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Local Service Category:	Early Intervention Services – Incarcerated
Amount Available:	To be determined
Unit Cost	
Budget Requirements or Restrictions:	Maximum 10% of budget for Administrative Cost. No direct medical costs may be billed to this grant.
Local Service Category Definition:	<u>This service includes the connection of incarcerated in the Harris County Jail into medical care, the coordination of their medical care while incarcerated, and the transition of their care from Harris County Jail to the community. Services must include: assessment of the client, provision of client education regarding disease and treatment, education and skills building to increase client’s health literacy, establishment of THMP/ADAP eligibility (as applicable), care coordination with medical resources within the jail, care coordination with service providers outside the jail, and discharge planning.</u>
Target Population (age, gender, geographic, race, ethnicity, etc.):	Services are for all HIV/AIDS infected individuals incarcerated <u>in The Harris County Jail.</u>
Services to be Provided:	Services include but are not limited to CPCDMS registration/update, assessment, provision of client education, coordination of medical care services provided while incarcerated, medication regimen transition, multidisciplinary team review, discharge planning, and referral to community resources.
Service Unit Definition(s):	One unit of service is defined as 15 minutes of direct client services or coordination of care on behalf of client.
Financial Eligibility:	Due to incarceration, no income or residency documentation is required.
Client Eligibility:	HIV-positive incarcerated resident of <u>the Harris County Jail.</u>
Agency Requirements:	<u>Agency must execute Memoranda of Understanding with Ryan White funded Outpatient Ambulatory Medical Care providers. The Administrative Agency must be notified in writing if any OAMC providers refuse to execute an MOU.</u>
Staff Requirements:	
Special Requirements:	Must comply with the State Services Standards of Care.

Service Category Definition - DSHS State Services Grant
September 1, 2010 - August 31, 2011

FY 2012 RWPC “How to Best Meet the Need” Decision Process

Step in Process: Council		Date: 06-09-11
Recommendations:	Approved: Y_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: Steering Committee		Date: 06-02-11
Recommendations:	Approved: Y_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: Quality Assurance Committee		Date: 05-19-11
Recommendations:	Approved: Y_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: HTBMTN Workgroup #1		Date: 04-20-11
Recommendations:	Financial Eligibility:	
1.		
2.		
3.		

DSHS STATE SERVICES
1112 HOUSTON HSDA SERVICE-SPECIFIC STANDARDS OF CARE
EARLY INTERVENTION SERVICES FOR THE INCARCERATED

#	STANDARD	MEASURE
9.0 Service-Specific Requirements		
9.1	<u>Scope of Service</u> Early intervention Services for the Incarcerated includes the connection of incarcerated in the Harris County Jail into medical care, the coordination of their medical care while incarcerated, and the transition of their care from Harris County Jail to the community. Services must include: assessment of the client, provision of client education regarding disease and treatment, education and skills building to increase client's health literacy, establishment of THMP/ADAP eligibility (as applicable), care coordination with medical resources within the jail, care coordination with service providers outside the jail, and discharge planning.	<ul style="list-style-type: none"> • Program's Policies and Procedures indicate compliance with expected Scope of Services. • Documentation of provision of services compliant with Scope of Services present in client files.
9.2	<u>Client Eligibility</u> In order to be eligible for services, individuals must meet the following: <ul style="list-style-type: none"> • HIV-positive status <i>Due to client's state of incarceration, this service is excluded from the requirement to document income and residency.</i>	<ul style="list-style-type: none"> • Documentation of HIV status is present in the client file. • Documentation in compliance with TRG Policies for SG-03 DOCUMENTATION OF HIV STATUS.
9.3	<u>CPCDMS Update/Registration</u> As part of intake into service, staff will register new clients into the CPCDMS data system (to the extent possible) and update CPCDMS registration for existing clients.	<ul style="list-style-type: none"> • Current registration of client is present in CPCDMS.
9.5	<u>Assessment of Client</u> Staff will complete an intake assessment form for all clients served. The assessment will include identified needs upon release, assessment of support system upon release, and desired provider to receive referral information on.	<ul style="list-style-type: none"> • Intake assessment form is present in the client file.
9.6	<u>Provision of Client Education</u> Staff provide client with education regarding the disease and its management, risk reduction, medication adherence and other health-related education.	<ul style="list-style-type: none"> • Documentation of client education is present in the client file.

#	STANDARD	MEASURE
9.7	<u>Increase Health Literacy</u> Staff assesses client ability to navigate medical care systems and provides education to increase client ability to advocate for themselves in medical care systems.	<ul style="list-style-type: none"> Documentation of health literacy evaluation and education is present in the client file.
9.8	<u>Coordination of Care</u> Staff assists in the coordination of client medical care while incarcerated including, but not limited to, medical appointments and medications.	<ul style="list-style-type: none"> Documentation of coordination of care is present in the client file.
9.9	<u>Medication Regimen Establishment/Transition</u> Staff assists clients to become eligible for TXMP/ADAP medication program prior to release. Staff assists client with transition of medication from correctional facility to outside pharmacy.	<ul style="list-style-type: none"> Documentation of THMP/ADAP application and its submission is present in client file. Documentation of connection/referral to outside pharmacy.
9.10	<u>Transitional Team Multidisciplinary (TTMD) Review</u> Staff creates opportunities for MDT review with all involved agencies to discuss client's case.	<ul style="list-style-type: none"> Schedule of available times for TTMD reviews with involved agencies available for review. Documentation of TTMD reviews present in client file.
9.11	<u>Discharge Planning</u> Staff conducts discharge planning into Houston HIV Care Continuum. Discharge planning should include but is not limited to: <ul style="list-style-type: none"> Review of core medical and other supportive services available upon release, and Creation of a discharge plan. 	<ul style="list-style-type: none"> Documentation of review of services present in client file. Documentation of client discharge plan is present in client file.
9.12	<u>Referral Process</u> Staff makes referrals to agencies for all clients to be released from Harris County Jail. The referral will include a packet with <ol style="list-style-type: none"> A copy of the Harris County Jail Intake/Assessment Form, Proof of HIV diagnosis, A list of current medications, and Provide client ID card or "known to me as" letter on HCSO letterhead to facilitate access of HIV/AIDS services in the community. 	<ul style="list-style-type: none"> Documentation of referral present in client file Documentation of referral feedback present in client file. Copy of "known to me as" letter present in client file.

#	STANDARD	MEASURE
9.13	<p><u>MOUs with Core Medical Services</u> The Agency must maintain MOUs with a continuum of core medical service providers. MOUs should be targeted at increasing communication, simplifying referrals, and decreasing other barriers to successfully connecting clients into ongoing care.</p>	<ul style="list-style-type: none"> • Review of MOUs at annual quality compliance reviews. • Documentation of communication and referrals with agencies covered by MOUs is present in client file.



Secondary prevention of HIV infection: the current state of prevention for positives

Jeffrey D. Fisher and Laramie Smith

Center for Health, Intervention, and Prevention (CHIP),
University of Connecticut, Storrs, Connecticut, USA

Correspondence to Professor Jeffrey D. Fisher,
Director, Center for Health, Intervention, and
Prevention (CHIP), University of Connecticut, 2006
Hillside Road, Unit 1248, Storrs, CT 06269-1248,
USA
Tel: +1 860 208 4393;
e-mail: Jeffrey.fisher@uconn.edu

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4:279–287

Purpose of review

To provide a state-of-the-science review of the literature on secondary prevention of HIV infection or 'prevention for positives' (PfP) interventions.

Recent findings

Early work on PfP focused on understanding the dynamics of risky behavior among People Living with HIV/AIDS (PLWH) and on designing, implementing, and evaluating a limited number of interventions to promote safer sexual and drug use behavior in this population (i.e., PfP interventions). Previous meta-analyses demonstrated that PfP interventions can effectively promote safer behavior. However, the understanding of risk dynamics among PLWH and the extant number and breadth of effective PfP interventions were scant. Recent work has addressed some of these problems, yielding greater understanding of risk dynamics and providing additional, effective interventions. Still, only a modest number of recent, rigorously evaluated, effective interventions have been identified. New ideas for creating stronger, more integrated, and effective PfP interventions have emerged that will guide future intervention research and practice.

Summary

There remains much to be done to understand why, when, and under what conditions PLWH practice risk. Substantial work also needs to be performed to design, implement, rigorously evaluate, and when effective, to disseminate widely, additional, evidence-based PfP interventions targeting diverse populations. Directing such interventions to populations of PLWH at greatest risk for transmission of HIV has the potential to yield significant impact on the pandemic.

Keywords

HIV prevention, People Living with HIV, prevention for positives interventions, secondary prevention of HIV

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Introduction

Approaches to HIV prevention have typically focused on individuals who are HIV seronegative or whose serostatus is unknown [1]. Nevertheless, all HIV infections originate with a seropositive individual, and about one-third of seropositives who know their status continue to practice risky sexual or drug use behavior [2–6]. Moreover, since the advent of antiretrovirals (ARVs), seropositives are thankfully living longer, healthier lives. Yet, if they practice risky behavior, they have the potential to contract other pathogens and to infect others with HIV, even resistant strains of the virus, over extended periods. In the past 10 years, the United States Centers for Disease Control and Prevention (CDC) and international organizations [(e.g., The United Nations Joint Programme on HIV/AIDS (UNAIDS)] have stated that a complete approach to HIV prevention must focus on both seronegatives and seropositives [7–9]. We review recent research on the dynamics of HIV risk behavior among

People Living with HIV/AIDS (PLWH) and on interventions that have been specifically designed to lower levels of risk among PLWH.

Overview

At present, there are about 33.2 million PLWH worldwide [8]. Sub-Saharan Africa has been disproportionately impacted by HIV. There, HIV is primarily transmitted through unprotected heterosexual sex in the general population and accounts for 22.5 million of all PLWH worldwide and 1.7 of the 2.5 million new infections in 2007. The epidemic in the rest of the world is concentrated among men who have sex with men (MSM), intravenous drug users (IDU), sex workers, and their partners [8].

Given the large number of PLWH worldwide, prevention for positives (PfP), which can target diverse preventive behaviors (e.g., safer sexual behaviors and safer needle drug use behaviors), has great potential to impact

the epidemic by leading to behavior change among PLWH who know their serostatus. The percentage of PLWH who know their antibody status varies worldwide and is greater in developed than undeveloped nations [10,11]. Many PLWH respond to the knowledge that they are seropositive, gained from HIV testing, by practicing safer behavior. In a meta-analysis, it was concluded that for PLWH who know their serostatus, rates of unprotected sex with partners of negative or unknown status are reduced by 68% [12]. However, periods during which PLWH abstain from or engage in risk fluctuate over time [13–15]. For those who engage in risky behavior, secondary prevention interventions often encourage more traditional prevention strategies (e.g., consistent condom use, reducing partners, abstinence, serostatus disclosure, and clean injection equipment) to reduce transmission. Harm reduction strategies such as negotiating condom use with specific types of partners (e.g., anonymous partners) [16], sexual positioning to reduce the time and area of mucosal membranes exposed to infection (e.g., a male seropositive partner assuming the receptive role in anal intercourse) [17], and serosorting (e.g., limiting sexual intercourse to persons of similar perceived status) [17] are less effective in reducing risk. However, when offered as part of a combination of strategies (e.g., with consistent condom use outside of the primary relationship), they may help PLWH achieve risk reduction when more traditional strategies fail. To be effective, prevention strategies must be targeted toward contexts in which PLWH are less likely to initiate or maintain safer behavior, acknowledging that risk dynamics vary among subpopulations of PLWH (e.g., women, MSM, and IDU). Recently, biomedical risk

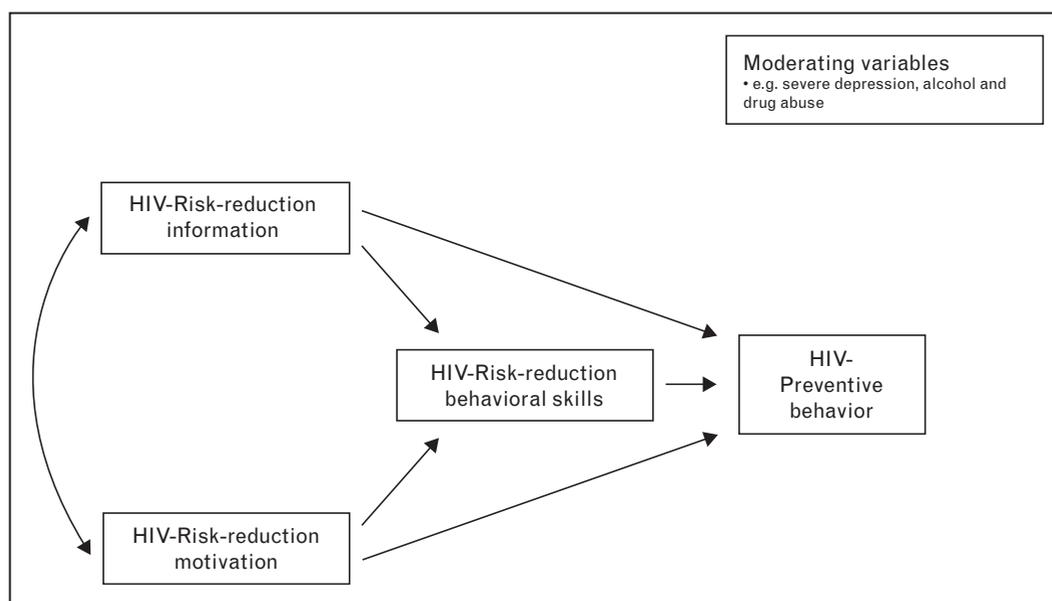
reduction approaches involving adherence to ARVs (to lower viral load) [18,19] have added a promising HIV prevention component.

Risk dynamics

We view the factors that influence risky behavior among PLWH consistent with the well validated Information–Motivation–Behavioral Skills (IMB) model of HIV preventive behavior [20,21]. In terms of the model (see Fig. 1), a PLWH's level of HIV prevention-relevant information, motivation, and behavioral skills determine his or her level of risky or safer behavior. Specifically, when an individual is informed about HIV transmission and prevention and motivated to practice preventive behavior, they enact critical skilled behaviors, which result in the practice of HIV preventive behavior *per se*. Deficits, or weaknesses, in information, motivation, and/or behavioral skills result in risky behavior. Interventions targeting PLWH that address deficits in IMB model elements will generally increase levels of safer behavior. The efficacy of such interventions may be affected by moderating variables (e.g., severe depression, alcohol, and drug abuse). Although the IMB model and model-based interventions are robust with respect to these variables, at extreme levels, these conditions must be addressed independently (e.g., through separate interventions to eliminate or reduce alcohol or drug consumption) for IMB model-based HIV prevention interventions to be maximally effective.

Information necessary for PLWH to practice prevention involves knowledge about HIV transmission and

Figure 1 Three fundamental determinants of HIV risk and preventive behavior among seropositives



Adapted from [20].

prevention (e.g., knowing that condoms and abstinence prevent HIV transmission) [22], knowledge of contraception and safe reproductive planning [23,24], and not possessing incorrect information (e.g., myths that being on ARVs invariably prevents transmission, believing that how a partner 'looks' indicates their serostatus [25], or that risky behavior with other PLWH is 'safe') [26].

Motivation to practice prevention involves having favorable attitudes toward practicing specific Pfp behaviors (e.g., condom use, disclosing one's serostatus, adhering to ARVs, and so on) and perceiving social normative support from important others, such as one's sexual partners or family, for these actions. Behavioral skills for prevention involve the ability to keep condoms on hand and to use them even in the face of countervailing elements (e.g., partners who do not want to use condoms, being under the influence of drugs or alcohol, and so on). Critical behavioral skills also involve the ability to negotiate safer sex, to leave unsafe situations, to substitute safer for risky behavior, to disclose one's status, and to adhere to ARVs, among others.

Consistent with the IMB model, past work on risk dynamics among PLWH has indeed found that individuals' levels of HIV prevention information, motivation, and behavioral skills are associated with levels of risky and preventive behavior [4,27,28]. For information, recent studies [23,24,26,29–32] have further demonstrated the importance that knowledge of HIV transmission risk plays in lowering risk-taking behavior across diverse samples of PLWH.

With respect to motivation, past studies [4,27,33] have shown that pro-prevention attitudes and social norms among PLWH are associated with preventive behavior. In more recent work, perceived responsibility and motivation to protect one's self and one's partners predict increased safer behavior among PLWH [32,34–36]. Further, supportive peer norms facilitate safer injection behaviors among seropositive IDUs [37,38]. Fertility desires [23,31,39,40], cultural taboos [30,41], and stigma [29,42,43] surrounding sexual activity and same-sex behaviors [44,45] decrease risk reduction motivation.

With respect to behavioral skills, skills for consistent condom use, safer sex negotiation, and disclosure help PLWH to reduce risk [4,27,46–48]. In our own work with PLWH, we consistently find, across studies, a relationship between self-reports of risk reduction behavioral skills and practicing lower levels of risky behavior (Amico KR, personal communication). Recent work demonstrates that skills for not sharing injection drug paraphernalia lower risk behavior in PLWH who are IDUs [37]. Sexual risk reduction among PLWH may also be achieved by increasing skills to reduce alcohol consumed prior to intercourse

[49] and enhancing skills that facilitate safer sex discourse and disclosure of antibody status [22,49].

Concerning moderators, or factors that will affect the relationship of PLWH's levels of information, motivation, and behavioral skills, with their levels of safer or risky behavior, research continues to identify factors such as extreme poverty [50], housing instability [13,51], intimate partner violence [52], mental health concerns [37,38,42,53,54], and substance use [49,55,56] that may need to be targeted prior to, or concurrent with, addressing risk reduction behavior change in behavioral interventions. By addressing relevant moderating factors, barriers to behavior change can be reduced. Treatment of severe addiction and mental illness may also improve one's capacity to attend to behavioral interventions.

Early prevention for positives interventions

For many years, the focus of HIV prevention interventions was those presumed to be seronegative. Beginning with the second decade of the epidemic, this focus was urgently expanded to PLWH [57]. The overall goals of Pfp interventions are to prevent HIV transmission to others and to ensure optimal health in PLWH [7]. Many Pfp interventions focus on safer behavior, which prevents HIV transmission to others and keeps PLWH from acquiring additional pathogens. To date, relatively few Pfp interventions have had a joint focus on preventing risk and enhancing ARV adherence. This can affect both infectivity and transmission of resistant HIV strains and also safeguard health of PLWH. Thus far, very few Pfp interventions have focused broadly on improving seropositives' health.

Initially, two intervention models emerged to reduce HIV transmission by PLWH [47]. One employed the same HIV prevention strategies used with populations at risk for HIV (e.g., HIV testing and counseling). This reduced risk in many PLWH, especially those with serodiscordant partners, but failed to effectively change or maintain safer behavior for others [12,14,27,47]. The limitation of this model was likely that it involved a 'one time' intervention during a period of acute anxiety and also failed to address relevant information, motivation, or behavioral skills factors specifically relevant to reducing risk in the context of living with HIV [4,6,20,21,47]. More recent models for Pfp interventions have stressed understanding and addressing the dynamics of risky behavior for PLWH and integrating HIV prevention with other care and support services [4,12].

Despite the relatively recent emphasis on Pfp [1], prior to 2006, there were several individual-level and group-level Pfp interventions that yielded mixed results [57–65]. This suggested that successful Pfp interventions may

demand information, motivation, and behavioral skills content [48] and other elements (e.g., substance abuse and mental health services) to address complex dynamics of living with HIV that were not incorporated in some early interventions. It also indicated a need to expand traditional prevention messages of ‘consistent condom use with all partners, for all sexual behaviors’ [4,6] and explore additional prevention objectives (e.g., concurrent HIV testing and safer sex with secondary partners) that may prove to be more practical, though less effective, intervention strategies for some PLWH [4].

Two meta-analyses [66,67] have emerged that demonstrate the overall potential for efficacy of Pfp interventions, including those reviewed above, when taken as a whole. These meta-analyses also highlight the conditions under which Pfp interventions are most likely to be effective. Each reviews interventions published primarily through 2004, and although they are very helpful, given the increasing emphasis on Pfp interventions, a newer, updated meta-analysis would be welcome as new studies accumulate.

Crepaz *et al.* [66] reviewed 12 pre-2004 Pfp intervention trials meeting stringent criteria, many including information, motivation, and behavioral skills (IMB) intervention components, and reported that this body of research, overall, greatly reduced PLWH’s levels of unsafe sex, decreased sexually transmitted infections (STIs), and would likely be cost-effective in terms of health outcomes [66]. Unfortunately, intervention effects on needle-sharing were non-significant. Over the sample of interventions, those that were most effective had the following characteristics: they used behavioral theory, were targeted to change HIV transmission risk behaviors, were given either by healthcare providers or counselors, were intensive, and were delivered over a period of more than 3 months at the individual level and at sites in which PLWH receive medical care and other services. The most effective interventions also included a skills-building component and addressed one or more issues related to HIV risk behavior, medication adherence, or mental health.

The meta-analysis by Johnson *et al.* [67] revealed similar results. Data from 15 trials meeting stringent criteria were reviewed, and again, Pfp interventions reduced risk with respect to unsafe sex compared with control conditions. Interventions did not reduce reported number of sex partners. In this meta-analysis and in that by Crepaz *et al.* [66], the effect sizes for condom use were equal to or stronger than in earlier meta-analyses of HIV prevention interventions for HIV-negative populations. In the meta-analysis by Johnson *et al.* [67], interventions were most successful at improving condom use if the sample included lower numbers of MSM or participants who were younger. Interventions with information,

motivation and behavioral skills components were more effective overall. As none of the interventions included in the meta-analysis targeting seropositive MSM had all the requisite IMB components, future research must ascertain whether such interventions would, as expected [68], be effective.

More recent work on prevention for positives interventions

An extensive literature review of recent Pfp interventions identified a reasonable number of newer studies. Of these, many involved descriptions of interventions that had been designed and implemented but not evaluated for outcomes [69–76]. We also found a number of recent Pfp interventions that involved rigorous intervention outcome studies. Most were interventions to increase safer sexual and drug use behaviors, which also protect PLWH from other pathogens. A number of them involved secondary prevention with respect to other health outcomes (e.g., interventions to favorably impact mental health and immune functioning) relevant to PLWH. We will discuss recent interventions to decrease risky sexual and drug use risk behavior in PLWH below.

Recall that Crepaz *et al.* [66] suggested that Pfp interventions situated in healthcare settings were especially effective. Two studies published recently by J. Fisher *et al.* [15] and Cornman *et al.* [77] focused on linking HIV prevention with clinical care for PLWH. In work performed in the United States [15], researchers taught physicians how to have IMB model-based ‘conversations about prevention’ with seropositive patients using Motivational Interviewing for intervention delivery [78]. Intervention recipients decreased risk behavior over time; those receiving the standard-of-care with respect to prevention actually increased risk, highlighting the cost of doing nothing. Cornman *et al.* [77] then adapted these clinic-based procedures to the healthcare system and the HIV risk dynamics in South Africa, and in an intervention delivered by HIV counselors rather than physicians (due to cost considerations and scarcity of physicians), reported similar outcomes.

Another intervention tested in outpatient clinics [79] involved ‘positive choice’, an interactive software program designed to perform a risk assessment and provide tailored risk reduction counseling for PLWH based on Motivational Interviewing. It framed behavior change for PLWH more to protect the patient’s own health than to protect others, a strategy suggested in some recent Pfp commentaries [80]. Patients reporting risk behavior were randomly assigned to the intervention, including a ‘video doctor,’ or to a control condition. The former led to less risk behavior involving illicit drugs and less unprotected sex than the control condition.

In Uganda, Bonell *et al.* [81] assessed the secondary prevention effects of ARV initiation coupled with a behavioral intervention involving sexual risk behavior counseling and free condoms. Overall, the intervention reduced sexual risk behavior by 70% over 6 months. Although there was no control condition, these findings suggest the potential of linking prevention with African ARV rollouts. Note that intervention participants appear to have decreased risk behavior even though they indicated increasing sexual desire and having more opportunities to meet new partners after initiating ARVs.

Jones *et al.* [82] randomly assigned seropositive Zambian women attending a hospital clinic to a group-based or individually based intervention; there was no control condition. The group-based condition included three sessions with a focus on group cohesion, skills building and practice, and experimentation and feedback on sexual barrier products. The individual-level intervention offered information in a standard health education format, skills training, and access to videos and written materials. Sexually active individuals used sexual barriers and male condoms more in the group condition than in the individual condition. There were no between-condition differences for use of female condoms, lubricants alone (to counter dry sex), or lubricants with condoms, all of which increased in both conditions.

Several recent PfP interventions have been performed outside of clinical care settings. For example, Lightfoot *et al.* [76] adapted a successful community-based PfP intervention initially implemented with youth in the United States to Ugandan youth living with HIV. Participants were randomly assigned to an intervention or control condition. Youth in the intervention used condoms and decreased number of sexual partners more than controls. On the basis of studies [28,83,84] that showed that PLWH with childhood sexual abuse engage in more risk behavior, Sikkema *et al.* [84] created a coping-based intervention to lower their risk. It involved 15 sessions, and the control condition was a therapeutic support group. Intervention participants reduced unsafe sex more than controls for up to 12 months.

Recent interventions have attempted to lower risk behavior among drug using PLWH. The Interventions for Seropositive Injectors - Research and Evaluation (INSPIRE) study [85] recruited seropositive IDU in four cities and randomly assigned them to a 10-session intervention involving peer mentoring or to a control condition consisting of a video-based discussion intervention. Both conditions reduced injection risk and sexual risk behavior compared with baseline, but the intervention condition was not differentially effective [85,86]. The EDGE study [87] randomly assigned PLWH with ongoing methamphetamine use to a safer sex interven-

tion or to a time-matched diet and exercise intervention. EDGE participants practiced greater safer behavior at 8-month and 12-month intervals. Margolin *et al.* [88] employed more unorthodox intervention methods to reduce impulsivity in drug using PLWH. Individuals were randomly assigned to a 'spiritual self-schema therapy' intervention (which integrates cognitive and Buddhist psychologies for increasing safer behaviors) or to a standard-of-care control condition. Those in the intervention decreased impulsivity and drug use and exhibited more motivation for abstinence, HIV prevention, and medication adherence.

Another large trial, the Healthy Living Project [89], involved recruiting risky PLWH from four groups (IDU, MSM, primarily heterosexual men, and women) in four cities. Fifteen PfP sessions were administered in the intervention group; there was also a wait-list control group. Risky behavior was lowered in the intervention group over intervals from 5 to 20 months, with the largest reduction at 20 months. All of these differences disappeared by the 25-month follow-up, perhaps demonstrating the need for booster sessions.

The future of prevention for positives interventions

Extant PfP interventions have generally been 'stand alone' projects in which PLWH have been recruited for interventions that focus on reducing risky practices. Future PfP interventions should be broader in their objectives than a narrow focus on safer behaviors *per se*, broader in the populations targeted, and substantially more integrated into an array of medical, social, psychological, and other services that PLWH may need. In effect, we need to recognize the role of a spectrum of services in facilitating PfP. Further, we must seriously consider designing and integrating PfP interventions so that they have the potential to continue, when needed at each medical visit, rather than ending precipitously, as most PfP interventions do (for exceptions, see [15,77]). When PfP (and other HIV prevention interventions) end, the effects tend to decay [89], yet PfP must be a lifetime enterprise. Many elaborations on these themes, which follow below, are discussed in detail in excellent studies by Temoshok and Wald [90], Remien *et al.* [91•], and West *et al.* [92••].

To cast the widest possible net, future PfP interventions should include early identification of PLWH through broad-based HIV testing initiatives, especially within 'high risk' populations [93]. Outreach could include targeting individuals who practice high-risk behaviors, their social networks, those with diseases with pathways to infection similar to HIV, patients in STI clinics, young women attending antenatal clinics, and others. 'Opt out'

testing could be incorporated in medical facilities offering routine and emergency care [93]. When individuals are tested and have access to treatments earlier, they are prescribed ARVs and have lowered viral loads and decreased infectivity earlier, can be exposed to Pfp interventions earlier, and have opportunities to improve their health and protect others [90,91**]. The act of being identified as HIV infected leads to safer behavior [12], safety that is likely augmented biologically by ARVs. When individuals are not identified early, they may practice risk during periods of high infectivity, and opportunities for promoting their own and others' health are missed (e.g., delivering behavioral and biomedical interventions to reduce horizontal and vertical transmission) [90,91**].

In addition to casting a wider net for targets for intervention, future interventions must address other pressing psychosocial needs of PLWH (e.g., substance use, mental health, and reproductive health needs) more aggressively through referral and vigorous follow-up. For example, Pfp programs must be directly linked with alcohol and drug treatment programs, as alcohol and drug use increase risk behavior among PLWH [56,94,95]. Pregnancy desires of women and their partners, which are also associated with risky sex among PLWH, contribute to both horizontal and vertical HIV transmission [91**] and have not been well addressed in past Pfp interventions or by some reproductive health service providers [96]. Inclusion of relevant content in interventions as well as referrals to reproductive health professionals can result in relatively safer techniques for achieving pregnancies (e.g., only having unprotected sex at times of highest fertility, adhering to ARVs, and cesarean delivery) [96]. For PLWH who do not want to become pregnant, barrier methods can prevent pregnancy and HIV transmission. In addition to linking PLWH with care, next generation Pfp programs must help keep individuals in care, as this enhances general health and Pfp-relevant outcomes [97,98]. Those who remain in care can access Pfp programs, have their ARVs monitored, their adherence enhanced, be checked for viral load and resistance, and be treated for co-morbid conditions.

Pfp programs must also provide effective referrals for homelessness and financial emergencies, for gender and other violence, provide access to clean needles (where possible), to male and female condoms, and to other critical services. For many PLWH, HIV is part of a syndemic (i.e., the interplay of multiple social and health problems that mutually facilitate risk for negative outcomes) [99], which must be addressed using multiple intervention methods. Many of these syndemic conditions (e.g., co-occurring alcohol and drug use, extreme poverty, homelessness, and violence) have been shown, independently, to produce risk behavior. This suggests

that for Pfp to be optimally effective, we must integrate Pfp with care, treatment, and other critical ancillary services in a 'treatment cocktail' and must exploit all potential synergies [90,91**]. This may involve individuals with different specialties working together, referring to each other, or even cross-training and possessing knowledge of each other's specialties.

In this vein, consider a nonadherent patient on ARVs who is practicing risky sexual and IDU behavior. An optimally effective Pfp intervention for this PLWH – or any PLWH – must address any behavioral (e.g., risky sex, drug use, and nonadherence) or biological element (e.g., inadequate ARV regimen and co-morbid conditions), or their interaction, which may affect infectivity to others (e.g., viral load and/or viral resistance). Behavior and biology interface in critical ways. For example, often, risky behavior and nonadherence to ARVs, with its biologic consequences, co-occur. Those likely to have resistant virus may be especially apt to practice risky behavior [91**,100]. Addressing these issues from only a behavioral or biological perspective is insufficient; a synergistic approach with input across specialties is critical. Such integration may be easier when prevention occurs in a clinical setting. Effective Pfp needs to include behavioral approaches to reduce risk, medical approaches to deal with drug resistance and infectivity, and, on occasion, mental health, addiction, and other interventions.

To have the most significant effect on the epidemic, future Pfp programs need to target populations in greatest need. As 70% of new HIV infections occur in sub-Saharan Africa [91**], this region is a critical focus. The ARV rollout there will reduce stigma, increase HIV testing, and bring people into care in which they can be exposed to Pfp interventions [15,101]. As we noted earlier, special attempts should also be made worldwide to target Pfp programs to PLWH with high HIV infectivity [92**]. It may also be critical to target Pfp to those new to ARVs who may become more risky as they feel better. Further, PLWH who are refractory to brief interventions, and who have characteristics that make them especially likely to practice risk behavior, should be triaged to more intensive Pfp. All such interventions should include behavioral and biomedical components.

Finally, few extant Pfp interventions have been widely disseminated, without which it is impossible for them to impact the epidemic [102]. It is unclear whether interventions developed and tested predominantly in resource-rich environments with particular HIV risk dynamics and healthcare systems will work in different contexts [91**]. Note, however, that several Pfp interventions developed in the United States were modified, tested, and found to work in Africa [76,77]. One of these involved using lower cost intervention personnel (e.g.,

HIV counselors rather than physicians [76]), an adaptation needed when disseminating interventions to resource poor settings. Kalichman *et al.* [103] showed that other significant changes may be made in PfP intervention protocols, possibly without affecting outcomes. Note also that widespread dissemination of PfP will necessitate critical organizational level interventions (e.g., to counteract negative attitudes toward PfP interventions or staff feelings of inefficacy to change behavior of PLWH) [104] and will also need to promote integration of PfP across levels of healthcare organizations in order to integrate PfP and medical services [90,91**].

Conclusion

Extant work on PfP has addressed both the dynamics of risk and the reduction of risk-related behaviors among PLWH. In light of this review, future PfP work that aims to integrate both behaviorally and biologically based prevention is likely to yield a more substantial impact on the current pandemic. As life circumstances and subsequent risk dynamics evolve throughout an individual's life span, PfP messages and support must be adapted to meet this variation in context within resource-constrained settings and across different subpopulations of PLWH. Thus, future work on PfP must consider systematically performing positive prevention across a continuum of social and care services in order to improve both the overall health of PLWH and help to address other risk-related factors (e.g., fertility desires, mental illness, and substance use).

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Additional references related to this topic can also be found in the Current World Literature section in this issue (p. 338).

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Focusing Efforts on Early-Stage HIV Interventions May Help Prevent Spread of Disease

Screening and early intervention with people in the earliest stages of HIV infection may reduce the spread of the disease, according to NIMH-funded researchers. A series of five papers from a small, multisite study were published online ahead of print in June 2009 in the journal *AIDS and Behavior*.

Background

The risk of spreading HIV is considerably higher during acute and early infection. Acute HIV infection (AHI) is defined as the time between initial infection and development of detectable HIV antibodies in the blood (seroconversion). Early infection refers to the time period up to six months after seroconversion. The increased risk of HIV transmission stems from extremely high levels of the virus during the time that a person may also be engaged in high risk sexual behaviors and is unaware of his or her infection. One study has suggested that transmission during early infection accounts for up to half of all new HIV infections.

Diagnosing early or acute HIV infection can be difficult. Symptoms of AHI, such as fever, headache, sore throat, and general aches and pains, are similar to many other types of illnesses. Also, commonly used HIV antibody tests will often give negative or inconclusive results during this stage of infection. This may lead people to mistakenly think that they are uninfected and unknowingly engage in behaviors that will transmit HIV to their sex partners.

To address this challenge, researchers at seven universities teamed up in the NIMH Multisite Acute HIV Infection Study. They recruited 34 adults, average age 33, within approximately one month of acute HIV diagnosis. Each participant completed two in-depth interviews, one near the time they first learned they were infected with HIV and the second interview about two months later. Through these interviews, the researchers explored participants' knowledge and awareness of AHI symptoms, elevated infectiousness, and testing procedures, individual circumstances surrounding HIV transmission, and changes in sexual behavior, substance use, or mental health before and after HIV diagnosis.

Results of the Study

The researchers identified study participants using two methods: provider referral based on suspected AHI symptoms and pooled testing of people who were HIV antibody negative, using a method similar to what is routinely done when screening blood donors. Both approaches were successful in identifying cases of acute or early HIV infections that would not have been caught by traditional screening methods.

Participants in this study showed a high prevalence of alcohol or substance use disorders and mental disorders in the range of those reported in "chronically" infected populations. Specifically:

- More than 85 percent had ever had an alcohol or substance use disorder
- About half (18 of 34 participants) had a history of more than one co-occurring disorder (for example, alcohol use disorder and a mood disorder at the same time)
- Almost 40 percent of the study population had symptoms of major depression
- About 20 percent had bipolar disorder, consistent with earlier studies showing people with this disorder are at higher risk of HIV, possibly related to impaired impulse control and risky sexual behaviors during an episode
- A history of suicidal thoughts or suicide attempts was much more common among study participants than has been reported for the community, but these results support past findings that most suicidal behaviors are more likely to be related to mood or substance use disorders than HIV.

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C 'n g { 'h p f k p i 'y c u 'y c v 'c h g t 'f k c i p q u k u . 'o c p { 'u w f { 'r c t v e k r c p u 't g f v e g f 'y j g k 'p w o d g t 'q h 'u g z w e n r c t v p g t u 'c p f 't g r q t v e f 'f g e t g c u g u 'l p v p r t q v e g e f 'u g z 'y k j 'w p l p h e v e f 'r c t v p g t u '0 V j g u g 'e j c p i g u 'y g t g 'o q u w { 'o q v x c v g f 'd { 'e q p e g t p u 'c d q w 'l p h e v k p i 'q y j g t u '0 V j g 't g u w n u 'u w i i g u v 'y j c v 'y j g 'l p k c i f k c i p q u k u 'o c { 'd g 'c p 'l o r q t v c p v 'h t u v 'u g r 'l p 'g h t q u 'v q 't g f v e g 't c p u o k u k q p 't k u n f w t k p i 'c e w g 'c p f 'g c t n { 'J K 'l p h e v k p 0

In terms of coping with an HIV diagnosis, participants were more likely to rely on adaptive strategies—for example, using emotional supports, turning to religion, and accepting their diagnosis—than less-adaptive strategies, such as venting, turning to substance use, or self-blaming. Another key finding was that participants were far more open than expected to transmission risk reduction counseling, despite experiencing stress over the new diagnoses.

The researchers note that these findings, particularly the estimates of mental and substances use disorders, should be interpreted with caution in light of the small study population. Thus, the prevalence estimates may not apply to larger groups. Also, the majority of participants were recruited from well-established, urban gay communities. Compared with those living in rural or underserved areas, people in these communities may have greater access to clinical and social services, which may in turn promote more positive coping strategies.

Significance

Based on their findings, the researchers emphasized the need for targeted education within at-risk communities to raise awareness and reduce the rapid spread of HIV associated with acute and early infection. Given the relatively mild psychiatric symptoms and generally positive outlook and coping strategies in the face of an HIV positive diagnosis, the researchers suggest that preventive efforts at this stage “would have a high probability of success.”

What’s Next

As described in the fifth paper in this series, the researchers noted a number of “lessons learned” from their preliminary study. These include the need for further research to:

- Establish the cost-effectiveness of the type of testing needed to identify acute and early HIV infections
- Address challenges in identifying people with AHI in a timely manner
- Increase awareness of AHI transmission risks among at-risk communities and the healthcare providers that serve them
- Determine the goals of behavioral interventions following AHI diagnosis, as well as possible preventive interventions among those at-risk who have a history of alcohol or substance use disorder or a mental disorder
- Develop rapid-response public health systems that can intervene during the AHI stage.

The sites coordinating on this study include Brown University, Colombia University, University of California at Los Angeles, University of California at San Diego, University of California at San Francisco, Medical College of Wisconsin, and Yale University.

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