Patient and Clinician Ethical Perspectives on the 2006 Centers for Disease Control and Prevention HIV Testing Methods

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ABSTRACT

Objectives. CDC 2006 recommendations for new HIV testing methods in U.S. health-care settings (opt-out approach, general medical consent, and optional prevention counseling) have been the subject of a public ethical debate. Ethical concerns might limit their implementation and affect expanded HIV screening efforts. We compared clinicians' and patients' perspectives on the ethical concerns raised about, justifications provided in support of, and preferences for the 2006 CDC-recommended HIV testing methods for the U.S. health-care setting, in contrast with the 2001 CDC-recommended HIV testing methods (opt-in approach, specific written consent, and mandatory prevention counseling).

Methods. We conducted a non-inferiority trial and survey of 249 clinicians and random samples of 1,013 of their patients at three emergency departments and three ambulatory care clinics at university-affiliated hospitals in Rhode Island from June to December 2007.

Results. Clinicians found the 2006 CDC HIV testing methods to be more ethically concerning than the 2001 testing methods (i.e., ethically inferior), while patients had few ethical concerns. In regard to ethical justifications cited for the 2006 CDC HIV testing methods, clinicians were more supportive of the ethical justifications cited for using an opt-out approach and general medical consent, while patients were more supportive of the justifications for optional HIV prevention counseling. Clinicians showed a relatively greater preference for the opt-out approach and use of general medical consent, while patients had a relatively greater preference for optional HIV prevention counseling.

Conclusions. Clinicians and their patients hold divergent ethical perspectives on CDC's 2006 HIV testing methods. The results indicate an opportunity to review not only these but also future HIV testing recommendations, as well as how they are presented for implementation.

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In September 2006, the Centers for Disease Control and Prevention (CDC) released revised recommendations for human immunodeficiency virus (HIV) testing in U.S. clinical settings.¹ The 2006 recommendations, as compared with those from 2001,² contained three substantial changes in HIV testing methods, which elicited considerable ethical debate. For these changes, CDC recommended the use of (1) an opt-out instead of an opt-in approach to initiating HIV testing, (2) general medical consent instead of specific signed consent for HIV testing, and (3) optional rather than mandatory prevention counseling at the time of HIV testing. CDC believed that use of these new methods was ethically justified because their implementation would ultimately lead to a reduction in HIV transmission by increasing HIV testing and facilitating linkage to care for those who are HIV infected.¹ However, some leaders in HIV care and advocacy expressed ethical concerns about these new HIV testing methods.^{3–15} These concerns included doubts that patients would be duly informed about being tested, might be tested without consent, and might lose opportunities for counseling to reduce their risk of acquiring an HIV infection.

It is unknown to what extent clinicians and their patients agree with the ethical concerns voiced about CDC's 2006 HIV testing methods or believe that their implementation is ultimately morally justified. Concerns about the testing methods and skepticism about the justifications offered in support of them could adversely affect the success of increasing HIV testing in the United States. Furthermore, if patients and clinicians differ in their beliefs about the moral acceptability of the 2006 testing methods, there could be conflicts that might undermine the clinician-patient trust, which could reduce patients' willingness to be tested for HIV. Although minor concerns about the testing methods and differences in perspectives between patients and clinicians might be overcome by education, time, and experience, major concerns and conflicts might indicate the need for further changes in HIV testing methods. Concerns about prior CDC HIV testing recommendations from the early years of the epidemic led to substantial changes in testing methods.^{2,16–18} Understanding the moral acceptability of CDC's 2006 recommendations for health-care settings is particularly timely given CDC's plan to release new recommendations for HIV testing in nonclinical settings.¹⁹

The primary objectives of this study were to investigate if (1) clinicians and their patients believe that the three CDC 2006 HIV testing methods are ethically concerning and (2) the testing methods can accomplish the justifications cited in support of their imple-

mentation. We were particularly interested in finding out if patients and their clinicians found the 2006 HIV testing methods at least as morally acceptable as (i.e., not ethically inferior to) the HIV testing methods CDC previously recommended in 2001. Further, we aimed to determine to what extent clinicians and patients differed on their perspectives about and their preferences for the 2006 vs. 2001 CDC-recommended HIV testing methods.

METHODS

Study setting

This study enrolled patients and their clinicians from June to December 2007 at six study sites located within three academic hospitals (Memorial Hospital of Rhode Island, The Miriam Hospital, and Rhode Island Hospital) affiliated with the Alpert Medical School of Brown University. The three hospitals are engaged in teaching programs for medical students, residents, and fellows. The six study sites at the three hospitals were three emergency departments (EDs), two internal medicine clinics, and one family medicine clinic. HIV prevalence in Rhode Island's general population is approximately 0.3%, which is similar to the national average.²⁰ Our prior research identified an HIV prevalence of <1% among 18- to 64-year-old Rhode Island Hospital ED patients.²¹ HIV prevalence at the other study sites has not been estimated.

Study population

All clinicians (i.e., attending, fellow, and resident physicians; nurse practitioners; and physician assistants) who worked at the EDs and clinics at the six study sites were invited to participate. A random sample of 18- to 64-year-old English- or Spanish-speaking patients at the study sites were assessed for study eligibility, and those who were eligible were invited to participate. Patients were excluded if they were critically ill or injured, inmates or on home confinement, known to be HIV infected, participants in an HIV vaccine study, or unable to provide consent or participate in the study because of an acute psychiatric condition or physical or mental impairment.

For the clinics, we randomly selected dates and times to conduct the study. We approached all patients in the clinic on those random dates and times and assessed their eligibility for the study. For the EDs, we randomly selected dates and times to collect data for the study based upon the typical patterns of patient registration to these EDs, using sampling methods performed in our previous studies.^{22,23} Accordingly, 40% of the eight-hour shifts for data collection were from 8 a.m.

to 4 p.m., 50% were from 4 p.m. to 12 a.m., and 10% were from 12 a.m. to 8 a.m. Due to the much larger number of patients available to approach in the ED vs. clinic settings, we also randomly selected patients present in the ED during those shifts to approach for an assessment of their study eligibility and possible enrollment.

Development of study instruments

We developed the “Ethical Perspectives on the 2006 CDC HIV Testing Recommendations Questionnaire” specifically for this study (available from: URL: http://www.research.brown.edu/pdf/Ethical_Perspectives_on_the_2006_CDC_HIV_Testing_Recommendations_Questionnaire.doc). The questionnaire was developed by our multidisciplinary research team of emergency medicine, family medicine, internal medicine, and HIV specialist clinicians; a philosopher-bioethicist; a survey methodologist; an epidemiologist; and a biostatistician. From our review of the 2006 CDC recommendations, research conducted, and commentaries published in the lay and medical literature on this topic,²⁴ we identified recurring ethical concerns about and justifications for the three 2006 HIV testing methods (opt-out approach, general medical consent, and optional prevention counseling). We created the questionnaire based upon these concerns and justifications.

We conducted cognitive-based assessments of the English- and Spanish-language versions of the questionnaire to assess and revise the questions, instructions, and accompanying images in an iterative fashion using techniques recommended by other investigators.^{25–28} For these assessments, we enrolled five female and five male attending physicians and residents at a hospital affiliated with our medical school, but not a part of the study, and five English- and five Spanish-speaking 18- to 64-year-old patients at each of the six study sites. We enrolled an equal number of patients based upon age group (18–33, 34–49, and 50–64 years of age), gender, race (white or nonwhite), and years of formal education (<12 years, 12 years, or >12 years). Participants in the cognitive-based assessments received a \$15 gift card to a local pharmacy.

Study instruments description and instrument administration

The questionnaire consists of three parts that correspond to concerns (Part I), justifications (Part II), and preferences (Part III). For Part I, participants were randomly assigned to view a fictional scenario in which a clinician employed either the 2006 or the 2001 CDC-recommended testing methods for each of the three typical phases of the HIV testing process:

(1) initiating HIV testing (opt-out [2006] vs. opt-in [2001] approach); (2) obtaining consent for HIV testing (general medical [2006] vs. specific signed [2001] consent); and (3) offering prevention counseling (optional [2006] vs. mandatory [2001]). Participants were asked questions about the scenario they viewed. The questions measured the extent to which the participants agreed with the moral concerns raised in the lay and medical literature about the three 2006 CDC testing methods. Participants were randomly assigned to view either a 2006 or a 2001 scenario for each phase of the testing process, so that they would consider each phase of the testing process separately and not believe that the scenarios presented from each phase were linked. Accordingly, because there were two methods to view for three phases, there were eight possible randomization patterns. For purposes of analysis, participants were grouped into two study arms (2006 or 2001 testing method) for each of the three phases. Block randomization was used for the assignments for Part I by study site.

In Part II, participants were shown both the 2006 and 2001 HIV testing method fictional scenarios from Part I simultaneously. They were asked to compare the scenarios in accompanying questions that measured the extent to which they agreed with the ethical justifications for the 2006 CDC testing methods. In Part III, participants again were shown both scenarios from Part I simultaneously and asked to indicate which HIV testing method they preferred for each phase of the HIV testing process. Participants were also asked about their demographic characteristics and HIV testing history using questions developed for previous studies.^{23,29} Responses to all questionnaires were anonymous.

The scenarios and questions were purposely designed to enable those without prior knowledge or experience with either the 2006 or the 2001 CDC HIV testing methods to provide their perspectives. Participants viewed the scenarios as if they were an observer and not someone administering or receiving the testing method. They were not informed which scenario represented either the 2006 or the 2001 HIV testing methods, and which methods were currently recommended by CDC. Participants were not informed of any controversy about or justifications for the HIV testing methods being displayed.

Patients completed the study in the waiting and treatment rooms of the ambulatory care clinics and EDs. Patients were administered the questionnaire using an audio computer-assisted self-interviewer (ACASI) system by which they viewed the scenarios and listened to professional audio voice recordings of the study questions and instructions. Patients were not offered an

incentive for participating but were invited to undergo free rapid HIV testing after completing the study. Clinicians received e-mail, mail, and verbal notices and reminders about the study and were given a \$5 gift card to a local store as an incentive for participating. Clinicians who completed the study were entered into a lottery to win a prize worth \$125. Most participants completed the survey within 10–15 minutes.

Data analysis

Summary statistics (e.g., means, proportions, and 95% confidence intervals [CIs]) were computed for study eligibility assessment, enrollment, and participation, and for responses to the study instruments. Missing responses to the ethical perspectives questionnaire were imputed using the demographic characteristics as predictor variables per recommended multivariable regression techniques.³⁰ We compared demographic characteristics and HIV testing history of patients vs. clinicians using Wilcoxon signed-rank tests for continuous variables and Pearson's Chi-square tests for categorical variables. Differences at the $\alpha=0.05$ level were considered significant for all analyses.

For Part I of the study, we examined if participants believed that the 2006 CDC HIV testing methods had the same level of ethical concerns as the 2001 CDC HIV testing methods (i.e., considered the 2006 CDC HIV testing methods to be similar [i.e., not inferior] to the 2001 testing methods in regard to ethical concerns). We used a non-inferiority approach to test whether or not differences in the level of ethical concerns between participants assigned to the two study arms (2006 vs. 2001 testing methods) by testing phase (opt-out vs. opt-in approach, general medical vs. specific signed consent, optional vs. mandatory HIV prevention counseling) were small. For non-inferiority studies, a 10% reduction in the lower limit of the mean of the values measured for the reference study arm (in this case, the 2001 HIV testing methods) is typically used as the criterion for non-inferiority.³¹ Accordingly, we established a uniform standard for establishing non-inferiority for each concern evaluated in Part I of the questionnaire. Because the scale measuring the level of concerns in Part I ranged from 0 (no concern) to 4 (high level of concern) points, we established that a <10% difference between study arms (0.4 points) would be the non-inferiority criterion. We calculated the difference in means to the responses to the concerns tested in Part I between study arms, along with corresponding 95% CIs. We estimated a priori that at least 332 participants in each study arm would be required ($\alpha=0.05$, $\beta=0.01$) to determine non-inferiority in Part I, which was the primary aim of the study.

For Part II of the study, we calculated the mean and corresponding 95% CI for each response to the questions about justifications for implementing the 2006 vs. 2001 HIV testing methods. The scale for these responses ranged from -2 (greater support for the 2006 HIV testing methods) to +2 (greater support for the 2001 HIV testing methods). If the 95% CI included zero, then both the 2001 and 2006 HIV testing methods were considered to be equally justified. For Part III of the study, we calculated the mean and corresponding 95% CI for the difference in proportions for those who preferred the 2001 vs. 2006 HIV testing methods.

We performed multivariable logistic regression analyses to compare the magnitude of differences in ethical concerns between clinicians and patients about the 2006 vs. 2001 HIV testing methods. We created similar models to compare the extent to which clinicians and patients supported the moral justifications offered for the 2006 HIV testing methods, and to measure the extent to which patients and clinicians favored the 2001 HIV testing methods. Models were adjusted for participant age, gender, race/ethnicity, HIV testing history, and study arm (for Part I only). The interaction (i.e., synergy or effect modification) between participant type (clinician vs. patient) and randomized group (2006 vs. 2001 HIV testing methods) was the primary outcome of interest for the ethical concerns models. For all models, we estimated odds ratios (ORs) with corresponding 95% CIs.

RESULTS

Participant enrollment and characteristics

The final sample of 1,262 participants included 1,013 (80.3%) patients and 249 (19.7%) clinicians. Figure 1 depicts the flow of participant eligibility assessment, recruitment, enrollment, and study completion. Few patients (2.9%) declined participation because of the subject of the study. As compared with clinicians, patients were older, more ethnically/racially diverse, and more likely to have been tested for HIV through blood donation, screening, or diagnostic testing (Table).

Ethical concerns about the 2006 CDC HIV testing methods

Clinicians and patients differed on their perspectives about whether the 2006 CDC HIV testing methods were as morally acceptable as the 2001 testing methods (Figure 2). Among clinicians, when each ethical concern was considered individually, the 2006 methods were considered to be less morally acceptable (i.e., inferior) than the 2001 methods for eight of the nine

Figure 1. Eligibility assessment, enrollment, and study completion diagram for a randomized controlled trial evaluating ethical concerns about the 2006 vs. 2001 CDC HIV testing methods at three hospitals in Rhode Island, June–December 2007

^aReasons for ineligibility do not total 100% because multiple reasons for ineligibility were possible.

^bParticipants completed a portion of the survey; missing responses were imputed.

CDC = Centers for Disease Control and Prevention

HIV = human immunodeficiency virus

Table. Comparison of demographic characteristics and HIV testing history of patients vs. clinicians who participated in a randomized controlled trial at three hospitals in Rhode Island, June–December 2007

<i>Variables</i>	<i>Patients (n=1,013) Percent</i>	<i>Clinicians (n=249) Percent</i>	<i>P-value^{a,b}</i>
Demographic characteristics			
Median age (in years) (interquartile range)	38 (28–48)	35 (29–39)	0.001
Gender			0.163
Female ^c	55.5	50.6	
Male	44.5	49.4	
Race/ethnicity			0.001
Non-Hispanic white	46.9	75.9	
Hispanic white	19.9	3.2	
Non-Hispanic black/African American	19.8	1.2	
Hispanic black	10.2	0.0	
Asian/Middle Eastern	1.1	14.9	
American Indian/Alaska Native	1.7	0.0	
Other race/ethnicity	0.4	4.8	
HIV testing history			
Ever tested for HIV (not part of a blood donation)			0.001
Previously tested for HIV	70.2	66.3	
Never tested for HIV	29.8	32.1	
Don't know	0.0	1.6	
Time elapsed since last HIV test			0.001
>5 years	21.2	31.5	
>2 years but ≤5 years	16.9	25.5	
>1 year but ≤2 years	19.7	10.9	
>6 months but ≤1 year	23.5	13.9	
<6 months	18.7	17.6	
Don't know	0.0	0.6	
Ever donated blood			0.001
Yes	30.4	64.3	
No	69.6	35.7	
Time elapsed since last blood donation			0.006
>5 years	53.5	52.5	
>2 years but ≤5 years	15.2	28.1	
>1 year but ≤2 years	10.9	6.2	
>6 months but ≤1 year	8.9	5.6	
<6 months	11.6	7.5	
History of any HIV test			0.001
Tested, but not part of a blood donation	48.6	21.7	
Tested as part of a blood donation	8.8	19.7	
Tested and donated blood	21.6	44.6	
No known HIV test	21.0	13.7	
Don't know	0.0	0.4	

^aWilcoxon sign-rank testing for continuous variables and Pearson's Chi-square testing for categorical variables^bP-values reflect comparison of characteristics of patients vs. clinicians.^cIncludes one male-to-female transgender who self-identified as female

HIV = human immunodeficiency virus

ethical concerns. Among patients, the 2006 methods were considered to be inferior for three of the nine ethical concerns. As shown by the results of the multivariable regression analysis, the effect between participant group (clinicians vs. patients) and study arm assignment (2006 vs. 2001 methods) was synergistic

or multiplicative, and not just additive (i.e., exhibited effect measure modification). In other words, clinicians viewing the 2006 CDC HIV testing methods generally had greater concerns than clinicians viewing the 2001 testing methods as well as patients in both study arms. When the three concerns for each HIV testing method

Figure 2. Ethical concerns about the 2006 vs. 2001 CDC HIV testing methods by patients and clinicians in a randomized controlled trial at three hospitals in Rhode Island, June–December 2007^a

^aThe circles (O) and crosses (X) represent the point estimates of the difference in concerns in concerns between study arm assignment (2006 vs. 2001 CDC HIV testing methods) for patients and clinicians, respectively, with corresponding 95% CIs. The thick bars are the aggregated concerns for each of the three HIV testing methods.

^bThe AORs represent the interaction between study arm assignment (2006 vs. 2001 HIV testing strategies) and participant type (clinicians vs. patients). Higher AORs indicate a greater concern by clinicians about the 2006 HIV testing strategies. Odds ratios were adjusted for age, gender, race/ethnicity, study arm assignment, and history of ever having been tested for HIV.

^cThe scale represents the magnitude of the difference in ethical concerns for the 2006 vs. 2001 CDC HIV testing methods.

CDC = Centers for Disease Control and Prevention

HIV = human immunodeficiency virus

AOR = adjusted odds ratio

CI = confidence interval

were aggregated, clinicians had greater concerns about the opt-out approach than they did about the use of general medical consent and optional HIV prevention counseling, whereas patients considered the 2006 methods to be as morally acceptable as the 2001 methods.

Ethical justifications for the 2006 CDC HIV testing methods

Clinicians indicated much greater support for the justifications made for implementing two of the 2006 HIV testing methods (opt-out approach and general medical consent) than patients (Figure 3). Patients were more supportive than clinicians of the justifications made for using optional rather than mandatory HIV prevention counseling. Clinicians believed that the opt-out approach would lead to a greater increase in people undergoing HIV testing and destigmatizing HIV testing than the other two testing methods. Patients regarded the three testing methods as having a similar effect on increasing HIV testing, but they viewed the opt-out approach as more likely to destigmatize HIV testing.

Preferences for the 2006 or 2001 CDC HIV testing methods

Both patients and clinicians had greater preferences for the 2001 than the 2006 CDC HIV testing methods (Figure 4). Clinicians showed a relatively greater preference for the opt-out approach and use of general medical consent than patients, while patients had a relatively greater preference for optional HIV prevention counseling. Clinician preference was highest for mandatory HIV prevention counseling compared with the other two methods, whereas patient preference was highest for optional HIV prevention counseling.

DISCUSSION

In this study population, patients generally viewed the three 2006 CDC HIV testing methods (opt-out approach, general medical consent, and optional prevention counseling) as being as morally acceptable as the 2001 testing methods (opt-in approach, specific signed consent, and mandatory prevention counseling). In contrast, clinicians generally found the 2006 testing methods to be relatively more ethically concerning than did patients. Yet, their level of concern varied by testing method and was low for most concerns evaluated (e.g., the largest difference was 1.57 on a 0–4 point scale). In fact, although clinicians considered the opt-out approach and use of general medical consent as relatively more ethically troubling than did patients, they were more apt than patients to support the justifications cited in support of the opt-

out approach and use of general medical consent and had a relatively greater preference for these two testing methods. Unlike their clinicians, patients indicated less support for the justifications made for the opt-out approach and use of the general medical consent, and had a relatively greater preference for optional prevention counseling. We did not assess the reasons for the divergent views between clinicians and patients, but the differences might be explained by clinicians' experience in using the 2001 HIV testing methods. Clinicians perhaps also hold more of a public health and health delivery view of HIV testing, while patients have a consumer's view. Alternatively, clinicians might have some knowledge of the debate over the 2006 CDC HIV testing methods in the medical literature. It is unclear if this divergence will decrease or become more pronounced as more clinicians implement and patients experience the 2006 testing methods firsthand.

It is interesting to observe that clinicians appear to have a more conservative perspective than patients regarding the ethical concerns raised about the 2006 recommendations, which bodes poorly for their planned implementation. The results show that CDC still must address ethical concerns about its 2006 methods among clinicians who are being asked to implement them. The study results also indicate that, at least among this sample, patients are not yet persuaded by the ethical justifications offered for the 2006 HIV testing methods. If patients are not convinced about the merits of the recommended methods, and clinicians have ethical concerns about them, then the hope for their implementation might not be fully realized. As a consequence, the subsequent increase in HIV testing with resultant increase in linkage to care and reduction in HIV transmission might not occur. If clinicians do not think the methods are right for patients, despite their beliefs in how they might be justified, they might not employ them, even if patients do not have objections to them.

Limitations

Our study was subject to a number of limitations. First, it did not address the legal or operational challenges to the 2006 CDC recommendations and did not determine if the 2006 CDC HIV testing methods are morally sound or troublesome. Second, the study was conducted in a state that had not yet enacted the 2006 CDC HIV testing recommendations, so experience with the 2006 HIV testing methods was likely limited. However, it is arguable that this state might be the ideal setting in which to assess the ethical concerns and justifications made for new public health policies. Third, because the study was conducted at academic

Figure 3. Ethical justifications for the 2006 vs. 2001 CDC HIV testing methods by patients and clinicians in a randomized controlled trial at three hospitals in Rhode Island, June–December 2007^a

^aThe circles (O) and crosses (X) represent the point estimates of the level of support for the ethical justifications by patients and clinicians, respectively, with corresponding 95% CIs. The thick bars are the aggregated concerns for each of the three HIV testing methods.

^bThe AORs represent the greater belief in justifications by age, gender, race/ethnicity, and history of ever having been tested for HIV.

^cThe scale represents the magnitude of the mean level of support participants indicated for ethical justifications for the 2006 vs. the 2001 CDC HIV testing methods (on a scale from -1.5 to 1.0).

CDC = Centers for Disease Control and Prevention

HIV = human immunodeficiency virus

AOR = adjusted odds ratio

CI = confidence interval

Figure 4. Preferences for the 2006 or 2001 CDC HIV testing methods by patients and clinicians in a randomized controlled trial at three hospitals in Rhode Island, June–December 2007^a

^aThe circles (O) and crosses (X) represent the point estimates of the difference in preferences by patients and clinicians, respectively, with corresponding 95% CIs.

^bThe AORs represent greater preferences by patients for the 2001 HIV testing methods. Odds ratios were adjusted for age, gender, race/ethnicity, and history of ever having been tested for HIV.

^cThe scale represents the mean level of support participants indicated for ethical justifications for the 2006 vs. the 2001 CDC HIV testing methods (on a scale from -20 to 80).

CDC = Centers for Disease Control and Prevention

HIV = human immunodeficiency virus

AOR = adjusted odds ratio

CI = confidence interval

institutions, it is unclear how well these findings can be generalized to non-academic institutions, as testing practices, clinician perspectives, patient demographic characteristics, and HIV prevalence might vary between these types of institutions. Furthermore, we cannot assess the viewpoints of the clinicians and patients who declined to participate or were ineligible for the study.

Fourth, it is possible that participants did not understand the ethical concerns or justifications examined in the study, despite cognitive-based assessments demonstrating patient comprehension of the concepts and questions, the ACASI format, and efforts to construct the survey to assess viewpoints rather than prior knowledge about the topics addressed. Regardless, any possible misunderstandings might account for some of the differences between clinicians and patients.

CONCLUSIONS

We believe that there are important differences in perspectives between patients and their clinicians in regard to concerns raised about, justifications offered regarding, and preferences for the 2006 CDC HIV testing methods. These differences should at least be addressed in the form of educational campaigns and clarifications so that testing efforts are not compromised. The results indicate an opportunity to review not only these but also future HIV testing recommendations, as well as how they are presented for implementation.

This study was approved by the Institutional Review Boards of Memorial Hospital of Rhode Island, The Miriam Hospital, and Rhode Island Hospital. Preliminary findings from this research were presented at the 2008 National Summit on HIV Diagnosis, Prevention, and Access to Care in Arlington, Virginia; the 2009 Centers for Disease Control and Prevention National HIV Prevention Conference in Atlanta; and the 2009 Society for Academic Emergency Medicine Annual Meeting in New Orleans.

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