

Diagnoses of HIV Infection Among Hispanics/Latinos in 40 States and Puerto Rico, 2006–2009

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Background: In the United States, Hispanics are disproportionately affected by HIV infection. However, Hispanic subgroups of varied national origin differ culturally and HIV may impact them differently.

Methods: We used information on Hispanics/Latinos diagnosed with HIV during 2006–2009 in 40 states and Puerto Rico, and aged ≥ 13 years, reported to the Centers for Disease Control and Prevention through June 2010, to examine the distribution of disease by selected characteristics, including place of birth and place of residence at diagnosis. We used Poisson regression to calculate the estimated annual percent change in the rate of HIV diagnoses and estimated prevalence ratios of a short HIV-to-AIDS interval (AIDS diagnosis within 12 months of HIV diagnosis). Analyses were adjusted for reporting delays and missing risk factor information.

Results: During 2006–2009, HIV infection was diagnosed among 33,498 Hispanics/Latinos. From 2006 to 2009, the annual rate of diagnoses decreased among Hispanics/Latinos [estimated annual percent change = -4.3% ; 95% confidence interval (CI) = -6.5 to -2.0] including men (-2.8% ; 95% CI = -5.2 to -0.4) and women (-9.8% ; 95% CI = -13.2 to -6.3). The rate of HIV diagnosis remained stable by place of birth but decreased among Puerto Ricans (-13.1% ; 95% CI = -17.0 to -9.0). Among Hispanics/Latinos, a short HIV-to-AIDS interval was more common in non-urban areas than in urban areas.

Discussion: Diagnosis of HIV infection among Hispanics/Latinos decreased and HIV-to-AIDS intervals varied by place of birth and area of residence. To continue to decrease the incidence of HIV infection among Hispanics, prevention programs need to address cultural and regional differences.

Key Words: HIV, Hispanic, region

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INTRODUCTION

In the United States, Hispanics/Latinos are disproportionately affected by HIV infection. Although Hispanics/Latinos accounted for 15% of the US population in the 2009 census estimates,¹ 21% of US residents diagnosed with AIDS that year were Hispanic/Latino.² Although the highest rate of HIV diagnosis in 2009 (in 40 states) was among blacks/African Americans, the second highest rate was among Hispanics/Latinos: 22.8 HIV diagnoses per 100,000 population—3 times the rate for whites.²

According to the US Census, an estimated 48.4 million Hispanics/Latinos were residing in the United States and ~ 4 million residing in Puerto Rico in 2009. In several states, the Hispanic/Latino population comprises a fifth or more of the population, including Arizona (31%), California (37%), Colorado (20%), Florida (22%), Nevada (26%), New Mexico (46%), and Texas (37%).³ There has also been a concentrated growth of Hispanics in metropolitan areas⁴; for example, the Hispanic population in Los Angeles County (4.7 million) had the largest increase (78,000) since July 2008.³

Hispanics/Latinos living in the United States have varied national origin and differ from one another culturally. Likewise, HIV knowledge,^{5,6} behavioral risk factors,⁷ perceptions of risk,^{6,8} and utilization of prevention services⁹ differ between foreign-born and US-born Hispanic/Latino populations. For example, Hispanics/Latinos born in Puerto Rico are more likely to contract HIV through injection drug use (IDU) than are other foreign-born or US-born Hispanics/Latinos.^{2,9} Using birthplace data can help identify subpopulations that differ in HIV testing,^{5,10} utilization of health care services,¹¹ or survival. The importance of these differences is underscored by the large proportion of the foreign-born population who are Hispanic/Latino, an estimated 47%. In 2008, the largest Hispanic/Latino subgroup was Mexican (66%), followed by Puerto Rican (9%), Cuban (3.4%), and Salvadoran (3.4%).³ However, few studies have reported the epidemiology of HIV infection among Hispanics/Latinos by place of origin and area of residence data.^{12,13} In addition, a short interval has been shown to vary by place of birth and was more common among Hispanics/Latinos than among whites (not Hispanic/Latino), consistent with other studies.¹⁴

Using data from the National HIV Surveillance System, we examined the epidemiology of HIV among Hispanics/Latinos, including (a) the place of origin and area of residence, (b) the recent trends in rates of HIV diagnosis, (c) the association between selected characteristics and a short interval (< 12 months) between diagnoses of HIV infection and AIDS, and (d) survival after a diagnosis of HIV infection.

The term “Hispanic/Latino” is used interchangeably with “Hispanic” in this report.

METHODS

Using the 2008 HIV surveillance case definition,¹⁵ we analyzed diagnoses of HIV infection among adult and adolescent (aged ≥ 13 years) Hispanics during 2006–2009 and that were reported to the Centers for Disease Control and Prevention (CDC) through June 2010. Data were available from 41 areas that had been conducting name-based HIV infection reporting since at least 2006, long enough for data collection to stabilize and for adjustment of the data to monitor trends. The 41 areas are in 40 states: Alabama, Alaska, Arizona, Arkansas, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin, Wyoming, and 1 territory: Puerto Rico.

We used the Office of Management and Budget *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* to define race/ethnicity. The term Hispanic or Latino refers to persons who trace their origin or descent to Mexico, Puerto Rico, Cuba, Central and South America, and other Spanish cultures.¹⁶ Hispanics can be of any race. We defined US-born as persons whose birthplace was the United States (limited to the 50 states and the District of Columbia). Area of residence is defined as either a state/territory or urban (metropolitan area $\geq 500,000$ population), suburban (metropolitan area of 50,000–499,999 population), or rural (nonmetropolitan population).

We adjusted the number of diagnoses for expected reporting delay (time between diagnosis of HIV infection, diagnosis of AIDS, or death of a person with HIV infection, and report of diagnosis/death to CDC).¹⁷ Persons are assumed to be alive unless their death has been reported to CDC. Death data include all deaths of persons with a diagnosis of HIV infection or AIDS regardless of cause of death. We adjusted the distribution of diagnoses by transmission category for missing risk factor information using multiple imputation.¹⁸

Using data from the 41 areas, we examined sex, age group, transmission category, birthplace, and area of residence among Hispanics with a diagnosis of HIV infection. The HIV transmission categories were (a) male-to-male sexual contact (regardless of whether the men also had sex with women), (b) male-to-male sexual contact and IDU, (c) IDU, (d) heterosexual contact (with a sex partner known to have, or to be at high risk for, HIV infection, eg, a man who has sex with men or an injection drug user), and (e) all other specified HIV risk factors (eg, receipt of HIV-contaminated blood transfusion, blood product, or tissue), and no HIV risk factor identified.

Annual rates of HIV diagnosis per 100,000 population were calculated by sex, age group, birthplace, and area of residence. The denominators used were computed by applying the sex, age, and area of residence estimates from the 2009 postcensus US Census file for the 50 states and District

of Columbia.¹⁹ The 2000 census summary files were used to impute postcensus population estimates for Puerto Rico by race/ethnicity. The denominators used to calculate rates by birthplace were extracted from the Public Use Microdata Sample files, a subset of the US Census Bureau’s American Community Survey.²⁰ The rates for transmission categories are not provided because of the absence of denominator data.

We analyzed trends in the diagnosis of HIV infection among Hispanics whose diagnosis was made during 2006–2009 and who resided in the 41 areas. We used Poisson regression to calculate the estimated annual percent change (EAPC) in the annual rates of diagnoses, by sex, age group, birthplace, and area of residence. The significance of a trend was determined by whether the 95% confidence interval (CI) for the EAPC included 0.

We defined a short HIV-to-AIDS interval or “late diagnosis” as the diagnosis of AIDS < 12 months after the diagnosis of HIV infection. We used the GENMOD procedure in SAS version 9.2 (SAS Institute, Cary, NC) to fit a generalized linear model to estimate the prevalence ratio of a short HIV-to-AIDS interval and selected characteristics (sex, age group, birthplace, transmission category, and area of residence) of Hispanic adults and adolescents whose diagnosis of HIV infection was made during 2006–2008 in the 41 areas. Differences between groups in the proportion of cases with a short interval were considered significant if the 95% CI for the adjusted prevalence ratio did not include 1. Cases in persons whose month of diagnosis of HIV infection was unknown ($n = 15$) and birthplace was unknown ($n = 4,812$) were excluded from this analysis.

We analyzed survival time after diagnosis of HIV infection among Hispanics whose diagnosis of HIV was made during 2001–2005 in the 41 areas and who were reported to CDC through June 2010. We used data on deaths that occurred during 2001–2008 and were reported by June 2010. We used the standardized Kaplan–Meier method to estimate the proportions of Hispanics who survived > 12 months and the proportions who survived > 36 months after diagnosis.²¹ We included for sex, age group, birthplace, transmission category, and area of residence at the time of diagnosis in these analyses, and results are not adjusted for reporting delays or for unknown risk factors.

RESULTS

An estimated 33,498 Hispanics were diagnosed with HIV during 2006–2009 in the 41 areas; birthplace information was missing or unknown for 19% of cases (data not shown). During 2006–2009 in 41 areas, the annual rate of HIV infection diagnosis per 100,000 population decreased among Hispanics (EAPC = -4.3% ; 95% CI = -6.5 to -2.0) and by sex: men (-2.8% ; 95% CI = -5.2 to -0.4) and women (-9.8% ; 95% CI = -13.2 to -6.3 ; Table 1). By age at diagnosis, the rate among men increased among those aged 20–29 years (4.2%; 95% CI = 0.5 to 8.0) and decreased among those aged 30–49 years. Furthermore, the rate among women decreased among those aged 13–59 years. The rate in HIV diagnosis remained stable among US-born Hispanic men but decreased among US-born Hispanic women (-6.8% ; 95% CI = -12.1 to -1.1),

TABLE 1. Estimated Number, Percentage, and EAPC of HIV Diagnosis Among Adult and Adolescent Hispanics* by Selected Characteristics, 2006–2009: 40 States and Puerto Rico

	2006			2007			2008		
	n	%	Rate	n	%	Rate	n	%	Rate
Total†	8508		34.5	8533		33.5	8230		31.4
Sex									
Male	6513	77	51.4	6656	78	50.8	6539	79	48.4
Female	1995	24	16.7	1876	22	15.2	1692	21	13.3
Age at diagnosis (yr)									
Men									
13–19	154	2	8	195	3	9.9	201	3	9.9
20–29	1713	26	55.6	1937	29	62.3	1881	29	60.1
30–39	2229	34	79	2064	31	70.5	2050	31	67.7
40–49	1605	25	74.5	1577	24	70.4	1595	24	68.5
50–59	576	9	43	652	10	46.2	590	9	39.8
60+	236	4	17.5	231	4	16.2	222	3	14.7
Women									
13–19	111	6	6.2	86	5	4.6	89	5	4.7
20–29	484	24	18.8	443	24	16.9	412	24	15.5
30–39	522	26	21.4	517	28	20.6	476	28	18.5
40–49	534	27	26.2	477	25	22.6	432	26	19.9
50–59	246	12	17.5	252	13	17.1	203	12	13.3
60+	97	5	5.7	102	5	5.6	80	5	4.2
Place of birth‡									
Men									
United States	2131	40	43.8	2268	43	45.2	2302	44	42.8
Foreign-born			39.6			37.6			36.8
Central America	329	6	38.5	361	7	42.6	365	7	42.2
Cuba	205	4	47.2	214	4	46.4	236	5	50
Mexico	885	17	24.3	878	17	23.4	871	16	23.8
Puerto Rico	1208	23	63.5	1083	20	56	1012	19	52
South America	345	7	47.7	340	6	45.2	304	6	40.4
Other	185	4	44.2	182	3	45.4	203	4	48.3
Women									
United States	632	39	12.8	556	37	10.9	580	41	10.9
Foreign-born			13.7			13.1			11.1
Central America	143	9	21.6	150	10	22	108	8	15.4
Cuba	18	1	4.1	20	1	4.2	18	1	3.9
Mexico	161	10	6	181	12	6.6	138	10	5
Puerto Rico	499	31	23.5	446	29	20.6	417	30	19.4
South America	52	3	6.7	50	3	6.1	47	3	5.7
Other	119	7	22.3	119	8	23.8	101	7	18.5
Residential area									
Men									
Urban	5446	84	57.1	5676	85	57.5	5623	86	55.2
Suburban	619	10	32.4	617	9	31.3	624	10	30.8
Rural	416	6	34.4	334	5	26.8	271	4	21.1
Unknown	31	1	—	28	0	—	22	0	—
Women									
Urban	1641	82	18	1576	84	16.7	1425	84	14.7
Suburban	196	10	10.7	189	10	10	203	12	10.4
Rural	148	7	14.6	106	6	10.1	52	3	4.8
Unknown	9	1	—	6	0	—	11	1	—

(continued on next page)

TABLE 1. (Continued) Estimated Number, Percentage, and EAPC of HIV Diagnosis Among Adult and Adolescent Hispanics* by Selected Characteristics, 2006–2009: 40 States and Puerto Rico

	2009			EAPC	95% CI
	n	%	Rate		
Total†	8227		30.5	-4.3	-6.5 to -2.0
Sex					
Male	6608	80	47.5	-2.8	-5.2 to -0.4
Female	1619	20	12.4	-9.8	-13.2 to -6.3
Age at diagnosis (yr)					
Men					
13–19	223	3	10.8	9.5	-1.2 to 21.3
20–29	2026	31	64.3	4.2	0.5 to 8.0
30–39	2003	30	64.2	-6.6	-9.9 to -3.3
40–49	1539	23	63.8	-4.7	-8.4 to -0.9
50–59	581	9	37.3	-5.1	-10.7 to 0.8
60+	235	4	14.8	-6.2	-14.9 to 3.4
Women					
13–19	64	4	3.3	-16.7	-28.4 to -3.1
20–29	349	22	13	-10.8	-17.1 to -4.1
30–39	448	28	17	-7.4	-13.3 to -1.1
40–49	444	27	19.9	-9.8	-15.8 to -3.4
50–59	210	13	13.2	-10.5	-18.9 to -1.4
60+	105	7	5.3	-6.0	-18.8 to 8.9
Place of birth‡					
Men					
United States	2413	45	43.2	-0.9	-4.1 to 2.4
Foreign-born			35.4	-3.5	-6.5 to -0.4
Central America	448	8	48.1	6.6	-0.5 to 14.3
Cuba	211	4	44.8	-0.2	-7.8 to 8.1
Mexico	910	17	24.9	0.6	-4.0 to 5.4
Puerto Rico	793	15	39.4	-13.1	-17.7 to -8.3
South America	338	6	43.1	-4.8	-12.0 to 2.9
Other	228	4	53	6.0	-4.9 to 18.1
Women					
United States	574	44	10.3	-6.8	-12.1 to -1.1
Foreign-born			9.8	-10.7	-15.3 to -5.8
Central America	119	9	15.8	-12.2	-21.6 to -1.6
Cuba	22	2	4.8	4.6	-16.6 to 31.2
Mexico	133	10	4.8	-8.7	-17.7 to 1.2
Puerto Rico	317	24	14.3	-13.2	-20.0 to -5.9
South America	52	4	6.2	-3.8	-20.8 to 16.9
Other	101	8	19.1	-6.7	-18.8 to 7.2
Residential area					
Men					
Urban	5683	86	54.1	-1.9	-4.4 to 0.6
Suburban	609	9	29.3	-3.1	-8.6 to 2.7
Rural	279	4	21.1	-16.8	-23.0 to -10.1
Unknown	37	1	—	—	—
Women					
Urban	1389	86	13.9	-8.7	-12.4 to -4.9
Suburban	161	10	8.1	-6.6	-15.8 to 3.5
Rural	62	4	5.6	-33.2	-42.5 to -22.4
Unknown	8	1	—	—	—

All estimates have been adjusted for reporting delays and the reclassification of cases reported without a known risk factor for HIV infection.

*Hispanics can be of any race.

†Because column totals for estimated numbers were calculated independently of the values for the subpopulations, the values in each column may not sum to the column total.

‡Excludes 6382 persons with an unknown/missing place of birth.

and foreign-born Hispanic men (−3.5%; 95% CI = −6.5 to −0.4) and women (−10.7%; 95% CI = −15.3 to −5.8). Among foreign-born Hispanics, rates decreased significantly only among Puerto Rican men (−13.1%; 95% CI = −17.7 to −8.3) and women (−13.2%; 95% CI = −20.0 to −5.9). By area of residence, decreases occurred among Hispanic women in urban areas (−8.7%; 95% CI = −12.4 to −4.9) and Hispanic men (−16.8%; 95% CI = −23.0 to −10.1) and women (−33.2%; 95% CI = −42.5 to −22.4) in rural areas.

In 2009, 81% (6657) of Hispanics were reported with a place of birth; of these, more than half (55%) were foreign-born (Table 2). The transmission categories for HIV infection in Hispanics were distributed as follows: male-to-male sexual contact, 57%; followed by heterosexual contact, 27%; IDU, 13%; and male-to-male sexual contact and IDU, 3%. Larger proportions had been diagnosed in urban residential areas (86%) than in suburban (9%) or rural areas (4%). The rate of HIV diagnosis among foreign-born was 23.1 per 100,000 population (data not shown), lower than among US-born (26.8). By age group, the diagnosis rates were highest among those aged 40–49 years (42.7), followed by those aged 30–39 years (42.6), and those aged 20–29 years (40.7). By birthplace, among the countries listed (Table 2), the diagnosis rate was highest among Hispanics born in Central America (33.7), followed by those born in the United States (26.8), Puerto Rico (26.3), Cuba (25.1), South America (24.0), and Mexico (16.2; Table 2).

Of the estimated 33,498 Hispanics diagnosed during 2006–2009, a total of 20,443 cases of HIV infection (2006–2008) were diagnosed among Hispanic adults and adolescents in the 41 areas: of these, 39% progressed to AIDS in <12 months (Table 3). After adjustment for covariates, a short interval was significantly more common among Hispanic men than among Hispanic women and increased with age (≥13 years). Likewise, a short interval was more common among foreign-born Hispanics than among US-born and more common among Hispanics diagnosed in nonurban areas than in urban areas.

The proportion of Hispanics who survived >36 months decreased with increasing age at the time of diagnosis (Table 4). The largest proportion of Hispanics who survived 36 months were born in South America. After 36 months, the smallest proportion of Hispanics who survived were injection drug users, those living in rural areas at time of diagnoses, and foreign-born Hispanics.

DISCUSSION

During 2006–2009, the annual rate of HIV diagnosis among Hispanic men and women declined by 2.8% and 9.8% per year, respectively. These decreases among Hispanics might have resulted from decreased incidence of HIV infection (eg, in response to prevention measures) or a reduction in HIV testing among Hispanics. However, a recent study reported that the percentage of persons ever tested for HIV was higher among Hispanics (47.6%) than among whites (40.9%) but lower than among blacks or African Americans (61.8%).²² Another study on the estimated lifetime risk for diagnosis of HIV infection among Hispanics indicated that an

TABLE 2. Estimated Number of Diagnoses of HIV Infection Among Adult and Adolescent Hispanics,* by Selected Characteristics, 2009: 40 States and Puerto Rico

	n	%	Rate
Sex			
Male	6608	80	47.5
Female	1619	20	12.4
Age group (yr)			
13–19	288	3	7.1
20–29	2375	29	40.7
30–39	2451	30	42.6
40–49	1983	24	42.7
50–59	791	10	25.1
60+	340	4	9.5
Transmission category			
Male-to-male sexual contact	4688	57	—
Male-to-male sexual contact and IDU	224	3	—
Injection drug use			
Men	788	10	—
Women	268	3	—
Heterosexual contact†			
Men	900	11	—
Women	1345	16	—
Other‡	13	0	—
Birthplace§			
United States	2987	45	26.8
Central America	566	9	33.7
Cuba	233	3	25.1
Mexico	1043	16	16.2
Puerto Rico	1110	17	26.3
South America	391	6	24.0
Other	329	5	34.4
Area of residence			
Urban	7072	86	34.5
Suburban	770	9	18.9
Rural	341	4	14.0
Unknown	45	1	—
Total	8227	100.0	30.5

Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Estimated numbers resulted from statistical adjustment that accounted for reporting delays and missing risk factor information, but not for incomplete reporting. Rates are per 100,000 population. Rates are not calculated by transmission category because of the lack of denominator data.

*Hispanics can be of any race.

†Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

‡Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.

§Excludes 1570 persons with missing/unknown place of birth.

||Because column totals for estimated numbers were calculated independently of the values for the subpopulations, the values in each column may not sum to the column total.

estimated 1.92% (1 in 52) of Hispanics would receive HIV diagnoses during their lifetimes, compared with an estimated lifetime risk for HIV diagnosis of 0.59% (1 in 170) for whites and 4.65% (1 in 22) for blacks/African Americans. Reducing HIV risk behaviors and increasing access to testing and care are important to continue to decrease the number of diagnoses of HIV infection.²³

TABLE 3. Diagnosis* of AIDS <12 Months After Diagnosis of HIV Infection Among Adult and Adolescent Hispanics,† by Selected Characteristics, 2006–2008: 40 States and Puerto Rico

	n	%	Prevalence Ratio (95% CI)	Adjusted Prevalence Ratio (95% CI)
Sex				
Female	4551	35	Reference	Reference
Male	15,892	40	1.14 (1.09 to 1.19)	1.22 (1.15 to 1.28)
Age group (yr)				
13–29	6318	27	Reference	Reference
30–39	6350	40	1.49 (1.42 to 1.57)	1.46 (1.39 to 1.53)
40–49	4966	45	1.68 (1.59 to 1.77)	1.64 (1.56 to 1.73)
50+	2810	52	1.95 (1.85 to 2.06)	1.83 (1.73 to 1.93)
Place of birth				
United States	8458	33	Reference	Reference
Foreign-born	11,985	43	1.29 (1.24 to 1.33)	1.2 (1.16 to 1.24)
Transmission category				
Male-to-male sexual contact	10,219	37	0.92 (0.88 to 0.95)	0.92 (0.88 to 0.97)
IDU	3252	40	1.00 (0.95 to 1.05)	0.91 (0.86 to 0.96)
Male-to-male sexual contact and IDU	674	37	0.91 (0.82 to 1.01)	0.88 (0.79 to 0.98)
Heterosexual contact‡	6248	40	Reference	Reference
Adult other§	50	81	2.01 (1.75 to 2.30)	1.33 (1.20 to 1.47)
Area of residence				
Urban	17,053	37	Reference	Reference
Nonurban	3390	47	1.27 (1.22 to 1.32)	1.23 (1.18 to 1.28)
Total	20,443	39		

Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis and excludes 15 persons whose month of diagnosis of HIV infection was unknown and 4812 persons with missing place of birth.

*Estimated numbers resulted from statistical adjustment that accounted for reporting delays and missing risk factor information, but not for incomplete reporting.

†Hispanics can be of any race.

‡Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

§Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.

||Includes areas with a population of 50,000–499,999, nonmetropolitan areas, and unknown residence at HIV diagnosis.

Over half of Hispanics with reported birthplace and diagnosed with HIV infection in the 40 states and Puerto Rico were born outside the continental United States. Although we cannot say definitively where these Hispanics became infected, some evidence suggests that most were infected in areas of the United States where the prevalence of HIV infection was higher.¹³ Hispanics have a history of migrating to the United States for work in agricultural industries in both urban and rural areas. Migration patterns may contribute to the risk for HIV infection, perhaps because change in residence can result in homelessness, loneliness, isolation, and financial instability. In turn, these factors can result in new sex partners, commercial sex, drug use, and inadequate access to health care services.²⁴

We found that Hispanics from Mexico comprised the largest proportion of foreign-born Hispanics. Factors that might influence HIV risk among Hispanics born in Mexico include the lower levels of education than the Hispanic population overall: 9% compared with 12.9%, respectively. Likewise, 22.3% of Hispanics born in Mexico live in poverty, higher than the 12.7% in the general US population. Many do not have health insurance (34.8%) compared with the general US populations (15.4%).²⁵

A short HIV-to-AIDS interval can indicate a delay in testing until late in the course of HIV disease, when symptoms are likely to have developed. It also may reflect

inadequate care and treatment for Hispanics who may not be getting antiretroviral treatment at an earlier stage in their infection when medication could produce better health outcomes. Hispanics unaware of their infection are not able to take advantage of the therapies that can keep them healthy and extend their lives, nor do they have the knowledge to protect their sex or drug-use partners from becoming infected. HIV-infected persons who are unaware of their infection do not reduce risk behaviors and may unknowingly transmit the virus to others.²⁶ The percentage of Hispanics with a short HIV-to-AIDS interval varied by place of birth and was larger among foreign-born Hispanics compared with US-born Hispanics. The barriers of language, lack of knowledge, and lack of health insurance have been obstacles to care and may be more prevalent among foreign-born Hispanics.^{27,28} A short interval was significantly more common among Hispanics diagnosed in rural areas than among Hispanics diagnosed in urban areas. Although a recent study found that there were high HIV prevalence rates (2.1%) in urban poverty areas, it did not differ significantly by race/ethnicity.²⁹ A short interval was more common among Hispanics whose area of residence was rural than among those whose area of residence was urban and may reflect less access to and differing quality of general medical care and treatment.^{30,31} In addition, there may be differences in HIV testing behaviors; migrant and seasonal workers in rural areas who are undocumented are less likely

TABLE 4. Survival Among Adult and Adolescent Hispanics* for >12 and 36 Months After a Diagnosis of HIV Infection During 2001–2005, by Selected Characteristics, 40 States and Puerto Rico

	n	%	12 Mo After Diagnosis		36 Mo After Diagnosis	
			Proportion	95% CI	Proportion	(95% CI)
Sex						
Male	31,570	76	0.92	0.92 to 0.93	0.89	0.89 to 0.89
Female	10,110	24	0.92	0.92 to 0.93	0.89	0.88 to 0.89
Age group (yr)						
13–29	10,595	25	0.97	0.97 to 0.97	0.96	0.95 to 0.96
30–49	25,482	61	0.93	0.93 to 0.94	0.90	0.90 to 0.91
50+	5603	13	0.83	0.82 to 0.84	0.78	0.76 to 0.79
Birthplace						
United States	14,471	35	0.94	0.93 to 0.94	0.91	0.90 to 0.91
Foreign-born			0.91	0.91 to 0.92	0.88	0.88 to 0.89
Central America	1788	4	0.91	0.90 to 0.93	0.88	0.87 to 0.90
Cuba	1248	3	0.93	0.92 to 0.94	0.89	0.88 to 0.91
Mexico	4389	11	0.90	0.89 to 0.91	0.88	0.87 to 0.89
Puerto Rico	8227	20	0.92	0.91 to 0.92	0.88	0.87 to 0.89
South America	2129	5	0.96	0.95 to 0.97	0.93	0.92 to 0.94
Other	1265	3	0.94	0.93 to 0.95	0.90	0.88 to 0.91
Unknown	8163	20	0.95	0.95 to 0.96	0.93	0.93 to 0.94
Transmission category						
Male-to-male sexual contact	14,896	36	0.94	0.94 to 0.94	0.92	0.91 to 0.92
IDU	6809	16	0.90	0.89 to 0.91	0.84	0.83 to 0.85
Male-to-male sexual contact and IDU	1362	3	0.94	0.93 to 0.95	0.90	0.89 to 0.91
Heterosexual contact†	9193	22	0.94	0.93 to 0.95	0.91	0.90 to 0.92
Adult other‡	9420	23	0.90	0.90 to 0.91	0.87	0.86 to 0.88
Diagnosis year						
2000	9099	22	0.93	0.92 to 0.93	0.89	0.88 to 0.89
2001	8585	21	0.93	0.92 to 0.93	0.89	0.89 to 0.90
2002	8247	20	0.93	0.92 to 0.93	0.90	0.89 to 0.90
2003	7727	19	0.92	0.92 to 0.93	0.89	0.89 to 0.90
2004	8022	19	0.93	0.92 to 0.94	0.91	0.90 to 0.91
Area of residence						
Urban	34,133	82	0.94	0.94 to 0.94	0.91	0.91 to 0.91
Suburban	3368	8	0.95	0.94 to 0.95	0.91	0.90 to 0.92
Rural	3925	9	0.87	0.85 to 0.88	0.83	0.81 to 0.84
Unknown	254	1	0.98	0.97 to 0.98	0.94	0.93 to 0.94
Total	41,680	100	0.93	0.92 to 0.93	0.90	0.89 to 0.90

Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Excludes persons whose month of diagnosis or month of death is unknown.

*Hispanics/Latinos can be of any race.

†Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

‡Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.

than documented workers to have been tested for HIV infection.³² A short interval increased with age, which may be explained by the fact that HIV disease progression tends to occur more rapidly among older persons. Another possible explanation is that older persons delay HIV testing due to lack of knowledge or the assumption they are not at risk.³³

We found that survival after the diagnosis of HIV differed among Hispanics by area of residence and transmission category. Hispanics diagnosed in rural areas had a lower proportion of survival after 36 months than those in nonrural areas. This may be attributed to diagnosis at a later stage of disease, lack of health care, or lack of insurance. Previous studies have found that the utilization of health care

services was a source of differences in survival.^{34,35} Moreover, Hispanics are more likely to be uninsured, and those who are uninsured are more likely to delay or not receive medical care because of cost.^{36,37}

Our data are subject to at least 5 limitations. Although our data are from the largest set of population-based data on persons diagnosed with HIV infection, the 40 states and 1 territory used in this analysis may not be nationally representative. Yet, they reported 80% of all AIDS cases diagnosed among adults and adolescents in the United States during 2006–2009 and 77% of AIDS cases among Hispanics. The exclusion of data from some states with high AIDS morbidity and a large Hispanic population (eg, California) may

result in an underrepresentation of cases among Hispanics. In addition, Hispanic immigrants, who may not access health care services because of cost or fear of deportation, may be underreported. HIV surveillance reports may not be representative of Hispanics infected with HIV because not all infected persons have been tested. Many HIV-reporting states offer anonymous HIV testing; the results of anonymous tests are not reported to the confidential name-based HIV registries of state and local health departments. Furthermore, detailed information about the HIV-related behavioral risk factors of sex partners of HIV-infected persons is limited. The correlation between high-risk behavior and acculturation among Hispanics cannot be assessed by our surveillance data. Other studies have suggested that a higher level of acculturation is associated with an increase in HIV knowledge,^{5,38,39} a higher prevalence of behavioral risk factors for HIV infection,^{6,40} and greater ability to obtain health care services.⁴¹ In addition, ancestry of US-born Hispanics is not collected; thus, differences among subgroups cannot be evaluated. The misclassification of Hispanics as members of other races/ethnicities may have resulted in an underestimation or overestimation in the number of Hispanics and Hispanic subgroups. However, in a validation study of race/ethnicity in the HIV Surveillance System, self-reported race/ethnicity agreed well.⁴² Lastly, in the HIV Surveillance System, birthplace information is missing for 19% of cases.

In summary, rates of HIV diagnosis decreased and transmission category, HIV-to-AIDS intervals, and survival of Hispanics with a diagnosis of HIV infection varied by birthplace and area of residence. HIV prevention efforts may not be equally effective for US-born and foreign-born Hispanics; thus, educational efforts should address the important cultural, behavioral, and regional differences among Hispanics. The Hispanic population is projected to triple between 2000 and 2050 and will constitute 30% of the nation's population,³ so it will be necessary to continue to address the impact of HIV on Hispanics.

In support of these efforts, the CDC has broadened its expanded HIV testing program to include Hispanics and to fund a variety of programs that direct prevention and treatment services to Hispanic populations. The programs will enhance capacity building assistance services delivered to community-based organizations and community stakeholders providing HIV prevention services, support the development and implementation of effective community-based HIV prevention programs, and build partnerships with leading national Hispanic organizations to help fight the HIV among Hispanics.

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