

## ORIGINAL RESEARCH

# Prenatal HIV Testing in the US-Mexico Border Region, 2005: The Brownsville-Matamoros Sister City Project for Women's Health

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## Abstract

### Introduction

Routine prenatal human immunodeficiency virus (HIV) screening provides a critical opportunity to diagnose HIV infection, begin chronic care, and prevent mother-to-child transmission. However, little is known about the prevalence of prenatal HIV testing in the US-Mexico border region. We explored the correlation between prenatal HIV testing and sociodemographic, health behavior, and health exposure characteristics.

### Methods

The study sample consisted of women who delivered live infants in 2005 in hospitals with more than 100 deliveries per year and resided in Matamoros, Tamaulipas, Mexico ( $n = 489$ ), or Cameron County, Texas ( $n = 458$ ). We examined univariate and bivariate distributions of HIV testing in Matamoros and Cameron County and quantified the difference in odds of HIV testing by using logistic regression.

### Results

The prevalence of prenatal HIV testing varied by place of residence — 57.6% in Matamoros and 94.8% in Cameron County. Women in Cameron County were significantly more likely than those in Matamoros to be tested. Marital status, education, knowledge of methods to prevent HIV transmission (adult-to-adult), discussion of HIV screening with a health care professional during prenatal care, and previous HIV testing were significantly associated with prenatal HIV testing in Matamoros, although only the latter 2 variables were significant in Cameron County.

### Conclusion

Although national policies in both the United States and Mexico recommend prenatal testing for HIV, a greater proportion of women in Cameron County were tested, compared with women in Matamoros. Efforts between Matamoros and Cameron County to improve HIV testing during pregnancy in the border region should consider correlates for testing in each community.

## Introduction

Human immunodeficiency virus (HIV)/AIDS was first thought to be an acute disease (1,2); however, recent developments in treatment have transformed HIV/AIDS into a chronic condition. The projected life expectancy for those infected with HIV, if they remain in optimal HIV care, has increased from less than 7 years in 1993 to more than 20 years today (1), but optimal care cannot begin without a diagnosis. Routinely testing women prenatally for HIV

provides a unique and critical opportunity to diagnose HIV infection, begin chronic care, and prevent mother-to-child transmission.

Perinatal transmission can be prevented in several ways: using antiretroviral drugs for treatment and prophylaxis, avoiding breastfeeding, and electing to have cesarean delivery when appropriate (3-5). Through 2005, 91% of AIDS cases reported among children aged 12 years and younger in the United States were attributed to perinatal transmission (3,4). The number of estimated perinatal HIV infections peaked in 1991 at 1,650 cases and then declined sharply to approximately 142 cases in 2005 (3,6,7). The rate of perinatal transmission is less than 2% with intervention (3,8), compared with 25% to 30% without intervention (3,9).

If a woman is not tested for HIV during her pregnancy, an opportunity for intervention is lost (10). Estimates from the 2004 Pregnancy Risk Assessment Monitoring System (PRAMS) suggest that 87% of women in Texas were tested for HIV during their most recent pregnancy. This figure is higher than the national US estimate of 69% reported in the 2002 National Survey of Family Growth (11). Currently, no estimates are available for prenatal HIV testing in the state of Tamaulipas or for Mexico overall. Very little is known about the prevalence of prenatal HIV testing on the Texas-Tamaulipas border; however, 2.4% of AIDS cases in Mexico are pediatric cases, most of which resulted from transmission from mother to child (12). In 2000, the Mexican National Center for AIDS Prevention (CENSIDA) released an estimate of 0.04% HIV prevalence among pregnant women for 1991 through 1995 (10). A 2003 survey of women tested perinatally in Tijuana found a higher HIV prevalence of 0.65% (12).

Officials from both states, Texas and Tamaulipas, consider the border area to be unique and culturally distinct from the rest of the state or country (13). Border residents share the same cultural identity and are exposed to the same economic conditions, including severe poverty and lack of services (14). The United States and Mexico have engaged in binational collaborations to address the unique public health needs of the border population, including the United States-Mexico Border Health Association and the United States-Mexico Border Health Commission (15,16). The prevalence of prenatal HIV testing in Texas and Tamaulipas does not provide information about prenatal

HIV testing on the border. Consequently, the objectives of this study were to 1) report the prevalence of prenatal HIV testing among women who lived in Cameron County, Texas, and among women who lived in Matamoros, Tamaulipas, Mexico, and 2) examine the association between prenatal HIV testing and sociodemographic factors, health behaviors, and health exposures for the sample as a whole as well as for women in each border community. These analyses focused primarily on individual-level characteristics. Other correlates for prenatal HIV testing include national policy and local practice, which were not directly measured.

## Methods

We used primary data collected from 2002 through 2006 from the Brownsville-Matamoros Sister City Project for Women's Health (BMSCP). Brownsville is in the Texas Rio Grande Valley, and Matamoros is a municipality in the state of Tamaulipas, Mexico (Figure). Data from Brownsville were actually collected in all of Cameron County, which is on the southern tip of Texas, adjacent to Tamaulipas. The city centers of Brownsville and



**Figure.** Map of the US-Mexico Border Region and Cameron County, Texas, and Matamoros, Tamaulipas, Mexico (Red Box). (The authors thank Allison Abell Banicki of the Office of Border Health, Texas Department of State Health Services, for creating this map.)

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Matamoros are only approximately 2 km apart, and one can easily travel between them by crossing any of 3 bridges that connect the cities.

The survey design team selected the sample for the study from among women who delivered live infants on selected days between August 21 and November 9, 2005; participants lived in either Matamoros or Cameron County. Interviewers conducted computer-assisted personal interviews. The Centers for Disease Control and Prevention reviewed this surveillance pilot project for human subjects concerns and determined it to be “non-research” or public health practice. Therefore, institutional review board approval was not required.

The sampling design consisted of stratified cluster sampling, and clusters were systematically selected. The survey design team selected all hospitals in each area (Matamoros and Cameron County) that reported 100 or more deliveries per year. Within each hospital stratum, clusters of 2-day blocks were selected. All women who gave birth to a live infant on a selected day, regardless of the time of day, were included in the sample. Interviewers identified eligible participants by periodically reviewing hospital delivery logs and medical records and contacting hospital staff. For a more thorough description of data collection, please see McDonald et al in this issue of *Preventing Chronic Disease* (17).

The survey design team created weights to account for probability of selection, population noncoverage, hospital noncoverage, and nonresponse. We used SUDAAN version 9.03 (RTI International, Research Triangle Park, North Carolina) to account for the complex survey design, which was necessary to allow for appropriate specification of the sampling design parameters.

We used univariate and bivariate distributions for women from Cameron County, women from Matamoros, and the total sample to measure prevalence of HIV testing during pregnancy. The outcome of interest was measured with the question, “At any time during your most recent pregnancy or during delivery, did you have a test for HIV, the virus that causes AIDS?” Correlates of HIV testing were identified by using logistic regression for women from Cameron County, women from Matamoros, and the total sample. In the regressions, the outcome variable was prenatal HIV testing. We selected candidates for the regressions from variables included

in the bivariate analyses. Each variable was included in a bivariate logistic regression with the outcome variable. We included only those variables that generated *P* values  $\leq .10$  in at least 1 place of residence (Matamoros or Cameron County) in the multivariate regressions. Interaction terms were included in a multivariate model for the total sample to confirm the role of place of residence. Variables were not retained in the model if they were not significant at  $\alpha = .05$ . Thus, models presented here are parsimonious. The first iteration of regression models included the item, “Were you offered an HIV test during your most recent pregnancy or delivery?” This variable was removed, however, because it was highly correlated with the outcome variable.

Most of the items collected for these analyses were self-reported. The survey design team measured most of the items about HIV, including the outcome measure, by using questions from PRAMS. This team took the item measuring knowledge of HIV infection prevention from Demographic and Health Surveys (DHS) (18) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). The team operationalized knowledge of HIV infection prevention in accordance with the Compendium of Indicators for Evaluating Reproductive Health Programs (<http://www.cpc.unc.edu/measure/publications/html/ms-02-06.html>). Respondents had knowledge of HIV infection prevention if they reported they could reduce the risk of adult-to-adult transmission by using condoms or having sex only with a single, uninfected partner. The team modified the measure of HIV risk from UNAIDS and DHS. Interviewers read the following item, “I am going to read a list of 3 activities. When I’m done, please tell me if any of the situations apply to you. You do not need to tell me which one. You have used intravenous drugs in the past year; you have been treated for a sexually transmitted disease, sexually transmitted infection, or venereal disease in the past year; you have had multiple (more than 2) sex partners in the past year.” The response categories were yes (1 or more applies) or no (none apply).

Although interviewers collected data at hospitals where women delivered, this project used place of residence as the key location variable. Programs and policies in a woman’s place of residence are likely to affect her health and pregnancy more than those in the place of delivery, particularly for the outcome of interest, HIV testing during pregnancy or delivery.

## Results

Women in each community were similar in age, employment, and health coverage during pregnancy (Table 1). They varied in terms of education, marital status, and health coverage before pregnancy. A greater proportion of women in Cameron County had a high school diploma or more. A greater proportion of women in Matamoros were either cohabitating or married. A larger percentage of women in Cameron County were without health coverage before pregnancy.

The prevalence of prenatal HIV testing in Matamoros was approximately 37 percentage points lower than the prevalence of HIV testing in Cameron County in 2005 (Table 2). Other notable differences included timing of prenatal care, being offered an HIV test, HIV testing before pregnancy, knowledge of HIV infection prevention, and risk behaviors among women in the sample. A greater proportion of women in Cameron County than in Matamoros entered prenatal care during their first trimester. A larger proportion of women in Cameron County than in Matamoros were offered an HIV test. Although a higher percentage of women in Cameron County were tested for HIV before the reference pregnancy, a higher percentage of women in Matamoros were tested within 6 months before their pregnancy. A greater proportion of women in Cameron County reported 1 of 2 effective methods to prevent HIV transmission, but a larger proportion of women in Matamoros mentioned both condom use and monogamy to prevent transmission.

A greater proportion of women in Cameron County than in Matamoros engaged in behaviors associated with increased risk of HIV before pregnancy. The prevalence of smoking in Cameron County was more than 1.5 times that in Matamoros. The prevalence of drinking and binge drinking in Cameron County was more than twice that in Matamoros. In contrast, the prevalences of intravenous drug use, treatment for a sexually transmitted disease, or multiple partners in the past year were identical for both communities. Smoking and drinking were included in initial regressions but were not significantly associated with HIV testing because they did not vary substantially among women who were tested for HIV.

The bivariate results are category-specific (Table 3 and Table 4). For example, the first row under “age” in Table 3 should be read as “48.6% of the women aged 14 to 19 who

lived in Mexico were tested for HIV.” The bivariate results show that a greater proportion of women across all categories were tested during pregnancy in Cameron County than in Matamoros. Indeed, there was little variation across categories within Cameron County because of the high testing rate. In terms of demographics, a smaller proportion of cohabitating women in Matamoros were tested for HIV compared with single and married women. Also, a smaller proportion of women in Matamoros with 7 years of education or less were tested compared with women with 8 or more years of education.

In terms of exposure to HIV education, testing, and risk behaviors, the differences between women in Matamoros and those in Cameron County reflected the high prenatal testing rate in Cameron County. Women in Cameron County were consistently tested at higher rates in all categories. Notable differences in Matamoros were seen in the categories for prenatal care, knowledge of effective HIV infection prevention, and exposure to risk. A smaller proportion of women who did not receive prenatal care as early as they wanted were tested for HIV, compared with women who received prenatal care when they wanted. A smaller proportion of women who mentioned condom use were tested compared with women who mentioned monogamy or both condom use and monogamy as an effective prevention method. Finally, only two-thirds of women who engaged in HIV risk behaviors in the previous year were tested during the reference pregnancy.

Of those not tested for HIV during their pregnancy, 91.0% (95% confidence interval [CI], 86.7%-93.4%) lived in Matamoros. Of the women who lived in Matamoros who were not tested for HIV before their pregnancy, 51.3% (95% CI, 46.6%-56.0%) were not tested during the reference pregnancy (compared with 9.6% [95% CI, 6.2%-14.6%] in Cameron County).

The results of logistic regression demonstrated that for the total sample, place of residence, older age, testing before pregnancy, discussion of testing during prenatal care, and knowledge of HIV infection prevention methods were significantly associated with prenatal HIV testing (Table 5). Women who resided in Cameron County were significantly more likely to be tested for HIV prenatally than were women who resided in Matamoros. Women aged 35 to 43 years had nearly 3 times the odds for testing as women in the youngest age group (14 to 19 years). Women who had been tested for HIV before the reference



pregnancy had nearly 5 times the odds for testing during the reference pregnancy. Women who discussed HIV testing during prenatal care with a health care professional were significantly more likely to be tested than were women who did not. Finally, mentioning either or both effective HIV infection prevention methods was significantly associated with having been tested for HIV. These results are parsimonious; nonsignificant variables were not kept in the final model.

Three of the variables presented in Table 5 were also significant in the Matamoros-specific regression and behaved similarly (testing before pregnancy, discussion of testing during prenatal care, and knowledge of effective infection prevention) (Table 6). In addition, marital status and education were associated with HIV testing among women who resided in Matamoros. Cohabitation was associated with a lower likelihood of having been tested than was being married. Women with a high school diploma were also more likely to have been tested than were women who had less than a seventh-grade education.

The high prevalence of prenatal HIV testing in Cameron County left little room for variation in the community-specific regression. Only 2 variables were significantly associated with having been tested: having had an HIV test before the reference pregnancy (odds ratio [OR], 5.9; 95% CI, 1.6-21.8;  $P = .01$ ) and discussion of HIV testing during prenatal care (OR, 4.5; 95% CI, 1.8-11.0;  $P = .001$ ).

## Discussion

Prenatal HIV testing was substantially more common in Cameron County than in Matamoros, according to both bivariate and regression analyses. Both also showed that women in Matamoros with a low level of formal education or who were not knowledgeable about adult-to-adult HIV infection prevention were less likely to be tested. Variables associated with prenatal HIV testing did not have the same influence in each community. To confirm these findings, we ran a regression for the total sample that included interaction terms for place of residence with variables that were significant in any of the models, and this regression confirmed the explanatory power of place of residence.

Univariate distributions showed that in some ways these 2 border communities were similar, but in others they varied widely. For example, the distribution of

women aged 20 to 34 years was similar in Matamoros and Cameron County, as was the proportion of those employed and the proportion of those who were insured during their pregnancy. However, women varied in their level of education, which may result partly from differences in the educational systems in the United States and Mexico and from differences in socioeconomic status in each community. Women also varied in terms of smoking and drinking alcohol (especially drinking). Alcohol abuse and cigarette smoking are common among people with HIV infection (19), although these behaviors were not significantly associated with prenatal HIV testing in either community.

In addition to individual-level characteristics, public health research must consider policy and practice. In this project, the role of place was probably influenced by national policy regarding prenatal HIV testing. The most recent US policy recommendations state that HIV testing should be offered to all pregnant women as part of standard prenatal tests, regardless of risk factors and prevalence rates in the community (20). The results from this survey suggest the US policy is successful, since nearly 95% of women who resided in Cameron County (and presumably received their prenatal care in their place of residence) were given an HIV test during their most recent pregnancy.

Mexican policy also recommends HIV testing during prenatal care (12); however, the practice of testing varies among insurers. The Mexican health care system is different from the US system in that major insurers also provide services (21), and not all insurers pay for HIV testing. The Mexican Social Security Institute insures employees in the private sector and covers the cost of HIV testing (21). The Social Security Institute for Government Employees, which insures federal employees, also covers the cost of an HIV test. However, the Ministry of Health in Tamaulipas, which serves the uninsured poor, does not cover the cost of an HIV test. An exception is made for high-risk patients, such as injection drug users or people with tattoos (21), but otherwise, women in Tamaulipas covered by the Ministry of Health must pay for their own HIV test.

This policy varies by state in Mexico. Other states, such as Nuevo León, have resources available through the Ministry of Health to pay for widespread HIV testing. In 2007, Mexico initiated a new strategy to use rapid HIV testing for all pregnant women as part of routine prenatal care, with signed consent. Previous policy mandated HIV testing only among women who tested positive for syphilis.

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Tables

| Characteristic                     | Country of Residence <sup>a</sup> |                     |                         |                     | Total Sample (N = 947) |                     |
|------------------------------------|-----------------------------------|---------------------|-------------------------|---------------------|------------------------|---------------------|
|                                    | Mexico (n = 489)                  |                     | United States (n = 458) |                     |                        |                     |
|                                    | n                                 | Weighted % (95% CI) | n                       | Weighted % (95% CI) | n                      | Weighted % (95% CI) |
| Country of delivery <sup>b</sup>   |                                   |                     |                         |                     |                        |                     |
| United States                      | 27                                | 5.1 (3.9-6.5)       | 457                     | 99.8 (98.6-100.0)   | 484                    | 48.4 (45.5-51.4)    |
| Mexico                             | 462                               | 95.0 (93.6-96.1)    | 1                       | 0.2 (0.0-1.4)       | 463                    | 51.6 (48.6-54.5)    |
| Age, y                             |                                   |                     |                         |                     |                        |                     |
| 14-19                              | 94                                | 19.2 (16.5-22.3)    | 68                      | 14.8 (11.9-18.3)    | 162                    | 17.2 (15.2-19.4)    |
| 20-24                              | 154                               | 31.5 (27.8-35.6)    | 141                     | 30.8 (27.5-34.4)    | 295                    | 31.2 (28.6-34.0)    |
| 25-34                              | 207                               | 42.3 (38.8-46.0)    | 202                     | 44.0 (40.5-47.7)    | 409                    | 43.1 (40.6-45.6)    |
| 35-39                              | 26                                | 5.3 (3.6-7.6)       | 39                      | 8.6 (6.2-11.7)      | 65                     | 6.8 (5.3-8.6)       |
| 40-43                              | 8                                 | 1.6 (0.9-2.8)       | 8                       | 1.7 (0.9-3.3)       | 16                     | 1.7 (1.1-2.5)       |
| Ethnicity <sup>b,c,d</sup>         |                                   |                     |                         |                     |                        |                     |
| Hispanic                           | 489                               | 100.0               | 394                     | 88.9 (85.5-91.6)    | 883                    | 95.0 (93.4-96.2)    |
| Non-Hispanic                       | 0                                 | 0                   | 49                      | 11.1 (8.4-14.5)     | 49                     | 5.0 (3.8-6.6)       |
| Country of birth <sup>d</sup>      |                                   |                     |                         |                     |                        |                     |
| Mexico                             | 483                               | 99.2 (98.1-99.6)    | 195                     | 43.2 (38.2-48.3)    | 678                    | 73.7 (70.5-76.6)    |
| United States                      | 2                                 | 0.4 (0.1-1.3)       | 251                     | 55.5 (50.0-60.9)    | 253                    | 25.5 (22.5-28.9)    |
| Other                              | 2                                 | 0.4 (0.1-1.3)       | 6                       | 1.3 (0.7-2.7)       | 8                      | 0.8 (0.5-1.5)       |
| Marital status <sup>b,d,e</sup>    |                                   |                     |                         |                     |                        |                     |
| Single                             | 46                                | 9.4 (7.3-12.0)      | 119                     | 26.3 (22.7-30.2)    | 165                    | 17.1 (15.0-19.4)    |
| Live-in significant other          | 181                               | 37.3 (33.8-41.0)    | 111                     | 24.6 (21.7-27.6)    | 292                    | 31.5 (29.1-34.0)    |
| Married                            | 259                               | 53.3 (49.2-57.3)    | 222                     | 49.1 (45.3-53.0)    | 481                    | 51.4 (48.6-54.2)    |
| Education, y <sup>b,d</sup>        |                                   |                     |                         |                     |                        |                     |
| ≤7                                 | 154                               | 31.7 (28.4-35.3)    | 53                      | 11.8 (9.2-14.9)     | 207                    | 22.6 (20.4-25.0)    |
| 8-12 (no high school diploma)      | 248                               | 51.1 (47.2-55.0)    | 168                     | 37.4 (32.9-42.0)    | 416                    | 44.9 (41.8-48.0)    |
| >12 (at least high school diploma) | 84                                | 17.1 (13.9-20.9)    | 229                     | 50.9 (46.1-55.7)    | 313                    | 32.5 (29.3-35.9)    |

Abbreviated version of the questionnaire was used for women who did not respond to this item were coded as living in the place where they delivered.

Included in bivariate regression with HIV screening during pregnancy in Matamoros, Cameron County, or total population.

All women who were pregnant at the time of delivery were included in the analysis.

Frequencies of "Don't know" or "refused" responses were included as missing data.

Women who were single, married, divorced, widowed, or separated were coded as single.

Homemaker, student, retired, or unable to work.

| Variable   | Country of Residence <sup>a</sup> |                     |                         |                     | Total Sample (N = 947) |                     |
|--|-----------------------------------|---------------------|-------------------------|---------------------|------------------------|---------------------|
|  | Mexico (n = 489)                  |                     | United States (n = 458) |                     |                        |                     |
|  | n                                 | Weighted % (95% CI) | n                       | Weighted % (95% CI) | n                      | Weighted % (95% CI) |
| HIV testing <sup>b</sup>   |                                   |                     |                         |                     |                        |                     |
| Had an HIV test during pregnancy   |                                   |                     |                         |                     |                        |                     |
| Yes  | 260                               | 57.6 (53.5-61.7)    | 402                     | 94.8 (92.7-96.4)    | 662                    | 74.7 (71.8-77.5)    |
| No   | 189                               | 42.4 (38.3-46.5)    | 22                      | 5.2 (3.6-7.3)       | 211                    | 25.3 (22.6-28.2)    |
| Timing of most recent HIV test   |                                   |                     |                         |                     |                        |                     |
| 1st trimester  | 87                                | 34.3 (27.8-41.4)    | 70                      | 17.6 (14.5-21.2)    | 157                    | 24.5 (21.2-28.2)    |
| 2nd trimester  | 81                                | 31.9 (27.0-37.3)    | 40                      | 10.2 (7.4-13.8)     | 121                    | 19.2 (16.4-22.3)    |
| 3rd trimester  | 77                                | 30.1 (25.1-35.7)    | 59                      | 14.9 (11.2-19.5)    | 136                    | 21.2 (18.1-24.7)    |
| During pregnancy, but did not know when  | 5                                 | 1.8 (0.9-3.9)       | 90                      | 22.7 (18.8-27.1)    | 95                     | 14.0 (11.5-17.1)    |
| During labor/delivery  | 5                                 | 1.8 (0.8-4.4)       | 136                     | 34.2 (28.0-41.1)    | 141                    | 20.8 (17.1-25.1)    |
| After delivery   | 0                                 | 0                   | 2                       | 0.5 (0.1-1.8)       | 2                      | 0.3 (0.1-1.0)       |
| Offered HIV test during pregnancy  |                                   |                     |                         |                     |                        |                     |
| Yes  | 203                               | 43.7 (40.0-47.4)    | 394                     | 91.0 (87.8-93.5)    | 597                    | 65.4 (62.4-68.2)    |
| No   | 259                               | 56.3 (52.6-60.0)    | 39                      | 9.0 (6.5-12.2)      | 298                    | 34.6 (31.8-37.6)    |
| Refused HIV test during pregnancy <sup>c</sup>                                       |                                   |                     |                         |                     |                        |                     |
| Yes  | 5                                 | 2.5 (1.1-5.6)       | 4                       | 1.0 (0.5-2.3)       | 9                      | 1.6 (0.9-2.8)       |
| No   | 198                               | 97.5 (94.4-98.9)    | 387                     | 99.0 (97.7-99.5)    | 585                    | 98.4 (97.2-99.1)    |
| Tested for HIV before pregnancy <sup>d</sup>   |                                   |                     |                         |                     |                        |                     |
| Yes  | 110                               | 23.5 (19.6-27.9)    | 237                     | 54.5 (50.3-58.7)    | 347                    | 37.7 (34.7-40.8)    |
| No   | 355                               | 76.5 (72.1-80.4)    | 198                     | 45.5 (41.3-49.8)    | 553                    | 62.3 (59.3-65.3)    |
| How long before pregnancy was HIV test <sup>d</sup>                                  |                                   |                     |                         |                     |                        |                     |
| <6 m( )-29(No)TJTEMC /\$pan <<tualText<FEextm( )-29(No)Tco/Spn <<tun-30((59.)TJ/\$pm |                                   |                     |                         |                     |                        | 62.3                |

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|  |     |                  |     |                  |     |                  |
|--|-----|------------------|-----|------------------|-----|------------------|
| 6-12 mo  | 10  | 9.0 (4.7-16.6)   | 50  | 21.2 (16.4-27.0) |     | 17.1 (13.3-21.8) |
| >1 y   | 54  | 49.5 (42.3-56.7) | 148 | 63.0 (56.5-69.0) | 202 | 58.4 (53.4-63.3) |
| <b>Prenatal care and HIV information<sup>b</sup></b> |     |                  |     |                  |     |                  |
| <b>Timing of prenatal care</b>                       |     |                  |     |                  |     |                  |
| 1st trimester  | 217 | 45.0 (41.4-48.7) | 279 | 62.0 (58.5-65.4) | 496 | 52.8 (50.3-55.3) |
| 2nd trimester  | 228 | 47.5 (44.2-50.9) | 152 | 33.8 (30.1-37.7) | 380 | 41.2 (38.7-43.8) |
| 3rd trimester  | 19  | 4.0 (2.6-6.0)    | 16  | 3.5 (2.5-5.0)    | 35  | 3.8 (2.8-5.0)    |
| Did not receive                                      | 17  | 3.5 (2.3-5.2)    | 3   | 0.7 (0.3-1.8)    | 20  | 2.2 (1.5-3.2)    |
| <b>Prenatal care early as wanted<sup>d</sup></b>     |     |                  |     |                  |     |                  |
| Yes  | 445 | 91.4 (88.7-93.5) | 418 | 91.5 (89.8-93.0) | 863 | 91.5 (89.9-92.8) |
| No   | 36  | 7.4 (5.5-10.0)   | 38  | 8.3 (6.9-10.0)   | 74  | 7.8 (6.5-9.3)    |

| Variable   | Country of Residence <sup>a</sup> |                     |                         |                     | Total Sample (N = 947) |                     |
|--|-----------------------------------|---------------------|-------------------------|---------------------|------------------------|---------------------|
|  | Mexico (n = 489)                  |                     | United States (n = 458) |                     |                        |                     |
|  | n                                 | Weighted % (95% CI) | n                       | Weighted % (95% CI) | n                      | Weighted % (95% CI) |
| Knowledge of HIV infection prevention <sup>d,e</sup> (continued) |                                   |                     |                         |                     |                        |                     |
| Mentioned both   | 112                               | 23.0 (20.0-26.1)    | 50                      | 10.9 (8.6-13.8)     | 162                    | 17.4 (15.4-19.7)    |
| Did not mention either   | 60                                | 12.3 (8.8-16.8)     | 93                      | 20.3 (15.8-25.6)    | 153                    | 15.9 (13.1-19.3)    |
| Risk factors for HIV infection in past year <sup>d</sup>         |                                   |                     |                         |                     |                        |                     |
| ≥1   | 28                                | 5.8 (4.4-7.5)       | 26                      | 5.8 (4.5-7.5)       | 54                     | 5.8 (4.8-6.9)       |
| None   | 460                               | 94.2 (92.5-95.6)    | 426                     | 92.6 (92.6-95.5)    | 886                    | 94.2 (93.1-95.2)    |
| Risk behaviors 3 mo before pregnancy                             |                                   |                     |                         |                     |                        |                     |
| Smoked cigarettes <sup>d,f</sup>                                 |                                   |                     |                         |                     |                        |                     |
| Yes  | 24                                | 4.9 (3.7-6.5)       | 36                      | 7.9 (6.2-10.1)      | 60                     | 6.3 (5.2-7.6)       |
| No   | 464                               | 95.1 (93.5-96.3)    | 419                     | 92.1 (89.9-93.9)    | 883                    | 93.7 (92.4-94.8)    |
| Drank alcohol <sup>d,g</sup>                                     |                                   |                     |                         |                     |                        |                     |
| Yes  | 66                                | 13.5 (11.1-16.3)    | 157                     | 34.5 (31.0-38.3)    | 223                    | 23.1 (21.1-25.3)    |
| No   | 422                               | 86.5 (83.7-88.9)    | 298                     | 65.5 (61.7-69.1)    | 720                    | 76.9 (74.8-79.0)    |
| Binge drinking <sup>d,h</sup>                                    |                                   |                     |                         |                     |                        |                     |
| Yes  | 30                                | 6.2 (4.8-7.9)       | 59                      | 13.0 (10.2-16.5)    | 89                     | 9.3 (7.8-11.0)      |
| No   | 458                               | 93.9 (92.1-95.2)    | 394                     | 87.0 (83.6-89.8)    | 852                    | 90.7 (89.1-92.2)    |

Abbreviations: HIV, human immunodeficiency virus; CI, confidence interval.

<sup>a</sup> Women who reported living in both the United States and Mexico or did not respond to this item were coded as living in the country where they delivered.

<sup>b</sup> Frequencies do not add to n's because of missing data. "Don't know" or "refused" responses were included as missing data.

<sup>c</sup> Reasons for refusing an HIV test included not having money (n = 4), confidence in HIV-negative status (n = 4), and belief the test would hurt the baby (n = 1).

<sup>d</sup> Included in multivariate regression models. Yielded a *P* value ≤.10 in bivariate regression with HIV screening during pregnancy in Matamoros, Cameron County, or total sample.

<sup>e</sup> The original item was open-ended. Only those methods described in the Compendium of Indicators for Evaluating Reproductive Health Programs are reported here.

<sup>f</sup> Respondents who smoked any cigarettes on an average day were classified as smokers.

<sup>g</sup> Respondents who drank any alcohol were classified as alcohol users.

<sup>h</sup> Respondents who consumed ≥5 alcoholic drinks in 1 sitting at least once were classified as binge drinkers.



# PREVENTING CHRONIC DISEAS

| Characteristic                      | Country of Residence <sup>a</sup> |                     |                         |                     | Total Sample (N = 662) |                     |
|-------------------------------------|-----------------------------------|---------------------|-------------------------|---------------------|------------------------|---------------------|
|                                     | Mexico (n = 260)                  |                     | United States (n = 402) |                     |                        |                     |
|                                     | n                                 | Weighted % (95% CI) | n                       | Weighted % (95% CI) | n                      | Weighted % (95% CI) |
| Employment status <sup>b,d</sup>    |                                   |                     |                         |                     |                        |                     |
| Employed                            | 132                               | 61.2 (55.0-67.0)    | 193                     | 96.0 (92.5-98.0)    | 325                    | 77.1 (72.5-81.1)    |
| Unemployed                          | 12                                | 56.3 (36.2-74.5)    | 44                      | 91.6 (83.3-96.0)    | 56                     | 80.3 (70.0-87.6)    |
| Not in labor force <sup>f</sup>     | 116                               | 54.1 (48.6-59.5)    | 160                     | 94.1 (90.5-96.4)    | 276                    | 70.9 (67.0-74.5)    |
| Health care coverage <sup>b,d</sup> |                                   |                     |                         |                     |                        |                     |
| Before pregnancy                    |                                   |                     |                         |                     |                        |                     |
| Coverage                            | 153                               | 59.0 (52.9-64.8)    | 104                     | 97.3 (93.3-98.9)    | 257                    | 69.3 (64.2-73.9)    |
| No coverage                         | 107                               | 55.8 (49.3-62.0)    | 298                     | 94.0 (91.0-96.0)    | 405                    | 78.8 (75.2-82.1)    |
| During pregnancy <sup>d</sup>       |                                   |                     |                         |                     |                        |                     |
| Coverage                            | 185                               | 59.8 (55.3-64.1)    | 279                     | 95.9 (93.3-97.6)    | 464                    | 76.3 (73.0-79.4)    |
| No coverage                         | 75                                | 52.8 (44.7-60.7)    | 122                     | 92.4 (87.2-95.6)    | 197                    | 71.1 (65.8-75.9)    |

Abbreviations: HIV, human immunodeficiency virus; CI, confidence interval.

<sup>a</sup> Women who reported living in both the United States and Mexico or did not respond to this item were coded as living in the place where they delivered.

<sup>b</sup> Included in multivariate regression models. Yielded a *P* value ≤10 in bivariate regression with HIV screening during pregnancy in Matamoros, Cameron County, or total sample.

<sup>c</sup> All women who reported living in Mexico were coded as Hispanic.

<sup>d</sup> Frequencies do not add to n's because of missing data. "Don't know" or "refused" responses were included as missing data.

<sup>e</sup> Women who reported being single, widowed, divorced, or separated were coded as single.

<sup>f</sup> Homemaker, student, retired, or unable to work.

**HIV testing**

|     |     |                  |                  |    |
|-----|-----|------------------|------------------|----|
| Yes | 186 | 92.0 (87.9-94.8) | 98.7 (97.2-99.4) |    |
| No  | 68  | 28.4 (24.3-32.8) | 54.2 (40.6-67.3) | 87 |

**Refused HIV test during pregnancy<sup>c</sup>**

|     |     |                  |                  |  |
|-----|-----|------------------|------------------|--|
| Yes |     |                  | 75.2 (26.5-96.2) |  |
| No  | 186 | 94.3 (90.9-96.5) | 98.9 (97.5-99.6) |  |

**Tested for HIV before pregnancy<sup>d</sup>**

|    |     |                  |                  |  |
|----|-----|------------------|------------------|--|
| No | 164 | 48.7 (44.0-53.4) | 90.4 (85.4-93.8) |  |
|----|-----|------------------|------------------|--|

**How long before pregnancy was HIV test<sup>d</sup>**

|         |    |                  |    |                  |    |
|---------|----|------------------|----|------------------|----|
| 6-12 mo | 9  | 89.7 (61.2-98.0) | 48 | 100.0            | 57 |
| >1 y    | 42 | 79.0 (66.8-87.6) |    | 97.9 (92.2-99.4) |    |

**Prenatal care and HIV information<sup>b,d</sup>**

|                 |     |                  |    |                  |                 |
|-----------------|-----|------------------|----|------------------|-----------------|
| 1st trimester   | 129 | 65.6 (57.5-72.9) |    | 95.0 (91.9-96.9) |                 |
| 2nd trimester   | 114 | 53.8 (48.2-59.3) |    | 95.1 (90.6-97.5) |                 |
| 3rd trimester   | 12  | 66.4 (47.1-81.4) | 13 |                  | 25              |
| Did not receive | 3   | 17.9 (7.0-38.7)  | 1  | 51.1 (8.0-92.6)  | 4               |
|                 |     |                  |    |                  | 21.3 (9.8-40.4) |

**Prenatal care early as wanted**

Abbreviations: HIV, human immunodeficiency virus; CI, confidence interval.

<sup>a</sup> Women who reported living in both the United States and Mexico or did not respond to this item were coded as living in the place where they delivered.

<sup>b</sup> Included in multivariate regression models. Yielded a *P* value  $\leq 10$  in bivariate regression with HIV screening during pregnancy in Matamoros, Cameron County, or total sample.

<sup>c</sup> Frequencies do not add to n's because of missing data. "Don't know" or "refused" responses were included as missing data.

<sup>d</sup> Women who reported being single, widowed, divorced, or separated were coded as single.

<sup>e</sup> Homemaker, student, retired, or unable to work.

# PREVENTING CHRONIC DISEAS

| Variable  | OR (95% CI)        | P value |
|---|--------------------|---------|
| <b>Place of residence<sup>a</sup></b>   |                    |         |
| Matamoros   | 1.00               |         |
| Cameron County  | 11.65 (6.65-20.42) | <.001   |
| <b>Age, y</b>   |                    |         |
| 14-19   | 1.00               |         |
| 20-24   | 0.75 (0.44-1.27)   | .28     |
| 25-34   | 1.35 (0.86-2.12)   | .19     |
| 35-43   | 2.74 (1.44-5.22)   | .003    |
| <b>Tested for HIV before pregnancy</b>  |                    |         |
| Yes   | 4.76 (3.32-7.00)   | <.001   |
| No  | 1.00               |         |
| <b>Discussed HIV testing with health care professional during prenatal care</b> |                    |         |
| Yes   | 5.52 (3.89-7.82)   | <.001   |
| No  | 1.00               |         |
| <b>Knowledge of HIV infection prevention methods<sup>b</sup></b>                |                    |         |
| Mentioned either condom use or monogamy with an uninfected partner              | 1.82 (1.00-3.31)   | .05     |
| Mentioned both methods  | 2.83 (1.46-5.47)   | .002    |
| Did not mention either method   | 1.00               |         |

Abbreviations: HIV, human immunodeficiency virus; OR, odds ratio; CI, confidence interval.

<sup>a</sup> Women who reported living in both the United States and Mexico or did not respond to this item were coded as living in the country where they delivered.

<sup>b</sup> The original item was open-ended. Only those methods described in the Compendium of Indicators for Evaluating Reproductive Health Programs are reported here.



PREVENT 