

Evaluation of the Effectiveness of HIV Voluntary Counseling and Testing Trainings for Clinicians in the Odessa Region of Ukraine

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Abstract In Ukraine, only 28 % of HIV-infected individuals are aware of their HIV status. Expansion of voluntary HIV counseling and testing (VCT) in primary and specialty health care settings holds promise for increasing the number of people who know their HIV status and can access care. To build capacity among health care providers to deliver VCT, we conducted two-day trainings on basic HIV knowledge and on VCT procedures in the Odessa region of Ukraine. The training program was developed by local trainers in collaboration with faculty from the US Southeast AIDS Training and Education Center and was delivered in the clinical settings where trainees worked ($n = 392$). We assessed training effectiveness in terms of change in knowledge among clinician trainees, comparing HIV specialists and nonspecialists and those working in urban and rural clinical settings. All else being equal, compared with their urban HIV-specialist peers, trainees who were rural nonspecialists demonstrated significantly greater increases in general HIV knowledge scores. This effort demonstrates that brief, on-site training programs

support the expansion of VCT by increasing the knowledge and skills of rural nonspecialist clinicians to levels equal with urban HIV specialists.

Keywords HIV · Voluntary counseling and testing · VCT · Provider training · Ukraine

Introduction

Despite significant HIV prevention efforts in Ukraine, the HIV/AIDS epidemic continues to spread into diverse population segments. Since 2008, HIV transmission in Ukraine has been associated predominantly with unprotected sex [1, 2]. In 2011, half of all new HIV cases were attributed to sexual transmission, up 5 % from the prior year. During the same period, the proportion of new HIV cases attributed to injection drug use declined from 34 to 31 % [1]. These trends imply a shift in the country's epidemic, from a specific population of injection drug users to a more general population [1, 2]. One of the hardest hit of Ukraine's 26 regions is Odessa; the prevalence of HIV is twice as high in the Odessa region (559.6 per 100,000) than it is in the country overall (264.3 per 100,000). The region has also seen the greatest increase in AIDS morbidity and mortality in recent years [1].

Reversing this trend in the Odessa region, and indeed in all of Ukraine, will require diffusion of effective interventions such as voluntary HIV counseling and testing (VCT). Increasing the number of HIV-infected people who become aware of their status helps ensure that they can get access to care and medicine that will improve their health and reduce the likelihood that they will transmit the virus to others [3]. However, as a result of low uptake of VCT services in Ukraine, only an estimated 28 % of

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HIV-infected persons have been tested and know their HIV status [4].

The first national Ukrainian HIV voluntary counseling and testing protocol (VCT Protocol), released in 2005 by the Ukrainian Ministry of Health, recommended improving access to VCT services with guidelines for incorporating testing into health care settings, where testing is not usually performed [5]. Unfortunately, scale-up of the recommendations has been slow. Of 3.3 million HIV screening tests performed in 2011, 33 % were administered to pregnant women and 26 % to blood donors, and 4.3 % were delivered to individuals with known risk factors; thus, routine testing in primary care settings has not been widely implemented [2]. Furthermore, of individuals newly diagnosed in Ukraine, 44 % were diagnosed simultaneously with HIV and AIDS in 2011, indicating that they tested late in the course of their infection [2].

One of the main barriers to expanding VCT in primary care settings is a lack of training for health care providers (HCPs) [4]. Training for HCPs and other clinical staff is required for full implementation of broad-scale HIV testing in health care facilities because providers must understand HIV testing technology, know how to discuss risk behavior and partner disclosure with patients, and be able to link newly diagnosed individuals to care [3, 5]. To effectively provide these services, HCPs need to gain new knowledge, skills, and motivation [6]. Education, training, and clinical mentoring of HCPs have been shown to significantly increase the number of tests performed in both primary and specialty health care settings [7–12]. Such trainings, however, are not widely available in Ukraine.

In this paper, we describe a regional on-site training program designed to help HCPs provide expanded VCT at urban and rural clinical sites in the Odessa region. The trainings took place between 2008 and 2010, and we evaluated their effectiveness in terms of changes in basic HIV and VCT knowledge, assessed before and after training. We also examined differences in knowledge gain across medical specialty and geographic location (urban vs rural settings).

Methods

Setting and Target Population

The trainings took place in the Odessa region of Ukraine, which consists of 26 rural subregions and seven cities, including the capital city of the region, Odessa city. There is a central clinic in every subregion and at least one such clinic in every city. These clinics provide both primary and specialty health care. In accordance with Ukrainian national guidelines [5], these clinics are responsible for providing

VCT to the populations they serve. With a limited budget for the project, clinics were selected to receive training in consultation with the Odessa regional AIDS Center, the facility that is responsible for providing medical care for HIV-infected individuals in the region and that helped identify subregions and cities with the highest HIV prevalence and morbidity. Participating training sites were municipal clinics in the cities of Bilhorod-Dnistrovskiy, Illichivsk, Izmail, Yuzhne, and Odessa city, as well as central clinics in 15 rural subregions. Because rural clinicians often have limited ability to travel for off-site educational programs, these trainings were delivered on-site at the clinics where they worked.

The training program was developed to target HCPs who are responsible for providing HIV testing in accordance with national guidelines. After selecting health care facilities, trainers consulted with the clinic managers to ensure inclusion of the most appropriate personnel. Only clinicians (providers who were licensed to deliver clinical services to patients) took part in the trainings, in accordance with the VCT Protocol, which states that only clinicians from governmental clinics are eligible to provide VCT services for patients, including at outreach mobile testing sites [5].

The Training

The training program was developed by a local nongovernmental organization, Future without AIDS Charity Foundation (FWA), in collaboration with the US Southeast AIDS Training and Education Center (SEATEC), based at Emory University (Atlanta, Georgia). Using the SEATEC materials as a starting point, FWA and SEATEC worked collaboratively to adapt the curriculum and evaluation materials to the Ukrainian clinical context and to conform to national guidelines. The curriculum covered HIV/AIDS epidemiology, clinical manifestations of HIV, HIV testing guidelines, HIV laboratory procedures and diagnostics, testing with rapid tests, HIV counseling techniques, HIV legal issues, HIV treatment guidelines, and stigma reduction. Because clinicians themselves do not perform HIV testing at Ukrainian health centers (tests are performed at the clinics' labs), special focus was on providing training in counseling and linking to care for patients who test HIV positive.

Two months prior to the on-site trainings, faculty from FWA and SEATEC performed a 4-day training of trainers (ToT) in Odessa, where four Ukrainian HIV clinicians and four psychologists received instruction and were trained in how to use the curriculum to educate HCPs on basic HIV knowledge and the performance of VCT in clinical settings. During ToT, clinicians and psychologists worked in dyads to practice HIV counseling procedures, switching roles so that each trainee could gain wider experience. The

intent was to leverage and expand the existing knowledge base among trainees through peer learning. The clinicians were able to apply their own knowledge about the clinical aspects of HIV/AIDS, while the psychologists were primarily responsible for leading counseling sessions.

Once the local trainers had been trained, they delivered 2-day on-site trainings in the selected clinics. The program included lectures/presentations as well as group discussions and skill-building sessions on pre- and post-test counseling (e.g., role plays, case studies), enabling participants to practice skills in counseling different populations. Participants also received topic-specific handouts, the national VCT Protocol [5], and a manual of procedures for delivering HIV testing [13].

Evaluation

HCPs completed a brief knowledge assessment prior to and immediately following the 2-day training to evaluate its effectiveness. The assessment was developed by a group of expert advisers in Ukraine and piloted in the target population among providers who were not practicing at the clinics where the training was to be rolled out. The pilot assessment was conducted by the project investigators together with trainers who attended the ToT. The instrument was derived from a set of questions used extensively by SEATEC and was tailored to the cultural context; thus it had high face validity. The assessment measured general HIV knowledge (five questions) and knowledge specific to HIV counseling and testing in Ukraine (ten questions; see Table 1 for the specific wording of the items and the correct answers.) Respondents were also asked to report their clinical specialty and number of years in medical practice. Clinician trainees did not receive an incentive for completing the assessments.

Statistical Analysis

Trainee responses to assessment items were entered on-site into a spreadsheet program and transferred to STATA/MP 11.1 (College Station, Texas) for analysis. We included in the analysis only those clinician trainees who were present for the entire training and who completed both the pre- and post-training assessments. Questions related to general HIV knowledge and VCT were summed separately and rescaled to represent “percent correct out of 100.”

To assess whether changes in knowledge were associated with clinician characteristics, we grouped providers into two categories: representatives of HIV-related specialties (infectious diseases, dermatology/sexually transmitted infections, substance abuse, and tuberculosis), and non-HIV-related specialists (all other participants, including surgeons, gynecologists, laboratory assistants, psychologists, and

general practitioners). These categories were defined in accordance with Ukrainian health care regulations [14], which state that HCPs of the specialties indicated as “HIV-related” are responsible for the care of populations at risk for HIV transmission, and are most likely to see HIV-infected patients. We also compared training effectiveness for HCPs from urban and rural settings.

We present an overall description of the sample in terms of self-reported clinical specialty, years in practice, and urban or rural work setting. We assessed independent associations using *t* tests and Chi square tests (results not shown) to identify candidate characteristics for inclusion in multivariable analyses. We used linear regression to estimate multivariable relationships among these characteristics and the two types of HIV knowledge: general HIV and HIV VCT.

Results

Trainee Demographics

During the years 2008, 2009, and 2010, 24 trainings were delivered in the Odessa region. 443 HCPs participated in the 2-day trainings, and of these, 362 (81.7 %) were present for the entire training and provided responses to both the pre- and post-training assessments. The demographic characteristics of the study participants are shown in Table 2. Across the 24 trainings, there were 202 HCPs working in HIV-related specialties (55.8 %) and 160 non-HIV-related specialists (44.2 %). Most of the HIV specialists were infectious disease specialists. Most of the non-HIV specialists were gynecologists and general practitioners. The majority ($n = 227$, 62.7 %) worked in rural areas of the Odessa region, and 135 (37.3 %) were from urban areas, including Odessa City. The mean working experience was 18.5 years, with a range from 1 to 40 years.

Change in HIV Knowledge

General HIV knowledge differences before and after training, by type of clinician trainee, are shown in Table 3. Training improved knowledge among all HCPs by an average of 11.2 percentage points (Wald Chi square 114.5, $P < .0001$) to an average of 93.7 % correct. The greatest gains were achieved among rural nonspecialists. At baseline, general HIV knowledge was significantly lower among these clinicians (77.6 % correct, compared with 84.1 % among urban HIV specialists; *t* statistic -2.6 , $P = .01$), but the training brought their knowledge scores up to a level equivalent with all other types of providers. The training reduced the knowledge gap between the nonspecialists and specialists and between those working in

Table 1 Items used to assess general HIV and VCT knowledge before and after training

Do you agree with the following statement? (correct answer)	Percent correct	
	Pre-training	Post-training
General HIV knowledge		
1. HIV infection can only be diagnosed with a laboratory test (yes)	93	98
2. HIV infection can be diagnosed when a person's health is deteriorating or because of his/her risky behavior (no)	93	98
3. Consistent and correct condom use reliably protects against sexual HIV transmission (yes)	69	88
4. HIV can be transmitted from an HIV-infected mother to her baby during delivery (yes)	85	93
5. Timely administration of antiretroviral therapy can completely rid a person of the HIV virus (no)	74	91
HIV VCT knowledge		
6. Implementation of voluntary counseling and testing in Ukraine will help to reduce the number of new HIV infections (yes)	83	96
7. HIV testing is mandatory for pregnant women, and if she refuses to get tested, a woman can lose access to other medical services (no)	71	92
8. The main purpose of pretest counseling is to help an individual make a decision to take an HIV testing (yes)	94	99
9. The HIV test counselor has a responsibility to assess an individual patient's risks for infection with HIV and to help develop a plan of risk reduction (yes)	84	98
10. The HIV test counselor should discuss with the client the advantages and challenges when he/she becomes aware of his/her HIV status (yes)	85	97
11. If a patient refuses pretest counseling, the health care provider has the right to refuse a patient a test (no)	69	91
12. When a couple presents for pretest counseling, the HIV test counselor is required to offer each person individual counseling before testing for HIV (yes)	83	93
13. Providing pretest HIV testing information to a group ensures the same level of confidentiality as individual counseling does (no)	36	66
14. Rapid HIV test results can only be determined by a trained and certified lab technician or clinician (yes)	88	94
15. A clinician may make a diagnosis of HIV infection based on a single positive HIV rapid test result (no)	83	90

urban and rural settings. Controlling for years of work experience, trainees who were rural nonspecialists increased their general HIV knowledge by 6.5 percentage points more than did urban HIV specialists (t statistic 2.4, $P = .02$).

Change in Knowledge Related to HIV Voluntary Counseling and Testing

Scores for HIV testing-related items, by type of clinician trainee, are shown in Table 4. Overall, average VCT knowledge scores increase from 77.7 % at baseline to 91.5 % post-training. Compared with all other types of clinicians, urban HIV specialists scored significantly higher in the baseline assessment (82.8 %), regardless of their working experience. After the training, VCT knowledge had improved by an average of 13.7 percentage points across all groups (Wald Chi square 276.9, $P < .0001$). At

the post-training assessment, VCT knowledge remained higher among HIV specialists, with rural nonspecialists continuing to score significantly lower on the knowledge scale (87.6 % compared with 93.8 % for urban HIV specialists, t statistic -5.0 , $P < .0001$). Even so, rural HIV specialists had the largest change in knowledge, gaining an average of 5.2 percentage points over their urban-HIV-specialist peers (t statistic 2.6, $P = .01$).

Discussion

Although participation in the 2-day training increased HIV knowledge among all clinicians, regardless of their specialty, geography, or work experience, the non-HIV specialists in rural areas gained the most. These results support other findings that effective training can significantly improve the ability and readiness of clinicians to provide

Table 2 HIV VCT training participants profile (2008–2010, Odessa Region, Ukraine)

	Frequency of characteristic	
	N	%
Overall	362	100
Geography and specialty		
Urban (5 sites)	135	37.3
HIV-related specialty	82	22.7
Non-HIV-related specialty	53	14.6
Rural (15 sites)	227	62.7
HIV-related specialty	120	33.1
Non-HIV-related specialty	107	29.6
Professional specialty		
HIV-related (n = 202)		
Infection diseases specialist	91	25.14
Dermatologist/STI specialist	49	13.54
Substance-abuse specialist	37	10.22
TB specialist	25	6.91
Non-HIV-related (n = 160)		
Gynecologist	42	11.6
Laboratory assistant	29	8.01
Psychologist	29	8.01
Surgeon	26	7.18
General practitioner	34	9.39
Working experience (years)	Mean	SD
Min 1, max 41	18.52	8.24

VCT services for their patients [15]. Based on these results, the training program may have potential to improve HIV testing knowledge and practices in other regions in Ukraine, particularly among those working in primary care and in rural areas. These results support other studies demonstrating the effectiveness of on-site, applied training techniques to help practicing clinicians gain new knowledge and skills [16].

Since the period when these trainings were delivered, the proportion of new HIV cases reported in rural clinics has increased [1, 2], particularly in the Odessa region [17]. For this reason, training rural clinicians to provide VCT is more important than ever. On-site training in Ukraine is especially important for rural clinicians who have limited means to travel for off-site educational events. Every physician in Ukraine is supposed to receive mandatory specialty-related continuing medical education every five years. Besides these required educational events, however, HCPs outside urban areas do not have consistent access to professional training on HIV-related issues. On-site training, such as the program delivered in this project, can fill an important gap. In the baseline knowledge scores, it appears that rural non-HIV specialists have suboptimal access to

accurate HIV information and therefore need more training in basic HIV issues. But despite their lower baseline knowledge, these trainees were able to increase knowledge so that their scores were comparable with those of their urban-specialist colleagues. The training program was effective for these novice HIV HCPs, and it also worked for the more advanced learners.

While improved knowledge does not necessarily translate into improved VCT practices, the gain among HCPs in the Odessa region is encouraging. Other studies have shown that change in knowledge and skills, measured by pre- and post-testing, is predictive of behavior change in HIV clinical training of health care professionals [12, 18–21]. Nevertheless, even if knowledge change leads to behavior change, it is not necessarily linked to attitude change [18, 22–24], which is a limitation of this project. Because we did not evaluate clinician attitudes, we are unable to assess whether the training led to increased *willingness* to treat HIV-infected patients. In future versions of the training, we hope to include additional material to help address stigma and discrimination, which persist in Ukraine today.

This evaluation of our training has limitations. We were not able to include a comparison group, which limits the generalizability of the results, as does the fact that training sites were not chosen at random. Nevertheless, because the trainings were delivered in real-world settings and the results were consistent across clinics, we have some confidence that the results apply across settings as well. To minimize the possibility that the quizzes might “cue” the trainees, HCPs were never given a copy of the correct answers. But there is no guarantee that they did not attend to some topics more than others because they knew they would be tested on them. We did not conduct follow-up assessments to investigate whether the clinicians’ new knowledge and skills translated into changes in their everyday practices. For example, we did not assess the impact that clinic environments have on the ability to apply new knowledge, nor did we assess the durability of the results, which might be important in determining the need for and frequency of refresher training courses. All these questions should be considered when planning future training interventions for HCPs.

Despite these limitations and because of the potential great gains from expanded VCT, the training program implemented in the Odessa region can serve as a model for others across Ukraine. Training holds promise for improving the capacity of rural clinicians, in particular, to provide VCT services for patients and to increase access for HIV-infected patients to care and treatment. In addition, lessons from effective trainings could be useful when adhering to the newly issued guidelines in Ukraine for provider-initiated counseling and testing [25].

Table 3 General HIV knowledge scores, by specialty, and geography

	Pre-training					Post-training					Change in score				
	Mean	SD	Coefficient ^a	t statistic	P > t	Mean	SD	Coefficient ^a	t statistic	P > t	Mean	SD	Coefficient ^a	t statistic	P > t
Overall	82.5	17.4	–	–	–	93.7	10.3	–	–	–	11.2	18.9	–	–	–
Urban HIV-related specialist	84.1	17.4	Reference	–	–	93.2	10.5	Reference	–	–	9.0	16.7	Reference	–	–
Rural HIV-related specialist	85.2	15.7	1.1	0.5	0.64	95.7	9.8	2.7	1.9	0.1	10.5	17.0	1.6	0.6	0.55
Urban nonspecialist	83.8	16.2	–0.5	–0.2	0.87	91.3	11.4	–2.1	–1.2	0.2	7.5	17.2	–1.6	–0.5	0.63
Rural nonspecialist	77.6	19.0	–6.6	–2.6	0.01	93.1	9.9	–0.1	–0.1	1.0	15.5	22.4	6.5	2.4	0.02

Bold type indicates statistical significance <0.05

^a Coefficient from linear regression controlling for years in medical practice

Table 4 HIV testing-related knowledge scores, by specialty, and geographic location

	Pre-training					Post-training					Change in score				
	Mean	SD	Coefficient ^a	t statistic	P > t	Mean	SD	Coefficient ^a	t statistic	P > t	Mean	SD	Coefficient ^a	t statistic	P > t
Overall	77.7	13.7	–	–	–	91.5	9.1	–	–	–	13.7	14.0	–	–	–
Urban HIV-related specialist	82.8	12.4	Reference	–	–	93.8	8.6	Reference	–	–	11.0	11.6	Reference	–	–
Rural HIV-related specialist	77.3	13.8	–5.2	–2.7	0.01	93.4	7.4	0.0	0.0	1.00	16.2	14.0	5.2	2.6	0.01
Urban nonspecialist	77.7	14.5	–5.4	–2.3	0.02	91.3	10.2	–2.8	–1.9	0.06	13.6	13.2	2.6	1.1	0.29
Rural nonspecialist	74.4	13.0	–8.4	–4.3	0.00	87.6	9.5	–6.2	–5.0	0.00	13.2	15.6	2.2	1.1	0.28

Bold type indicates statistical significance <0.05

^a Coefficient from linear regression controlling for years in medical practice

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