

ABSTRACT

Objectives. Efforts to prevent perinatal transmission of HIV include implementation of prenatal counseling and testing programs. The objective of this study was to assess organizational predictors of HIV counseling and testing.

Methods. Surveillance records were collected on 5900 prenatal patients from 9 hospital and community clinics in Connecticut.

Results. Some organizational factors (e.g., type of clinic, dedicated staff) that enhanced counseling rates had the opposite effect on test acceptance. For instance, patients were more likely to be counseled when counseling was conducted by providers; however, test acceptance was more likely when dedicated counselors were available.

Conclusions. These results provide important information concerning clinic resources needed as HIV counseling and testing services continue to be incorporated into prenatal care. (*Am J Public Health*. 2000;90:1448–1451)

Organizational Predictors of Prenatal HIV Counseling and Testing

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With advances in treatment to prevent transmission of HIV from mothers to infants,¹ numerous changes have occurred in federal, state, and local policies regarding the provision of prenatal HIV counseling and testing services.² Most recently, the Institute of Medicine recommended routine testing within prenatal settings in its federally mandated study of perinatal transmission of HIV.³ In settings where these recommendations are adopted, HIV would be included within the routine battery of prenatal tests, and women would be notified of the test and of their right to refuse.

In response to changes in treatment and guidelines, the number of HIV tests conducted in prenatal clinics has risen dramatically⁴; however, clinics vary in the extent to which they counsel and test women during pregnancy (J.R. Ickovics et al., unpublished data, 2000).^{5,6} In moving toward routine testing of pregnant women, prenatal care programs are now faced with having to make modifications in the context of limited resources.

Although several studies have examined predictors of prenatal HIV testing^{7–10} (also M.I. Fernandez et al., unpublished data, 2000), few have addressed prenatal HIV pretest counseling or acceptance of counseling and testing in conjunction,¹⁰ particularly the clinic-based factors that may affect whether counseling occurs

and whether the test is accepted. These organizational factors are particularly relevant to HIV pretest counseling, which is not necessarily based on individual choice (i.e., it may be more dependent on being approached by a counselor).

We addressed these issues in a large multisite study, using a prospective cohort design to assess rates of HIV counseling and testing and predictors of these processes. The purpose of the analyses presented here was

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to investigate the impact of organizational factors on whether women were counseled about HIV and whether they accepted testing. Specifically, along with several patient demographic factors (e.g., age, race/ethnicity), we examined the effect of organizational factors (e.g., type and size of clinic, patient load, counselor characteristics, length of counseling sessions) on whether women received counseling and accepted testing. These results will provide critical information to facilitate increases in overall HIV testing rates and decreases in perinatal transmission of HIV.

Methods

Study Participants and Procedures

Between March 1996 and December 1997, we documented all prenatal care patients (n=5900) at 9 clinics affiliated with hospitals and community health centers in New Haven, Hartford, Bridgeport, and Stamford, Conn. These cities were chosen because they represent the areas of the state with the highest HIV seroprevalence rates among childbearing women. These sites represent the majority of "nonprivate" prenatal care sites in the study cities. For each prenatal patient, we recorded date of birth, race/ethnicity, date of first prenatal visit, and whether counseling and testing had occurred. This information was either prospectively collected specifically for this study by a trained clinic staff member or compiled from existing clinic databases.

We interviewed one or more key personnel (e.g., clinic director, nurse manager, HIV counselor) at each site to obtain relevant information about the organization. The factors assessed were chosen because they had been shown to be important in predicting the implementation of other policy changes or because they were directly related to the process of HIV counseling and testing.

Measures

Outcome measures. HIV counseling was documented if pretest counseling occurred at any point during pregnancy. HIV test acceptance was also documented among women who had been counseled.

Sociodemographic predictors. Age and race/ethnicity were derived from surveillance records. The sample was divided into adolescents (those 19 years or younger) and adults (those older than 19 years).

Organizational predictors. Depending on the clinic in which she received care, each woman was defined as either a hospital-

based clinic or a community health care center patient.

Patient-provider ratio was defined as the number of prenatal patients at each site relative to the number of full-time-equivalent direct care providers (e.g., certified nurse midwives, physicians). On the basis of a median split of the number of providers per site, women were coded as having received care in a clinic with either a low (fewer than 44 patients per provider) or a high (more than 44 patients per provider) patient-provider ratio.

Women were coded as having received care in prenatal clinics that had dedicated HIV staff or in clinics where counseling and testing were the primary responsibility of prenatal providers (i.e., physicians and certified nurse midwives). Also, women were coded as receiving care in a site that either did or did not attempt to reoffer HIV testing to women who initially refused.

Average length of HIV pretest counseling sessions at each site was estimated by key personnel. On the basis of a median split, women were coded as receiving care at a site with shorter (15 minutes or less) or longer (more than 15 minutes) HIV counseling sessions.

Finally, average length of wait for HIV test blood draw was estimated by key personnel. Again, on the basis of a median split, women were coded as receiving care at a site with shorter (5 minutes or less) or longer (more than 5 minutes) waits.

Statistical Analyses

Factors that influenced the outcomes of interest were assessed in bivariate analyses with χ^2 statistics to test for significant differences. As a means of controlling for other variables in the model, multivariate logistic regression was used to examine predictors of HIV counseling and test acceptance separately. Only variables significant in the bivariate analyses ($P < .05$) were included in the multivariate model.

Results

Background Characteristics

Background characteristics of the sample are presented in Table 1. Overall, the mean age of the prenatal patients in the study was 24 years (range: 12 to 50 years). The majority of women were Black or Latina.

Predictors of HIV Pretest Counseling and Test Acceptance

Overall, 83.9% of women were counseled about HIV testing during their pregnancy. Sites varied greatly in the degree to which they counseled the women in their care; percentages of women who received counseling ranged from

TABLE 1—Background Characteristics of Study Sample: Connecticut, 1996–1997

Characteristic	Sample, No (%)
Age, y	
≤19	1300 (22.0)
>19 ^a	4547 (77.1)
Race	
Latina	2804 (47.5)
Black	1981 (33.6)
White	868 (14.7)
Other	247 (4.2)
Site type	
Hospital	4866 (82.5)
Community health center	1034 (17.5)
Patient-provider ratio	
Low (<44:1)	2604 (44.1)
High (>44:1)	3296 (55.9)
Testing reoffered	
No	3337 (56.6)
Yes ^a	2563 (43.4)
Dedicated counseling and testing staff	
No	2076 (35.2)
Yes	3824 (64.8)
Length of HIV counseling, min	
≤15	3308 (56.1)
>15	2592 (43.9)
Length of wait for blood draw, min	
≤5	3135 (53.1)
>5	2765 (46.9)

Note. Missing data resulted in lower total sample size.

TABLE 2—Bivariate Predictors of HIV Counseling and Test Acceptance: Connecticut, 1996–1997

Characteristic	Counseled About HIV Testing		Accepted an HIV Test	
	%	P	%	P
Age, y				
≤19	86.2		81.5	
>19	83.6	.03	78.3	.001
Latina ethnicity				
Yes	88.8		81.1	
No	80.3	.0001	75.9	.0001
Site type				
Hospital	86.1		78.8	
Community health center	83.5	.04	86.1	.006
Patient–provider ratio				
Low	91.0		81.6	
High	78.2	.0001	74.7	.0001
Testing reoffered				
No	79.4		74.7	
Yes	89.7	.0001	81.8	.0001
Dedicated counseling and testing staff				
No	91.5		74.8	
Yes	79.9	.0001	80.0	.0001
Length of HIV counseling, min				
≤15	92.1		73.7	
>15	73.8	.0001	80.2	.0001
Wait for blood draw, min				
≤5	89.6		80.7	
>5	77.6	.0001	74.6	.0001

48.4% to 94.0% (J.R. Ickovics et al., unpublished data, 2000). Of the women in the study who received HIV counseling, 78.0% accepted a test. These percentages also varied significantly across sites, ranging from 68.4% to 96.3% (J.R. Ickovics et al., unpublished data, 2000).

Bivariate analyses of predictors of HIV counseling are presented in Table 2. Adolescents and Latina women were most likely to receive counseling. Women who received care in hospital-based clinics and sites that had a low patient–provider ratio were more likely to be counseled. Women who received their care in sites where testing was reoffered to women who initially refused, where there was no dedicated counseling and testing staff, and where HIV counseling sessions and waits for blood draws were shorter were significantly more likely to be counseled.

A set of variables similar to those that predicted HIV counseling was significantly related

to test acceptance; however, the directions of a number of these findings were reversed. These results are presented in Table 2. Community health center patients, women who received care in sites that had dedicated staff, and those who received care in sites where counseling sessions were longer were more likely to accept a test.

Multivariate Models of Predictors

Variables that were significant in bivariate analyses were entered into multivariate logistic regression models. The results of these analyses are presented in Table 3. In the final models, 5 variables remained significant predictors of HIV counseling, and 5 variables remained significant predictors of HIV test acceptance.

Adolescents, Latina women, and hospital patients were more likely to be counseled. Women who received care in clinics where there were fewer patients per provider or where coun-

seling was conducted by prenatal care providers were more likely to be counseled about HIV. In contrast, women who received care in a community health care center, women who received longer counseling sessions, and women who were counseled by a dedicated HIV counselor were more likely to accept a test.

Discussion

The results of this study present a dilemma for clinics as they continue to incorporate HIV services into their prenatal programs. Making sure each woman in a clinic learns her HIV status requires at least 2 steps: she must be counseled about HIV testing, and she must accept the test. The results of this study suggest that the factors that facilitate the first process may be detrimental to the second.

Counseling all prenatal patients is extremely difficult, particularly in busier clinics with fewer resources; thus, women who received care in sites less burdened by an overload of patients were more likely to receive pretest counseling. It also appears that 100% counseling coverage cannot be accomplished by a single individual. Clinics where primary providers were responsible for HIV counseling (relative to those with a dedicated HIV counselor) counseled a higher proportion of women, suggesting that when more of the staff in the clinic are available, counseling is more likely to occur. Because of the added expense, sites that have dedicated staff for HIV counseling and testing often employ a single individual or have only part-time coverage. Dedicated, trained HIV counselors probably also spend more time with each patient, making it less likely that they will reach all patients.

These same factors—presence of dedicated staff and amount of time spent in counseling sessions—were those that had the most positive impact on whether women accepted a test in our study. Thus, sites with higher rates of counseling may not actually test a higher percentage of their patients if those patients are less likely to accept testing. In addition, as clinics move toward routine prenatal HIV testing with notification, they may become less focused on counseling all

TABLE 3—Multivariate Predictors of HIV Counseling and Test Acceptance: Connecticut, 1996–1997

Characteristic	Counseled About HIV Testing		Accepted an HIV Test	
	Odds Ratio	95% Confidence Interval	Odds Ratio	95% Confidence Interval
Adolescent	1.29	1.06, 1.56	1.31	1.10, 1.56
Latina ethnicity	1.29	1.09, 1.53	1.55	1.33, 1.80
Hospital patient	1.61	1.28, 2.03	0.53	0.37, 0.64
Low patient–provider ratio	5.67	4.69, 6.85
Dedicated counseling and testing staff	0.20	0.16, 0.25	2.07	1.59, 2.70
Longer HIV counseling session	1.76	1.40, 2.22

women and more concerned with only those women who refuse the test. Women are most likely to accept testing when they receive care in sites that have dedicated, trained staff who can spend more time counseling patients who need it and can reoffer testing to women who initially refuse. Without the resources to provide specialized HIV counseling and testing to those who most need them or at a level high enough to meet the demands of the clinic, pregnant women with HIV may continue to go undiagnosed.

Within the context of other studies on factors influencing test acceptance, this study provides additional evidence regarding the importance of the provider or counselor in the decision to be tested. Royce et al.,⁷ in a study of parturients, found that women who perceived that their clinician strongly recommended testing were significantly more likely to have been tested. Fernandez et al. (unpublished data, 2000) found that, along with knowledge and attitudes about testing and sociodemographic factors, provider recommendations were an important factor in whether women accepted an HIV test during pregnancy. Perceptions of provider or counselor recommendations regarding testing were not assessed in this study; however, these results reinforce the need to educate and train prenatal care providers as an essential component of the HIV counseling and testing process.

With prenatal HIV counseling, testing, and treatment during pregnancy, public health professionals and prenatal care providers have the opportunity to ensure that as few infants as possible are infected with HIV. Also, they can identify undiagnosed women and provide these women and their children with necessary services. □

Contributors

K. A. Ethier designed the study, analyzed the data, and wrote the paper. R. Fox-Tierney assisted with study design and managed data collection. W. C. Nicholas assisted with the design of the organizational assessment and interviewed key personnel within the participating sites. K. M. Salisbury designed the organizational assessment and assisted with interviews with key clinic personnel. J. R. Ickovics designed the study. All authors contributed to the writing of the paper.

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