Improving HIV/STD Prevention in the Care of Persons Living with HIV Through a National Training Program

Susan Dreisbach, PhD,¹ Helen Burnside, MS,² Katherine Hsu, MD,³ Laura Smock, MPH,³ Patricia Coury-Doniger, NP,⁴ Christopher Hall, MD,⁵ Jeanne Marrazzo, MD,⁶ Gowri Nagendra, NP,⁷ Cornelis Rietmeijer, MD,² Ann Rompalo, MD,⁸ and Mark Thrun, MD^{1,2}

Abstract

Persons living with HIV (PLWH) are living longer, remaining sexually active, and may continue risky sexual behaviors. As such, it is crucial for providers to ask all HIV-positive patients about behaviors related to HIV transmission and STD acquisition. The “Ask, Screen, Intervene” (ASI) curriculum was developed to increase provider knowledge, skills, and motivation to incorporate risk assessment and prevention services into the care of PLWH. The ASI curriculum was delivered to 2558 HIV-care providers at 137 sites between September 30, 2007 and December 31, 2010. Immediately post-training, participants self-reported significant gains in perceived confidence to demonstrate ASI knowledge and skills ($p < 0.001$) and 89% agreed they would update practices as a result of the training. Three to six months post-training, 320 participants who served PLWH or supervised HIV-care providers self-reported more frequently performing ASI skills ($p < 0.001$), and 71% self-reported greater perceived confidence than before training to perform those skills ($p < 0.001$). Limitations include self-reported measures and a 30% response rate to the 3–6 month follow-up survey. Our findings suggest that a well-coordinated training program can reach a national audience of HIV-care providers, significantly increase self-reported capacity to incorporate HIV/STD prevention into the care of PLWH, and increase implementation of national recommendations.

Introduction

THE ESTIMATED NUMBER OF ANNUAL NEW human immunodeficiency virus (HIV) infections in the United States has not declined in recent years despite significant improvements in testing and treatment.^{1–3} Incidence has remained disproportionately high among racial/ethnic minorities and men who have sex with men (MSM) with a 48% increase in incidence among young African-American MSM from 2006 to 2009.^{2–4} Ongoing sexual risk behaviors have been reported for 18–38% of young MSM of color living with HIV^{5,6} and sexually transmitted diseases (STDs) are frequently diagnosed among people living with HIV (PLWH), particularly MSM.^{3,4} These indicators underscore the need for more ongoing dialogue in HIV care settings

about sexual risk behaviors and STD screening, coupled with prevention counseling to help reduce HIV/STD transmission. Since PLWH increasingly access care, delivering prevention in medical care settings can be a high-impact, cost-effective prevention strategy.^{7,8}

In 2003, the Centers for Disease Control and Prevention (CDC), Health Resources and Services Administration, National Institutes of Health, and the HIV Medicine Association published joint recommendations for prevention in medical settings with PLWH. The recommendations called for incorporating risk assessment, STD screening, prevention messages, risk reduction plans, and referrals to partner services.⁹ Prevention with PLWH remains key to the National HIV Strategy¹⁰ and CDC's HIV Prevention Strategic Plan.^{10,11} Revised guidelines expected soon will update, expand, and

¹Department of Health and Behavioral Sciences, University of Colorado Denver, Denver, Colorado.

²Department of STD/HIV Prevention and Control, Denver Public Health, Denver, Colorado.

³Massachusetts Department of Public Health, Jamaica Plain, Massachusetts.

⁴Center for Health and Behavioral Training, University of Rochester, Rochester, New York.

⁵Division of Infectious Diseases, University of California at San Francisco, San Francisco, California.

⁶Department of Medicine, University of Washington, Seattle, Washington.

⁷STD/HIV Prevention Training Center, New York City Department of Health and Mental Hygiene, New York, New York.

⁸School of Medicine and Infectious Disease Division, Johns Hopkins University, Baltimore, Maryland.

consolidate recommendations and expand the types of providers proposed to carry out recommended prevention practices with PLWH.¹²

Despite recommendations for providers to assess and address patients' risk for HIV transmission and STD acquisition consistently, these activities occur relatively infrequently in clinical settings. Recent studies estimate that risk reduction counseling occurs with only 14–49% of patients reporting sexual risk behaviors, and that counseling is less frequent among established HIV patients.^{13–15} To increase the frequency of risk assessment and prevention counseling with PLWH, the CDC commissioned the National Network of STD/HIV Prevention Training Centers (NNPTC) and the AIDS Education and Training Centers (AETC) to create a national curriculum, "Ask, Screen, Intervene" (ASI), to train HIV providers to incorporate the joint recommendations.

This article reports program evaluation results for ASI to address whether a nationally coordinated training program can reach providers who care for PLWH and increase perceived knowledge, self-efficacy, and motivation needed to implement recommended prevention practices. It also reports trainee implementation of recommended practices in the workplace 3–6 months after training and identifies barriers to implementation.

Methods

The NNPTC, a network of 16 centers that train on STD clinical care (8 centers), HIV/STD prevention behavioral interventions (5 centers), and public health strategies including HIV/STD partner services (3 centers), and the AETC, a national network of centers that train on HIV prevention, diagnosis, and care, developed ASI to disseminate the guidelines, *Incorporating HIV Prevention into the Medical Care of Persons Living with HIV*, presented in the Morbidity and Mortality Weekly Report in June 2003.⁹ The subsequent curriculum, "Ask, Screen, Intervene," was based on the premise that the audience for this training was not only primary HIV care providers, but also all other members of the clinical care team who might engage patients in prevention discussions, including social workers, psychiatric staff, case managers, and support staff. As such, the curriculum considered the varied skill sets and educational levels found across the spectrum of an integrated care team.

The ASI curriculum consisted of four modules: Behavioral Risk and STD Screening; Universal Prevention Messages and Addressing Misconceptions; Tailored Behavioral Interventions; and Partner Services. It combined didactic presentations with case studies, group discussion, and skills practice. Learning objectives and course content were derived directly from the 2003 Prevention in Care guidelines focusing on improving perceived self-efficacy to assess risk behaviors, screen for STDs, address misconceptions about HIV/STD transmission, deliver universal and tailored prevention messages, facilitate patient-centered behavioral change, and utilize partner services for PLWH. Resources related to the course may be found at <http://nnptc.org/resources/ask-screen-intervene-effective-prevention-in-hiv-care/>.

ASI was presented as one 6-h course or as individual modules in clinics, as independent workshops for professional groups, or as part of larger conferences. NNPTC and AETC faculty of physicians, registered nurses, and preven-

tion trainers conducted trainings partnering when possible with local physicians or disease intervention specialists to provide a local perspective.

The target audience included medical and social service providers who care for PLWH, particularly providers serving racial and ethnic minorities disproportionately impacted by HIV. The NNPTC and AETC recruited participants in geographic areas with a high incidence and prevalence of HIV among racial/ethnic minorities through e-mails, at conferences, and through direct outreach to HIV care settings and professional organizations of HIV care providers, specifically providers of color. Participants self-selected to attend or their employer required attendance. Continuing education credits (CME, CNE, and CEU) were offered free of charge for each completed module.

Participants provided information before the training on demographics, profession, work setting, and populations served. Immediately after training, participants were asked to: evaluate course satisfaction; self-assess their confidence before and after training to demonstrate ASI knowledge and skills; indicate intentions to apply ASI in the workplace; list intended practice changes; and identify anticipated barriers to implementation.

Three to 6 months after training, participants with active e-mail addresses who had agreed to be contacted for further evaluation were invited via up to three e-mails to complete an online survey to report: use of ASI in their work; confidence to demonstrate ASI knowledge and skills; and barriers to implementation. Respondents were entered in a drawing to receive one of twenty \$50 gift cards. This program evaluation was exempted by the Colorado Multiple Institution Review Board.

Descriptive statistics summarized demographic, occupational, and satisfaction data. Likert scale confidence levels to demonstrate ASI learning objectives were treated as interval variables; means were calculated to measure changes in confidence pre- to immediately post-course and pre-course to 3–6 month follow-up. Paired two-tailed Student's *t*-test was used to test the significance of changes at the 0.05 confidence level. Chi-square comparison of proportions was used to compare characteristics of respondents and non-respondents. Open-ended responses were coded by two evaluators and discrepancies reviewed by a third to reach consensus.

Results

From October 2007 through December 2010, the NNPTC delivered the ASI curriculum at 137 sites to 2558 participants. Of those participants, 61.4% were clinicians including registered nurses (27%), physicians (15%), nurse practitioners (7%), licensed practical nurses (5%), and physician assistants (1%). Another 33.6% were other nonclinician healthcare providers (HCPs), including social workers (8%), health educators (5%), counselors (4%), administrators (4%), public health workers (3%), disease intervention specialists (2%), and case managers (1%). Nearly two-thirds (62.0%) worked directly with PLWH. Most others supervised or supported those who worked directly with PLWH, or anticipated serving HIV+ patients in the future. Over half (52.1%) belonged to a racial or ethnic minority (Table 1). Participants worked in 45 states, the District of Columbia, and three US territories. Work settings varied widely with the most common

TABLE 1. CHARACTERISTICS OF ALL PARTICIPANTS, 3–6 MONTH RESPONDENTS USING ASI, AND 3–6 MONTH NONRESPONDERS

Characteristic	Whole sample (N = 2558)		3–6 month respondents (N = 320 ^a)		3–6 month Nonresponders (N = 2105)		Diff p ^b
	N	%	N	%	N	%	
Gender							
Female	1993	77.9%	259	80.9%	1634	77.6%	0.209
Male	484	18.9%	54	16.9%	397	15.6%	0.609
Transgender	5	0.2%	1	0.3%	4	0.2%	0.773
Race							
White	1281	50.1%	182	56.9%	1015	48.2%	0.005
African American or black	663	25.9%	84	26.3%	563	26.7%	0.934
Asian	123	4.8%	8	2.5%	105	5.0%	0.067
American Indian/Alaska Native	45	1.8%	4	1.3%	37	1.8%	0.683
Pacific Islander	30	1.2%	4	1.3%	25	1.2%	0.903
No race indicated	143	5.6%	11	3.4%	126	6.0%	0.081
Multiple races	48	1.9%	10	3.1%	39	1.9%	0.231
Ethnicity							
Hispanic or Latino/a	424	16.6%	39	12.2%	367	17.4%	0.025
One or more ethnic/racial minority	1333	52.1%	149	46.6%	1136	54.0%	0.016
Profession							
Clinician	1571	61.4%	172	53.8%	1383	65.7%	<0.001
Non-clinician HCP	859	33.6%	132	41.3%	663	31.5%	<0.001
Primary patient population							
PLWH	869	34.0%	143	44.7%	687	32.6%	<0.001
General public	761	29.8%	81	25.3%	639	30.4%	0.073
Gay, lesbian, bisexual, MSM	447	17.5%	61	19.1%	365	17.3%	0.478
Adolescents	306	11.9%	42	13.1%	250	11.9%	0.602
Substance users–IDU	255	10.0%	39	12.2%	196	9.3%	0.125
Incarcerated or recently paroled	247	9.7%	28	8.8%	206	9.8%	0.644
Homeless	224	8.7%	31	9.7%	184	8.7%	0.630
Pregnant women	169	6.6%	20	6.3%	145	6.9%	0.781
Transgendered individuals	115	4.5%	11	3.4%	99	4.7%	0.369
Serving minorities living with HIV							
Work directly with PLWH	1585	62.0%	246	74.9%	1270	60.3%	<0.001
Serving African Americans w/ HIV	1423	55.6%	223	69.7%	1129	53.6%	<0.001
Serving Hispanics or Latinos w/ HIV	1312	51.3%	195	60.9%	1054	50.1%	<0.001

For gender, race, ethnicity, and profession, percentages do not add to 100% due to some people not answering the question. For primary patient population, participants were allowed to select up to three populations.

^aOnly respondents with an opportunity to have used ASI were asked about the frequency of using ASI practices before and after the training.

^bDiff = difference in characteristics of those who did not respond to the follow-up survey for any reason and those who responded and are represented in Table 3 as having an opportunity to use ASI.

settings being hospitals (19.9%), public health agencies (19.8%), and nonprofit clinics (12.5%).

Participant ratings indicated high satisfaction with trainers, content, instructional strategies, and course materials (means 4.53 to 4.73 out of possible 5). Most (93.7%) agreed or strongly agreed the training met their educational needs. Continuing education credits influenced the decision to take the training for 44%.

Immediately after training, participants self-reported significant gains in perceived confidence to demonstrate ASI knowledge and perform the skills outlined in the learning objectives ($p < 0.001$) (Table 2). Participants perceived being significantly more confident after training to screen HIV+ patients for risk behaviors, deliver prevention messages, and use tailored behavioral interventions (3.39 to 4.32, $p < 0.001$). Participants reported even larger gains (3.09 to 4.31, $p < 0.001$) in perceived confidence to define, describe, and utilize partner services. Prior to training, clinicians self-reported having significantly lower confidence than non-

clinician HCPs to demonstrate all ASI knowledge and perform all ASI skills ($p < 0.001$) except for being able to explain when to order an STD test and ordering the appropriate test. After training, clinicians self-reported significantly greater improvements than nonclinician HCPs in perceived confidence to: assess sexual risk behaviors; address misconceptions about HIV transmission; help patients change behavior; and communicate about and utilize partner services (Table 2).

Immediately after training, 89% of participants agreed or strongly agreed they would make practice changes as a result of the ASI training. For the 58% of participants ($N = 1492$) who listed practices they intended to change, the most commonly reported changes focused on increasing the frequency and quality of: risk screening (45.1%); all aspects of partner services (25.6%); tailored HIV/STD prevention messages (19.9%); prevention communication (19.5%); facilitation of client-centered behavior change (19.3%); use of open-ended questions (18.2%); and STD testing (16.9%).

TABLE 2. IMMEDIATE POST-TRAINING SELF-REPORTED GAINS IN CONFIDENCE TO DEMONSTRATE LEARNING OBJECTIVES BY PROVIDER TYPE

<i>How confident were you before training and how confident are you now, after the training, in your ability to...</i>	<i>N</i>	<i>Pre-course mean</i>	<i>Post-course mean</i>	<i>Within group change</i>	<i>Between group diff</i>
Module 1: Risk Assessment: Behavioral Risks and STDs					
... ask all your HIV + patients about behaviors that would place them at risk for transmitting HIV or getting a new STD?					
Clinicians ^a	945	3.43	4.41	+0.98	<0.001
Nonclinician HCPs ^b	473	3.61	4.42	+0.81	<0.001
... explain when to order an STD screening test for your HIV + patients?					
Clinicians	943	3.53	4.44	+0.91	<0.001
Nonclinician HCPs	451	3.20	4.14	+0.94	<0.001
... order an STD screening test for your HIV + patients?					
Clinicians	935	3.48	4.37	+0.89	<0.001
Nonclinician HCPs	446	2.99	3.93	+0.94	<0.001
Module 2: Universal Prevention Messages and Addressing Misconceptions					
... address misconceptions your HIV + patients may have about STD/HIV transmission?					
Clinicians	824	3.43	4.45	+1.02	<0.001
Nonclinician HCPs	454	3.60	4.43	+0.83	<0.001
Module 3: Tailored Behavioral Interventions					
... deliver prevention messages tailored to your HIV + patients?					
Clinicians	828	3.34	4.34	+1.00	<0.001
Nonclinician HCPs	477	3.55	4.40	+0.85	<0.001
... assess your HIV + patients' readiness to make behavior changes to reduce their risk of transmitting HIV or getting a new STD?					
Clinicians	832	3.20	4.25	+1.05	<0.001
Nonclinician HCPs	476	3.47	4.32	+0.85	<0.001
... facilitate your HIV + patients' developing specific, realistic goals to reduce their chances of transmitting HIV or getting a new STD.					
Clinicians	831	3.20	4.25	+1.05	<0.001
Nonclinician HCPs	477	3.49	4.33	+0.84	<0.001
Module 4 Partner Services					
... define partner services?					
Clinicians	871	2.94	4.31	+1.37	<0.001
Nonclinician HCPs	435	3.26	4.36	+1.20	<0.001
... describe partner services to HIV + patients?					
Clinicians	864	2.91	4.28	+1.37	<0.001
Nonclinician HCPs	432	3.24	4.33	+1.09	<0.001
... utilize partner services through state and local health departments for your HIV + patients?					
Clinicians	875	2.91	4.27	+1.36	<0.001
Nonclinician HCPs	435	3.26	4.31	+1.05	<0.001

Scale: 1 = not at all confident, 2 = not very confident, 3 = somewhat confident, 4 = confident, 5 = very confident.

Participants who did not provide information about their occupation are not included.

^aClinicians included registered nurses, physicians, nurse practitioners, licensed practical nurses, and physician assistants.

^bNonclinician health care providers included social workers, health educators, counselors, administrators, public health workers, disease intervention specialists, and case managers.

Intentions to change practices did not differ between clinicians and other nonclinician HCPs.

Three to 6 months after ASI training, 453 participants responded to the follow-up survey (30% of the 1512 participants who agreed to follow-up and provided a working email address). Of those, 320 reported having had an opportunity to use ASI and completed the survey. Of the 320, 53.8% were clinicians ($N=172$), including 19.7% physicians, 41.6% registered nurses, and 15.9% advanced practice nurses (Table 1). Other non-clinician HCPs accounted for 41.4% ($N=132$) of respondents and included 24.3% public health workers, 22.9% social workers, 16.0% health educators, 15.3% counselors, and 12.2% administrators. Five percent ($N=16$) did not provide occupation data to classify. Compared to the ASI trainees who did not respond to

the 3–6 month follow-up survey, a significantly larger proportion of the 320 responders who had an opportunity to use ASI were nonclinician HCPs (41.3% versus 31.5%; $p<0.001$), worked directly with PLWH (74.9% versus 60.3%; $p<0.001$), served African-American and Latino/a PLWH (69.7% versus 53.6% and 60.9% versus 50.1%, respectively; $p<0.001$) and prior to training self-reported greater confidence to ask all HIV + patients about their risk behaviors (3.59 versus 3.46, $p=0.047$).

Of the 320 follow-up respondents who had an opportunity to use ASI, 71% self-reported increased confidence from before training to demonstrate ASI knowledge and perform ASI skills ($p<0.001$). Perceived confidence increased significantly for all 10 learning objectives ($p<0.001$) with gains of 0.80 Likert scale points or more (for a 5-point Likert scale)

for asking about risk behaviors, addressing misconceptions about HIV/STD transmission, delivering tailored prevention messages, and describing and utilizing partner services. Both clinician and other nonclinician respondents self-reported significant but smaller increases in confidence to explain when to order an STD test, order the appropriate test, and facilitate behavior change ($p < 0.001$). Clinicians self-reported significantly greater confidence pre- and post-training to describe which STD test to order ($p = 0.001$); conversely nonclinician HCPs self-reported significantly greater confidence than clinicians before and after training to ask patients about risk behaviors ($p = 0.008$), assess readiness to change behavior ($p < 0.001$), and facilitate behavior change ($p = 0.014$).

As shown in Table 3, 3–6 months post-training, respondents self-reported significant increases in the frequency of performing all 8 ASI skills ($p < 0.001$). There was no difference in the magnitude of increase reported by clinicians and other nonclinician HCPs. However, before ASI and 3–6 months after, nonclinician HCPs reported more frequently asking HIV+ patients about risk behaviors ($p = 0.012$ before; $p = 0.022$ after); addressing misconceptions about HIV/STD transmission ($p = 0.009$ before; $p = 0.117$ after); assessing readiness to change

and facilitating behavior change (both skills $p = < 0.001$ before and after); describing partner services ($p = 0.002$ before; $p = 0.089$ after); and using partner services ($p = 0.001$ before; $p = 0.018$ after). Conversely, clinicians reported more frequently ordering STD tests before and after the training ($p < 0.001$).

Three to 6 months after ASI, the mean self-reported frequency of asking HIV+ patients about risk behaviors, addressing misconceptions about STD/HIV transmission, and delivering prevention messages increased for clinicians from an average of 3.44 to 3.90 ($p < 0.001$) and from 3.86 to 4.21 for other nonclinician HCPs ($p < 0.001$) (4 = almost always). The mean frequency of ordering an STD test increased for clinicians from 3.07 to 3.21 ($p < 0.001$) (3 = sometimes), and from 2.34 to 2.52 for other nonclinician HCPs ($p < 0.001$) (2 = rarely). Clinicians increased their frequency of utilizing partner services from 2.58 to 3.26 ($p < 0.001$) and nonclinician HCPs reported a similar increase from 2.96 to 3.29 ($p < 0.001$).

In addition to changes in practice summarized in Table 3, 75.2% of respondents with an opportunity to use ASI posted universal prevention messages in waiting or exam rooms; 89.9% shared what they learned in their work setting; and 80.7% encouraged others to take the ASI training.

TABLE 3. RETROSPECTIVE SELF-REPORTED FREQUENCY OF PRACTICING ASI SKILLS IN THE WORKPLACE BEFORE AND 3–6 MONTHS AFTER ASI TRAINING

How frequently did you...	N	Pre-course mean	Post-course mean	Within group change	Inter-group diff
Module 1					
... ask all HIV+ patients about behaviors that can place them at risk for transmitting HIV or getting a new STD?					
Clinicians ^a	150	3.44	3.91	+0.47	<0.001
Nonclinician HCPs ^b	132	3.77	4.17	+0.40	<0.001
... order an STD screening test for your HIV+ patients?					
Clinicians	150	3.07	3.37	+0.30	<0.001
Nonclinician HCPs	132	2.34	2.52	+0.18	<0.001
Module 2					
... address misconceptions that your HIV+ patients may have about STD/HIV transmission?					
Clinicians	125	3.54	3.95	+0.41	<0.001
Nonclinician HCPs	126	3.90	4.17	+0.27	<0.001
Module 3					
... deliver prevention messages tailored to your HIV+ patients?					
Clinicians	131	3.34	3.85	+0.51	<0.001
Nonclinician HCPs	125	3.91	4.30	+0.39	<0.001
... assess HIV+ patients' readiness to make behavior changes to reduce risk of transmitting HIV or getting a new STD?					
Clinicians	130	3.22	3.70	+0.48	<0.001
Nonclinician HCPs	125	3.70	4.18	+0.48	<0.001
... facilitate HIV+ patients' developing specific, realistic goals to reduce chances of transmitting HIV or getting a new STD?					
Clinicians	130	3.11	3.55	+0.44	<0.001
Nonclinician HCPs	125	3.54	4.01	+0.47	<0.001
Module 4					
... describe partner services to your HIV+ patients?					
Clinicians	146	2.58	3.26	+0.68	<0.001
Nonclinician HCPs	119	3.16	3.64	+0.48	<0.001
... utilize partner services available through state and local health departments for your HIV+ patients?					
Clinicians	146	2.35	2.86	+0.51	<0.001
Nonclinician HCPs	119	2.96	3.29	+0.33	<0.001

Frequency scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = almost always, 5 = always.

^aClinicians included registered nurses, physicians, nurse practitioners, licensed practical nurses, and physician assistants.

^bNonclinician healthcare providers included social workers, health educators, counselors, administrators, public health workers, disease intervention specialists, and case managers.

Immediately after ASI training, 21.3% of participants anticipated barriers to implementing ASI. Nearly half (48.5%) expected having inadequate time for ASI practices due to brief appointments and competing priorities, such as medication adherence. One quarter (27.2%) presumed patient unwillingness or inability to change risk behaviors would be a barrier. Three to 6 months post-training, 43.8% of follow-up respondents reported actual barriers to implementing ASI knowledge and skills. Time constraints were a barrier for only 28.6%, and only 5.0% of respondents experienced patient reluctance.

Discussion

Creating an environment that promotes a reduction in HIV transmission among PLWH in HIV care settings is complex. While the establishment of federally recommended practice guidelines is a first step towards creating a standard of care, little is known about the uptake of such recommendations into clinical practice. Training is needed to increase motivation, knowledge, and skills to implement practices.

This program evaluation provides evidence that a national training program can (1) reach providers who deliver services to PLWH; (2) widely disseminate recommended practices; (3) significantly increase perceived confidence to demonstrate knowledge and skills for incorporating HIV/STD prevention into the care of PLWH; and (4) increase self-reported frequency of using recommended practices. To our knowledge, this is the first time a national effort lead by an organization like the NNPTC has demonstrated improved implementation of joint recommendations for HIV/STD prevention in clinical settings.

Although ASI prioritized reaching clinicians caring for PLWH, the broader intention was to also reach other non-clinician healthcare providers, program directors, and administrators interested in learning how to incorporate HIV prevention into the care of PLWH in order to create a culture of prevention in the clinical setting. Our overall findings suggest that ASI was equally valuable for both clinicians and other nonclinician HCPs, particularly around assessing risk behaviors and communicating about partner services. Significant gains in perceived confidence to demonstrate ASI knowledge and perform ASI skills after training were comparable for clinicians and other nonclinician HCPs.

Studies have demonstrated that training HIV-providers about the importance of identifying patient risk and delivering prevention messages increases prevention conversations and reduces HIV transmission risk behavior in PLWH.^{16–18} In addition, Thrun et al. showed that clinicians trained to conduct brief prevention counseling self-reported significantly improved attitudes about prevention counseling, including greater comfort, willingness, self-efficacy, and frequency of delivering prevention counseling to their patients.¹⁹ Our findings show that such gains applied to both clinicians and other nonclinician HCPs serving PLWH. Including more members of the care team in assessment and prevention counseling may increase the chance that prevention discussions will occur and be reinforced. Discussions about sexual risk are particularly critical for PLWH who may continue engaging in risk behaviors such as young MSM of color,^{5,6} and MSM who abuse methamphetamine.²⁰ By training HIV care team clinicians and other nonclinician HCPs to identify behaviors associated with risk, the care team can effectively counsel patients, facilitate behavior change, or refer patients for other needed services.

Unfortunately, individual and structural barriers to implementing prevention activities in clinical settings pose challenges to providers who want to assume an active prevention role.²¹ In our evaluation, approximately half of the follow-up survey responders faced barriers to implementing ASI practices. In general, barriers mirrored anticipated obstacles with time constraints mentioned most often. Although providers expected patient reluctance to interfere, few found this to be true.

This evaluation has several limitations. First, without a randomly assigned control group, we cannot demonstrate that training is solely responsible for the changes in confidence reported, nor can we generalize the findings. Second, most participants volunteered to attend the training which might have biased the sample toward those already motivated to improve their HIV prevention practices.

Third, confidence ratings and frequency of implementing ASI practices are self-reported estimates. Without observations and objective measures, different respondents may rate the same level of confidence or frequency of practice differently. To reduce such bias, we compared relative gains rather than the absolute changes in confidence or frequency of performing recommended practices. Although using retrospective surveys to measure relative change is controversial, such instruments have been shown to reduce recall bias and increase the accuracy of estimated change.²²

Finally, we note the 30% response rate to the follow-up survey administered online at 3–6 months and bias introduced by the follow-up sample having a greater proportion of other nonclinician HCPs and more providers who care directly for PLWH than nonresponders to the follow-up. Although recent literature suggests that a 30% response rate can deliver valid results and is the current average for online surveys, caution is warranted when interpreting the follow-up.^{23–25}

In conclusion, our program evaluation indicates that a national training strategy can disseminate recommended HIV/STD prevention practices to an audience of clinicians and other nonclinician HCPs caring for PLWH. ASI training increased perceived confidence to demonstrate ASI knowledge and skills and contributed to more frequent use of ASI skills 3–6 months post-training for both clinicians and other nonclinician HCPs. This supports a multi-disciplinary team approach to increase the frequency of ASI practices and reinforce prevention messages in clinical settings. However, training alone is not sufficient to ensure recommended prevention strategies become fully integrated into HIV care. Barriers, specifically those related to having sufficient time for these discussions to take place, need to be addressed before prevention in care can be maximized in clinical settings.

Acknowledgments

The authors would like to thank the all of their NNPTC colleagues involved in the dissemination and evaluation of this project. This program evaluation was made possible with funding from the Centers of Disease Control and Prevention FOA# PS07-771 and does not necessarily represent the views of the CDC.

Author Disclosure Statement

No competing financial interests exist.

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Address correspondence to:

Susan Dreisbach, PhD

Department of Health and Behavioral Sciences

University of Colorado Denver

Campus Box 188, PO Box 173364

Denver, CO 80217-3364

E-mail: Susan.Dreisbach@ucdenver.edu