” the “NIDA Standard model,” the “Indigenous Leader” model, the “peer-educator” model, and the “Community Health Outreach Worker” (CHOW) model, relies on staffs of salaried outreach workers - usually former drug users or indigenous community members with “street credentials” - to interact with members of their own community as clients (National Institute on Drug Abuse 1992; National Institute on Drug Abuse 2000; Brown and Beschner 1993; Wiebel 1992; Feldman n.d). They do this by working to identify and meet community members who inject drugs; educate them in the community about HIV prevention; recruit them for risk assessment interviews and other prevention services; and distribute risk reduction materials directly to IDUs in the community (Broadhead and Fox 1990, 1993; Johnson, Williams and Kotarba 1990). (A website linking the key literature on variations of the provider-client outreach model is available at: http://www.cdc.gov/outreach/).

In contrast, the PDI model rests on the premise that IDUs are much more capable of reaching and communicating with one another on matters of mutual concern than are salaried “peer-educators,” outreach workers, or professionals (Broadhead and Heckathorn et al., 1995). The model, therefore, relies entirely on persons who currently inject drugs to carry-out the following core activities that professional outreach workers perform, but as bona fide members of active drug-using networks: educate their peers about HIV prevention in the course of their own everyday interactions; recruit peers to prevention services where they are offered free HIV-test counseling, health/risk assessments, needle exchange, and further prevention education; and distribute harm reduction materials to peers such as condoms, small bottles of bleach and sterile water to aid in cleaning syringes, clean cookers and cotton filters, bandages and sterile cotton pads, and informational brochures (Broadhead and Heckathorn et al. 1998).

In a PDI, after being recruited by a peer in the community, and receiving prevention services at a project office, each recruit is given recruitment coupons and trained to educate and recruit additional IDU-peers for services. Thus all persons recruited to a PDI are also given the opportunity to play active roles as peer-educators and recruiters. In addition, the PDI recruitment process expands geometrically; eg., a project that begins with, say, 3 recruiters who are each given 3 recruitment coupons can generate 9 recruits who, given 3 coupons each, can generate 27 recruits, and so on (Heckathorn 2002). The coupons enable a project to keep track and credit each recruiter for the IDU-peers s/he recruits for services, as well as for how well s/he educates each recruit, as determined by a short knowledge test administered to each recruit when
s/he comes to the project for an appointment. Each recruiter is paid nominal cash rewards for educating and successfully recruiting each peer.

2. **Target Population**
The PDI was originally designed to reach and educate IDUs. Since the 1990s, however, the model has been expanded and adapted for use in accessing other at-risk and network-based populations such as commercial sex workers, men-who-have-sex-with-men (MSM), high-risk heterosexuals (HRH), homeless/runaway youth, and even jazz musicians (Magnani and Sabin et al., 2005; Heckathorn and Jeffri 2001; Broadhead and Volkanovsky et al., 2006; Broadhead and Hammett et al., 2009). The one thing these seemingly disparate populations have in common is that their members are not loners or social isolates; they depend very much on others to make their way in the world, and they participate in various types of social networks or systems of reciprocity to satisfy their mutual interests and needs.

For convenience sake, the remainder of this PDI overview will focus on the use of the model in accessing IDUs.

3. **Content of Intervention**
A. **Model of Delivery/Duration**

The PDI recruitment process can be “steered” through the use of selective incentives and bonus rewards offered to IDUs to access specially-targeted or high-risk members of a local drug scene. The model assumes that some IDUs are unusually knowledgeable about, and have special connections to, certain types of IDUs, such as those who are young and/or female, or others who are unusually hidden or marginalized due to ethnicity, sexual orientation, etc. The PDI also rests on the assumption that not all recruits will be effective recruiters, but that only a minority of recruits need to be successful as recruiters in order for the outreach mechanism to be robust (Broadhead and Heckathorn et al., 1995; Heckathorn 2002).

Starting a PDI in a community begins with a handful of “seeds.” These are active IDUs known to a PDI’s staff of Health Educators (HEs), or IDUs who are referred to the latter by knowledgeable drug-researchers, drug-treatment providers, physicians, public health officials, or social workers in the local area. The HEs train the seeds as described below to serve as peer-recruiters, for which they earn nominal rewards for each IDU they both educate in the community and recruit to the PDI facility for intervention services. After receiving intervention services, these recruits are similarly trained and offered rewards to serve as peer-educators and recruiters. In this way, all PDI-participants are invited to play two roles in promoting HIV prevention: first they are *recruits* who are educated in the community by a peer and recruited to a PDI-office where they receive enhanced prevention services; then they are *recruiters* who are trained to educate IDU-peers in the community and recruit them to the PDI-office for the same enhanced services and opportunities to serve.
Figure 1 is a flow chart of the stages and activities in a PDI that bring a project’s staff of HEs, recruits and recruiters into interaction with one another in providing and receiving HIV prevention services.

The steps in operating a PDI are as follows (in the discussion below, we intentionally depart from custom and use the feminine pronoun):

**In the Community (Box 1):** With recruitment coupons in hand, a recruiter (seed) approaches an IDU-peer to see if she is interested in participating in a confidential interview conducted by a local HIV prevention project, for which she will be paid a small cash reward. The recruiter says that the project will also offer her a free, confidential HIV test and a free supply of disease-prevention materials like condoms and sterile syringes. Finally, the recruiter notes that the project will also offer her an opportunity to earn additional rewards by helping the project carry out its HIV prevention mission. If interested, the recruiter gives the prospective-recruit a coupon and tells her to make an appointment either by telephoning or going down to the project office. Printed on the back of the coupon is a map of the project’s location as well as its local telephone number and address. Finally, the recruiter explains, the project asked him to pass on some specific health information to each person he recruits to the project, and that the project’s staff will test each recruit at the time of her appointment to see how well the recruiter educated her. Using a crib card the project gave him to help be an effective peer-educator, the recruiter then discusses with the recruit the HIV prevention information he was trained to pass on, in hopes that the recruit will do well on the knowledge test when she arrives for her appointment.
Following the recruiter’s advice, the recruit either telephones the project using the number printed on the coupon, or comes down to the office, to make an appointment. The receptionist greets the caller and, following the Appointment Protocol, seeks to confirm that she knows what the purpose of the project is, and that it works with injection drug users.

In the PDI-Office (Box 2): (The remainder of the discussion focuses on the experience of a single hypothetical recruit.)

When the recruit arrives for her appointment, the receptionist collects her coupon. The receptionist staples the coupon into a new Respondent Folder and introduces the recruit to a HE, who escorts her to a private interview room with the recruit’s folder in hand.

After introducing himself, the HE begins by reviewing again the goals and services of the project, and how it relies on its respondents to play active roles in making the prevention effort succeed. The HE then reviews the Consent Form and asks the recruit if she has any questions. After responding, the HE then asks the recruit if she wishes to participate and, if so, to sign and date the consent form. The HE places the signed consent form in the recruit’s folder. (If the recruit decides not to participate, the HE wishes her well and sends her on her way.)

Next the HE follows the steps in the Screening Protocol to confirm whether the recruit is an active IDU, and records in the project’s computer the specific step in which the recruit is judged to be eligible. (If the recruit is found to be ineligible, the HE follows the guidelines in the screening protocol for dismissing her from further participation.)

The HE then administers the Knowledge Test to measure how well the recruiter educated the recruit in the community in the body of prevention information the recruiter was asked to pass on. The test results are also recorded on the project’s computer. The HE also records the recruit’s visible physical characteristics, which the project can retrieve in the future using the project’s computer to identify the recruit without having to know the latter’s real name or other “hard” forms of identification.

In keeping with the Questionnaire Protocol, the HE administers the Risk-Assessment Questionnaire. The questionnaire reviews the recruit’s sexual and drug-use history, and provides baseline measures of the recruit’s current level of drug-related and sexual risk-behaviors for HIV and related diseases. This is virtually the same information that an HIV-counselor gathers in a pre-test counseling session, except it is collected and recorded in a more standardized and systematic manner. Following the interview, the questionnaire is placed in the respondent’s folder.

In keeping with the Education Protocol, the HE administers the Education Module, which offers the recruit enhanced information about HIV and related diseases, and steps IDUs can follow to reduce their risks, including a hands-on demonstration by the HE of how to use a condom correctly, and how to disinfect used syringes and drug-preparation equipment. The Education Module also reviews the same information the recruit’s recruiter taught her in the community in preparation for the knowledge test she was administered when she arrived for her appointment.
Following the Reward Protocol, the HE now pays the recruit her reward (primary incentive) for participating in the intervention, and for the information she provided in the interview.

The HE follows the Recruiter Training protocol and asks the recruit whether she would like to earn additional rewards (secondary incentives) by educating peers in the community and recruiting them to the project; ie., to work in the same way her recruiter did in educating and recruiting her. In reviewing the Recruiter Consent form, the HE explains how the rewards are earned for educating and recruiting peers, and the ground-rules the project expects all recruits to follow in serving as recruiters. If the recruit agrees, the HE has the recruit-now-recruiter sign and date the Recruiter Consent form, which the HE places in the her folder.

In training the recruiter, the HE emphasizes the “do’s” and “don’ts” of recruiting, along with the requirement that the recruiter treat her peers with the same respect that the project has extended to her. The HE reviews the body of prevention information the recruiter is asked to pass on to each of her recruits, and gives the recruiter a Crib Card to use to help remember all of the information she needs to cover in order for her recruits to do well on the knowledge test. The Crib Card contains word-cues that will jog the recruiter’s memory of the 8 pieces of prevention information she is asked to teach each of her recruits. These 8 pieces of information are also embedded in larger Education Module that the HE just finished teaching the recruiter. Finally, the HE gives the recruiter the Recruitment Coupons that she is to give to each of her recruits. Each coupon bears a unique number, and the HE records these numbers on the respondent’s computer file. The HE explains that the computer file links the coupon numbers to the recruiter so that she will receive credit for each recruit who comes to the project with one of her coupons. Similarly, the recruiter will also receive credit for the Knowledge Test score that each of her recruits achieve, which measures how successfully the recruiter her recruits in the community. The HE also reviews the procedures the recruiter should follow to be paid for her education and recruitment efforts. After the recruiter has educated her recruits in the community and given out the recruitment coupons – which may take a week or more – the project asks the recruiter to follow certain steps in order to receive her rewards.

The HE now offers the recruiter free Test Counseling for HIV and related diseases. The HE follows the state-required protocol in giving the recruiter her test results, and in the storing of those results, legally required of all HIV test-counselors within the jurisdiction the project is operating.

If the project offers a Follow-up Intervention cycle (as described below), the HE makes an appointment for the recruiter to return to the project for a Follow-up Appointment. To help the recruiter remember the appointment, the HE asks her to complete the Contact Form so the project can discretely remind her in the coming months of her appointment via post, telephone or email. The appointment date and contact information is entered into the respondent’s computer file.

The HE offers the recruiter an assortment of free harm reduction materials, and reminds her that she is welcome come back to the project on any day during regular business hours to obtain more materials as needed, or to obtain materials for her peers.
After the recruiter leaves the PDI-office, the HE returns the recruiter’s file to the receptionist who assumes responsibility for all the remaining information from the recruiter is entered into the respondents’ computer file. The data from the Health and Risk Assessment Interview are entered into a statistical package such as SAS or SPSS for later analysis.

**Community Education & Recruitment (Box 3-5):** The recruiter leaves the PDI-office with recruitment coupons in hand. If all goes well, the recruiter will access, educate and recruit several IDU-peers in the community. The recruiter will carry-out the same tasks that her recruiter did in educating and recruiting her. Hopefully all of the recruiter’s recruits will make appointments with the project’s receptionist and obtain the additional services the project has to offer (Box 2) within a relatively short period of time.

**Returning for Rewards (Box 6):** After a week or more, the recruiter contacts the project to determine whether any of her recruits came through the project and if she has any education and recruitment rewards coming to her. The receptionist will follow the Reward Protocol in providing the recruiter with this information. If the recruiter has any rewards coming to her, the receptionist will tell her when to return to the project to receive them.

When the recruiter returns to the project, the receptionist or a HE may debrief the recruiter about her recruitment and education experiences. The project’s computer software is consulted to determine the exact amount the recruiter has earned. Recruiters who prove by their accomplishments to be unusually successful in their education and recruitment efforts, or in reaching especially hard-to-access IDUs, may be given more recruitment coupons to earn additional rewards by continuing to work for the project. The recruiter is then paid the rewards she earned and thanked for helping the project.

If the project offers a follow-up intervention, the recruiter will also be reminded of the date of her follow-up appointment and the reward she will earn by keeping it.

**The 6-Month Follow-up Intervention Cycle**

Projects that elect to offer a follow-up intervention cycle have the advantage of being able to compare measures of their respondents’ baseline understanding of HIV, and their levels of risk behavior, with later measures. These measures are obtained through the administration of the knowledge tests and the risk-assessment questionnaires to all recruits. Such a comparison gives projects an empirical basis to calculate whether the intervention produced any significant changes in the respondents’ prevention knowledge and injection drug-use practices, hopefully changes that reduce their risk of contracting or spreading HIV. Secondly, with a follow-up intervention cycle, projects are able to give their respondents additional HIV prevention information on protecting themselves, additional referrals to available services, and more opportunities for each respondent them to more of their own peers. With respect to the latter, the PDI’s design includes an opportunity for respondents to earn additional rewards by serving as “Second-Time” educators and recruiters, say, 6 months after their first experience in serving as an educator and recruiter. Projects are able to offer incentives to respondents to educate and recruit peers who still have not received any prevention services, and to educate in a second body of prevention information, and recruit again, respondents who are eligible for follow-up interviews and services, say, 6 months following their first participation in the project.
As described above, in projects that offer a follow-up intervention, recruits are given follow-up appointments when they complete their first round of participation as a recruit and recruiter. Recruits also give the project contact information which the project’s HEs use in the interim to send them discrete reminders of their upcoming follow-up appointment. In addition to those reminders, projects also begin giving recruitment coupons to “Second-Time” recruiters to help the project succeed in its follow-up efforts.

**Follow-up in the PDI-Office**

Looking again at Figure 1, when the time comes for a project to begin the follow-up cycle for the group of respondents who first came through the intervention, the HEs call-back to the project the “seeds” who originally jump-started the first recruitment cycle.

**Box 2:** The HEs tell the seeds about the follow-up effort and reviews with them Follow-up Consent Form. After the seeds sign the form, the HE places it in their individual respondent folder. The HEs administer the Follow-up Risk-Assessment Questionnaire and then educate the seeds in the Follow-up Education Module. The HE pays the seeds for participating in the follow-up interview.

The HEs review with the seeds the Follow-Up Recruiter Consent Form that explains their responsibilities and ground rules for serving again as an educator and recruiter, and how their rewards will be calculated. The seeds are asked to sign the consent form, which the HEs place in their individual respondent folders. Each seed - now a Second-Time recruiter - is given 2-3 coupons that can be used to recruit only new (baseline) recruits, and 2-3 follow-up coupons that can only be used to recruit respondents who are eligible for a follow-up interview. (If respondents are unsure of whether they are eligible for a follow-up interview, they are asked to telephone the project using the local telephone number printed on the recruitment coupon to confirm.) The Second-time Recruiters are also given a refresher in the first Education Module. They are then given two crib cards: the first Crib Card that will help them pass on the first body of prevention information designed for new recruits - recruits who have never participated in the intervention - and the Follow-up Crib Card that will help them pass on the second body of prevention information designed for follow-up recruits.

Before the seeds leave the office, the HEs offer them an additional HIV-test counseling opportunity.

**Follow-up in the Community (Box 3-5):** In recruiting new recruits, the Second-Time recruiters use the first crib card and educate them in the eight-items of prevention information contained in the first Education Module and Knowledge Test. In recruiting follow-up recruits, the Second-Time recruiters use the second crib card and educate each recruit in the eight items of prevention information contained in the first Follow-up Education Module and Follow-up Knowledge Test. The recruiter encourages all of the recruits to call the project and make an appointment for the prevention services it offers (summarized in Box 2).

**Follow-up Rewards Box 6:** After a week or more, the Second-Time recruiters will contact the project to see whether any of their recruits came through the project and if they had any
education and recruitment rewards coming to them. The receptionist will follow the Reward Protocol in providing the Second-Time recruiters with this information. If the recruiters have any rewards coming to them, the receptionist will tell them how to return to the project to receive them.

When the Second-Time recruiters return to the project, the receptionist or a HE may debrief them about their recruitment and education experiences. The project’s computer program is consulted to determine the reward that the recruiters have earned. Second-Time recruiters who prove to be unusually successful may be given more recruitment coupons to earn additional rewards by continuing to work for the project. The recruiters are then paid the rewards they earned and thanked for helping the project.

The PDI offers all recruits HIV prevention services and opportunities to earn rewards by serving as educators and recruiters. In this way, the PDI relies on IDUs as collaborators and colleagues; without the success of their efforts, the PDI has no respondents.

In offering a follow-up intervention cycle, the PDI offers all recruits two opportunities to serve as recruiters. As Second-Time Recruiters, the respondents are trained to differentiate between and educate peers who have never received services from the project, and peers who are eligible for follow-up services. In doing so, Second-Time Recruiters are trained to deliver two different bodies of prevention information to peers in the community; the first body of information to new recruits, and a second body to follow-up recruits. Thus the role that respondents play in the PDI in promoting HIV prevention in their own community is large, and the rewards they pay are truly earned, based on objectively-measurable results: they are paid for accessing individuals who are screened to be in need of prevention services, and they are paid for their recruits’ scores on knowledge tests, which measure the time and energy the recruiters invest in educating them in the community.

B. Setting
A PDI’s staff of 3-4 HEs operates out of an office, storefront or some other facility, preferably in close proximity to the neighborhoods and hang-outs from which most of its respondents come. Experience has shown that careful geographic selection of the community area in which a PDI-office is located is important for ensuring the success of an outreach effort. The PDI-office must be easily accessible via public transportation for the majority of drug users the project hopes to serve in a particular metropolitan area. The office also needs to be located in a territorially-neutral area; that is, in an area that is generally not seen by IDUs as one particular group’s “turf.” Thus, regardless of ethnicity, gender, sexual orientation, drug of choice, or reference group, IDUs in general need to see the office as located in an area in which they feel comfortable being seen and visiting.

It is recommended that a PDI-office adhere as much as possible to the design below such that respondents can see for themselves immediately upon entering that the office is structurally secure and affords confidential interaction (see Figure 2):
The entrance to a PDI-office opens to a waiting room capable of seating 3-5 respondents, who will be clearly visible at all times to a HE/receptionist seated at a desk behind a sliding glass partition. In the waiting room are chairs or a couch, and shelves containing a supply of harm reduction materials and information (condoms, alcohol wipes, band-aids, prevention brochures and flier, and other information) which respondents are free to peruse and take. From behind the desk, the HE/receptionist can easily speak to the respondents in the waiting room through the sliding-glass window, as well as work with individual respondents standing in front of the window about their appointments and other business. Next to the water cooler are paper-cups are coffee and tea supplies provided by the project for the respondents to enjoy during their visit.

On the receptionist’s desk is the project’s computer containing the software used by the HEs to identify respondents, and keep track of their appointments, rewards, and contact information. The data stored in the computer are encrypted and password protected. The computer’s monitor is angled away from the respondents’ point-of-view so that all information on its screen can only be viewed by the receptionist. There is also a telephone on the desk that the receptionist uses for taking respondents’ calls, making appointments, and conducting business. The receptionist’s space is physically walled off from the waiting room and accessible only through a locked door which the receptionist controls. Behind the receptionist are the locked, steel filing cabinets in which respondents’ files and other project documents are kept secure.
The PDI offers a needle-exchange service as part of its prevention efforts. A “sharp-safe” container is typically located in the waiting room below and to the side of the sliding-glass window (not pictured in Figure 1). Respondents count out their used syringes they have brought in to the project in the presence of the receptionist before depositing them in the sharp-safe. The receptionist gives the respondents an equivalent number of sterile syringes in a paper bag in exchange.

Staffing a PDI-office that will be open to work with respondents several hours a day throughout a normal work-week requires at a minimum three “full-time equivalent” (FTE) Health Educator (HE) positions. One of these need to be a combined HE/Supervisor position for someone who will work as a HE but who will also be responsible for overseeing the smooth running of all project operations; e.g., someone who will supervise the quality of the other HEs’ work, attend to the office’s security and upkeep, safeguard the respondent’s folders and rewards, order supplies, ensure the accurate maintenance of data-entry and record-keeping, attend to personnel issues/complaints, and answer for the team as a whole to others in authority.

For security reasons, and for adequate service coverage, at least 2 but preferably 3 HEs need to be on-site on any given workday. One of the 3 must serve as the project’s receptionist, a busy duty that is rotated per day among the HEs. The receptionist answers of the project’s telephone and makes appointments, greets respondents when they walk-in or arrive for their appointments, pays respondents their rewards and collects their signatures, enters data from respondents’ folders into the project’s computer in a timely manner, and ensures the orderly behavior of all guests in the project’s waiting room. The second HE works with the individual respondents, screening them for eligibility, obtaining their consent to participate, conducting the risk-assessment interviews, preparing recruits to serve as recruiters, providing test-counseling services, and referring respondents to additional services for which they may be eligible. The presence of the third HE means that the project can interview and work with more than one individual respondent at a time. With two HEs in addition to the HE/receptionist, a project can provide services for 8 to 10 respondents in every 8-hour workday, or 40 to 50 respondents a week, compared to half that number if only one HE is available.

Persons hired as HEs need to be mature adults, experienced enough to have a serious discussions with an active IDUs about HIV infection, drug use, and sexual behaviors. By nature and temperament, persons employed as HEs need to be open-minded, accepting of, and nonjudgmental toward people who are different from themselves in lifestyle, habits, personal beliefs, sexual orientation, ethnicity, religion, and so on.

In addition, persons hired as HEs need to embrace a sincere desire to help others, see drug users as persons deserving of help and empathy, and who want to assist people in dealing with sensitive and difficult problems such as drug use, mental illness, sexual stigmatization, low self-esteem and education-levels, and other “problems of living” such as poverty, unemployment, criminal records, domestic abuse, lack of child care, and so on.

Finally, persons hired as HEs need to see themselves as team-members, eager and willing to work closely with colleagues in coordinating their efforts, and fitting into a larger coordinated effort that requires mutual trust, respect and courtesy toward both colleagues and respondents.
In terms of more traditional qualifications for employment, such education, work, and life experience, persons hired as HEs can be drawn from a very wide assortment of backgrounds. Good oral communication skills are necessary, as well as basic literacy in working with both written documents and computers, including software programs such as MS Word, Excel, and Internet Explorer. PDI-projects that will be working with many respondents who speak different languages must hire HEs who are bi- and multi-lingual. It is not necessary, however, to hire persons who are, or used to be, drug users themselves, or who have experience working with and being around drug users. Other than being empathic, nonjudgmental, and literate, as described above, experience has shown that persons from perfectly ordinary backgrounds can serve quite satisfactorily as HEs in PDI projects; they do not need to have so-called “street-credentials,” as some have insisted outreach staffs must have, in order to work effectively with IDUs (Broadhead and Heckathorn et al., 1995).

A PDI-office that is designed to recruit and work with IDUs on disease-prevention issues is advised to schedule its operating hours in keeping with the availability of its respondents. Experience has shown that IDUs are not early-risers, and they can be busy “taking care of business” well into the evening. Thus, for any given 8-hour workday, a PDI-office is advised to open for services in the late morning (say 10:00 or 11:00) and close later than usual (say 18:00 – 20:00). With days being longer in summer months, combined with daylight savings-time, projects are advised to open even later (say around noon) and remaining open until well into the night (say 22:00).

C. Theoretical Basis

Mediated

The PDI model is based on the theory of group-mediated social control (Heckathorn 1990). According to the theory, relationships of social influence are never strictly dyadic as most individuals are members of groups with whom they are interdependent. These include family members, friends, neighbors, co-workers and others with whom individuals interact regularly. To the extent that networks of actors are interdependent, events that impact on any individual have consequences that extend to other network members. For example, when a person is promoted on the job or fired, the sanction spills over and affects family members and friends. Except in the limited case of social isolates, all social sanctions targeted at an individual generate collective rewards or punishments that impinge on significant others. The implication is that social sanctions are virtually never individualized (see Figure 3).

Given that most social sanctioning includes both an individual and a collective component, social influence can arise from either of two theoretically distinguishable sources. First, it can arise from individual-targeted sanctions directed at an actor by an agent such as a teacher, parent, a neighbor or an HIV-prevention counselor. For example, an agent may target an actor with the promise of a
reward or a threat of punishment. The result is a dyadic relation of the sort presumed in most analyses of influence relations. Second, compliance can arise from group-mediated control, as when students obey teachers because punishment administered by the school would be augmented by parents; or when workers hold onto disagreeable jobs because unemployment would inflict hardship on their families. In these cases, control occurs through a two-step process. First, members of an actor's group or network recognize that, based on whether the actor complies, they will either receive a collective reward or suffer a collective penalty. Second, the group or network mobilizes to exert influence over the actor based on the perceived benefit or loss. For example, parents augment the authority of teachers, or employees work harder to satisfy their boss, because of the needs of their family. In this way, the agent's influence is amplified through the network in which the target of control is embedded.

According to the theory of group-mediated social control, social behavior can be seen as springing from two sources: inclinations and regulatory interests. An individual's inclinations are preferences regarding his or her own behavior. In contrast, an individual's regulatory interests are preferences regarding others’ behavior. Control based on individual sanctions works by altering inclinations using "primary incentives," which are rewards or penalties that individuals receive based on their own performance. In contrast, group-mediated social control works by altering regulatory interests using “secondary incentives," which are rewards or penalties that individuals receive based on the performance of their peers. With secondary incentives, individuals are rewarded only if they successfully elicit (or suppress) certain behaviors from others. Secondary incentives change the ways and extent to which individuals work to exercise influence over one another by altering the structure of their mutual interdependence.

The PDI in various parts of the world uses a dual-reward structure of primary and secondary incentives to reimburse respondents for the time and effort they invest in working with peers on behalf of the prevention effort. Primary incentives are rewards respondents earn as a result of their own behavior. An example is a respondent earning a reward for agreeing to being interviewed by the project. Secondary incentives are rewards respondents earn for eliciting positive responses from a peer. An example is a respondent earning a reward for recruiting a peer to the project. The respondent is rewarded only if the peer responds; if the peer chooses not to, the respondent earns nothing regardless of how much time and effort he or she may have invested in the recruitment effort. Some projects also offered recruiters additional secondary rewards, or bonuses, for recruiting specially-targeted respondents, such as women-IDUs, IDUs < 25 years old, or injectors of specific types of drugs, such as stimulants. Note also that recruits and recruiters are frequently offered somewhat different primary and secondary rewards depending on whether they are participating in a PDI for the first-time, or are follow-up recruits and recruiters.

The rewards that PDI-projects offer IDUs for their participation are nominal, large enough to reimburse respondents for their expenses in working with peers, but small enough to ensure that the rewards cannot alter their drug habit for even a single day. The rewards are also kept small to ensure that they do not overwhelm the altruism that IDUs have been found to have for helping to prevent the spread of HIV in their own community (Broadhead and Heckathorn et al. 1995).
Experience has found that IDUs respond much more enthusiastically to cash-rewards than reward-substitutes such as food items, articles of clothing, or vouchers redeemable for items at various stores. In turn, PDI-projects have also found that cash is easier to manage on a day-to-day basis in rewarding respondents for their efforts than substitutes. For example, food items and articles of clothing are difficult for PDI-projects to stock in sufficient variety and abundance to satisfy many respondents. They are also difficult to allocate in graduated increments in order to pay respondents for their relative success in educating their peers (as measured on an 8-point knowledge test when their recruits first come to a project) and in recruiting them. In contrast to food and clothing, vouchers are easier for PDI-projects to manage and allocate incrementally. But vouchers have to be redeemed in front of store-employees and customers, and IDUs see such transactions as placing their anonymity as drug users at substantial risk. In general, experience has demonstrated that rewarding IDUs in incremental amounts of cash for each task they complete as not only more manageable than food, clothing or vouchers; cash is more ethically defensible because it better safeguards IDUs’ anonymity, reduces their feelings of stigmatization, and increases their collective participation in HIV prevention efforts.

Table 2 summarizes the reward-schedules of 6 different PDI-projects that operated in various parts of the world. Close examination of the reward schedules will reveal some of the different ways in which a PDI can be organized and implemented.

Table 2. Recruiter Reward Schedules

<table>
<thead>
<tr>
<th>Project</th>
<th>Operating Years</th>
<th>Initial Recruit</th>
<th>FU Recruit</th>
<th>Education (KT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Odessa, Ukraine (2006)</td>
<td>20 UAH ($3.96)</td>
<td>none</td>
<td>Up to 24 UAH</td>
<td></td>
</tr>
<tr>
<td>II. Ha Giang, Vietnam (2003-05)</td>
<td>30K VND ($1.91)</td>
<td>30K VND</td>
<td>Up to 30K VND</td>
<td></td>
</tr>
<tr>
<td>III. Gulang, China (2004-05)</td>
<td>16 CNY ($1.93)</td>
<td>16 CNY</td>
<td>Up to 16 CNY</td>
<td></td>
</tr>
<tr>
<td>IV. Bragino, Russia (2003-05)</td>
<td>100 rubles ($3.57)</td>
<td>100 rubles</td>
<td>Up to 30 rubles</td>
<td></td>
</tr>
<tr>
<td>V. Rybinsk, Russia (2003-05)</td>
<td>100 rubles</td>
<td>none</td>
<td>Up to 100 rubles</td>
<td></td>
</tr>
<tr>
<td>VI. Middletown, CT (USA) (1996-1998)</td>
<td>none</td>
<td>none</td>
<td>Up to 30 rubles</td>
<td></td>
</tr>
</tbody>
</table>

* Different colored coupons for recruiting men and women only. Recruiters alternate in receiving issued 2 male coupons and 1 female coupon and vice versa.

Under the name of each city in Table 2 are the years in which the PDI-project operated. The rewards that each project offered to respondents are given in the country’s local currency, along with their equivalent value in U.S. dollars based on the exchange rate that was applicable at the time.
In the far left-hand column of Table 2, note that respondents earned rewards for serving as both 
recruits and recruiters. Each project set the size of the rewards it offered to IDUs based on 
amounts recommended by focus-groups of drug users that were convened before start-up of 
operations, in keeping with the considerations discussed above.

Projects paid recruits for agreeing to be interviewed by a HE about their sex- and drug-related 
risk behaviors, and for receiving other prevention services. Note that the Kiev-PDI did not 
offer a follow-up (FU) cycle; the respondents were recruited only once to the project for 
intervention services. Thus, looking down the Kiev column, the project offered no reward to 
recruits for a follow-up interview, or to recruiters for working to bring peers back to the project 
for follow-up services.

In contrast, all of the other 5 PDI-projects offered rewards to both recruits and recruiters for 
participating in a follow-up cycle, which began for respondents approx. 3 to 6 months after their 
first intervention experience. In 4 of the projects, the respondents who served as recruiters 
during the first cycle were given an opportunity to serve as “2nd Time” recruiters; ie., to educate 
recruits eligible for follow-up services in a new body of prevention education, and to recruit 
them back to the PDI-office for a second round of intervention services. The exception was the 
Middletown-PDI; recruiters were not offered rewards for participating in the follow-up cycle. 
Instead, the project relied on recruits to remember their 6-month follow-up appointment, and on 
the HEs who mailed respondents periodic reminders about their appointment.

Note too that most projects offered bonus rewards to recruiters for reaching certain types of 
recruits. For example, the Kiev-PDI paid recruiters a reward of 10 hryvnia for recruiting a 
woman- or a male-IDU who was less than 25 years old, and a bonus of 10 hryvnia if the women-IDU was less than 25 years old. Or, the Bragino-PDI paid recruiters 30 rubles for each new 
recruit, and a bonus of 20 rubles for each recruit who was a woman; for the follow-up cycle, 
“2nd Time” recruiters were paid 60 rubles for each recruit who was eligible for a FU-interview, 
plus a bonus of 20 rubles if the FU-recruit was a woman-IDU. 2nd Time recruiters could also 
recruit new recruits for 30 rubles each, plus a bonus of 20 rubles for a woman-IDU. Thus, at 
follow-up in Bragino, 2nd Time recruiters were relied on to recruit both new and follow-up 
recruits, and they received bonus rewards for recruiting women-respondents in both cycles.

Note that recruiters are rewarded for educating their recruits “up to” a certain amount in both the 
initial and FU intervention cycle, depending on how their recruits perform on an 8-point 
knowledge test (KT) when they came to the project. Usually bonuses were also built into the 
education rewards. For example, in Ha Giang, recruiters were paid 3K VND for each correct 
answer a recruit got on the 8-question knowledge test administered to him or her, for a total of 
18K VND. If the recruit answered the first 6 questions correctly, the recruiter was then eligible 
for a bonus of 3K VND if the recruit also answered both the seventh and the eight question 
correctly on the KT, for a total maximum reward of 30K VND to the recruiter for educating the 
recruit successfully in the community.

Respondent-Driven Sampling
The PDI is also used as a pure sampling methodology, called Respondent Driven-Sampling 
(RDS). Designed by Douglas Heckathorn (1997; 2002), RDS is used for conducting basic
social, demographic, and epidemiological research of populations who cannot be accessed through traditional sampling methods. In RDS, the PDI's educational and intervention components are removed; this is because initiating behavioral change in respondents is not a goal of RDS per se. RDS applies a mathematical model to the PDI recruitment process that controls for the biases in chain-referral sampling, with the goal of enabling researchers to calculate statistically valid population estimates of the characteristics of a “hidden” population being studied.

For example, the U.S. Centers for Disease Control and Prevention (CDC) funds the National HIV Behavioral Surveillance System (NHBS) which operates out of state health departments in some 25 metropolitan areas. The NHBS uses RDS among other methods to conduct HIV surveillance by recruiting and interviewing samples of IDUs, men-who-have-sex-with-men (MSMs) and high-risk heterosexuals (HRHs) in alternating yearly cycles, indefinitely. Similarly, the World Health Organization sponsors the Behavioral Surveillance Surveys project using RDS to access IDUs, commercial sex workers, and other high-risk population in countries around the world. The goal of both of these large-scale sampling efforts is primarily research: to collect data systematically for calculating statistically-valid estimates of the characteristics of the different at-risk populations, and to measure significant changes that occur in members’ risk-behaviors, or their utilization of prevention services, over time. Officials seek such measurements to identify trends in the HIV epidemic, and to marshal empirical support to justify the implementation of interventions like the PDI in hopes of altering or tempering such trends if they appear to be getting worse.

Should public health officials shift their emphasis from surveillance and monitoring of the HIV epidemic to prevention and control through the implementation of targeted interventions, RDS projects can be converted into PDIs by reinserting the educational and intervention components back into the model’s operation.

4. Evidence of Efficacy / Background Bibliography

Please consult the following publications bearing on the efficacy of the PDI and RDS, and on background materials cited above.

**Efficacy**


**Background Materials**


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