

# Infectious Syphilis in Non-Hispanic Blacks and Hispanics in an Urban STD Clinic

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## ABSTRACT

*Syphilis is a complex infectious disease caused by *Treponema pallidum* and acquired through sexual contact or vertical transmission. The natural history of syphilis is divided in primary, secondary, latent and tertiary stages. The syphilis epidemic has evolved over the years. National rates of syphilis infection dropped to the lowest in 2000 and have since increased in certain populations. Men who have sex with men (MSM) account for 60% of new infections and high rates occur in individuals with human immune deficiency virus co-infection. This study describes and compares the demographic characteristics, risk factors, and clinical presentation of infectious syphilis cases diagnosed in the Miami-Dade Health Department STD clinic among the two main ethnicities (non-Hispanic Black and Hispanic).*

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## Background

Syphilis is a complex infectious disease caused by *Treponema pallidum* and acquired through sexual contact or vertical transmission. The natural history of syphilis is divided in primary, secondary, latent and tertiary syphilis. Infectious syphilis consists of the primary, secondary, and early latent stages (Kent & Romanelli, 2008; Centers for Disease Control and Prevention [CDC], 2010a).

The syphilis epidemic has evolved over the years. National rates of syphilis infection dropped to the lowest in 2000 and have since increased in certain populations. Men who have sex with men (MSM) account for 60% of new infections and high rates occur in individuals with human immune deficiency virus (HIV) co-infection (Gottlieb et al., 2008; Heffelfinger et al., 2007; Horberg et al., 2010). Disparities are also seen among different races and ethnicities. National data from the CDC and local reports, reveal higher rates among Blacks in the U.S. (Newman & Berman, 2008; CDC, 2010b). Miami is a multi-ethnic city with high prevalence of both sexually transmitted infections (STI) and HIV (CDC, 2010; Florida Department of Health [FDOH], 2010). In 2010, the CDC reported that Miami was one of the metropolitan areas with the highest number of cases with infectious syphilis and ranked fourth in the country (CDC, 2010b). Although national data show highest rates among Blacks, the rates of both syphilis and HIV are increasing among Hispanics in southern cities such as Miami (Castro et al., 2009; FDOH, 2010; CDC, 2010b).

The Miami-Dade Health Department (MDHD) sexually transmitted disease (STD) clinic serves the population of Miami-Dade County and visitors. Patients attend the clinic when they have STI-related symptoms, or when contacted by surveillance services because of a positive reported test (syphilis, chla-

mydia, gonorrhea or HIV). Most individuals attending the clinic are of Hispanic or African American origin. All individuals undergo a detailed physical exam and syphilis testing with rapid plasma reagin (RPR) and syphilis enzyme immunoassay (EIA) IgG or fluorescent treponemal antibody absorbed (FTA-ABS) if the RPR is reactive. Dark field examination is performed in any genital lesion. Treatment is provided according to the stage of the disease and following CDC (2010a) guidelines.

General demographics of individuals infected with syphilis are available through MDHD reports (FDOH 2010). However, detailed information on risk factors, clinical presentation, co-infections with other STIs by ethnicity is not known and is essential for designing ethnic targeted STI prevention strategies.

This describes and compares the demographic characteristics, risk factors, and clinical presentation of infectious syphilis cases diagnosed in the MDHD STD clinic in the two main ethnic groups it serves (non-Hispanic Black and Hispanic).

## Methods

A retrospective cohort study of the MDHD STD clinic medical records of individuals with a positive RPR from January 1, 2009 to August 31, 2009 was performed.

### *Approvals*

Approvals from the University of Miami and the Florida Department of Health Institutional Review Boards were obtained prior to any study related activities.

### *Definitions*

Infectious cases were considered those with primary, secondary, early latent, and syphilis of unknown duration in patients with high risk sexual

behavior in the year prior to the visit (i.e., persons having multiple sex partners, MSM). Syphilis stage definitions were extracted from published CDC (2010a) guidelines.

#### *Selection of Cases*

A patient list containing positive RPR results was extracted from the electronic medical records. Charts of patients with a positive RPR were reviewed after matching names and dates of birth with chart medical record numbers. Extracted information was imported into a database with protected patient identifiers. All patients that did not meet the definition of infectious syphilis were excluded from the analysis (i.e., follow-up serologies from previously diagnosed cases, false positives and late latent infections).

#### *Data Collection*

Collected data included demographic information (age, gender, self reported ethnicity, birth country, household income), sexual risk factors (number of sexual partners, sexual modalities, gender preference, use of condoms), laboratory results (HIV status, results of chlamydia (CT) and gonorrhea (GC) testing, RPR, syphilis IgG and FTA), details about syphilis diagnosis, treatment, and follow-ups. Race and ethnicity were self-reported. For purposes of this report and to better characterize the two main minority ethnicities in Miami, Hispanic and Black non-Hispanics (NH), a comparison was made between these groups.

#### *Statistical Analysis*

The abstracted descriptive data were coded and uploaded into the Statistical Package for Social Sciences (SPSS) software, version 18, for statistical analysis. Univariate analysis using an odds ratio was used to determine factors associated with syphilis infection. A  $p$  value of  $< .05$  was considered to be statistically significant.

## **Results**

Overall, 519 reactive RPRs were identified. Of these, 342 cases were excluded because they were not considered infectious syphilis. A total of 177 cases of infectious syphilis were identified. Eight were excluded from the analysis because they did not belong to ethnic minorities resulting in a total of 169 cases of infectious syphilis in the NH Black and Hispanic minorities.

Baseline demographic characteristics and risk behaviors are shown in Table 1. The majority were men and above the age of 21. There was a slight predominance of Blacks over Hispanics. Almost half of the cases were seen in foreign-born individuals. Almost half reported same sex practices and multiple sexual partners in the prior year. Anal intercourse was reported in 52% of the cases. Condom use in the last encounter was low. Approximately one-fourth of the cases presented with symptoms related to sy-

philis and about one-third were co-infected with HIV. The majority of the cases were diagnosed with secondary syphilis and the median RPR titer was 1:128.

Several differences were noted between the two major ethnic groups and are shown in Table 2. By age, in the younger population, NH Black was the predominant race and in the older cases, Hispanic ethnicity was more common. Females infected with syphilis were more likely to be NH Blacks and males were more likely to be Hispanic. Most of the heterosexual individuals with syphilis were NH Blacks and most of the MSM were Hispanics. For the individuals with syphilis co-infected with chlamydia, most were NH Blacks. There were no differences by ethnicity in condom use, prior history of STI and co-infection with HIV or other STIs.

## **Discussion**

This study describes the demographic characteristics, risk factors, and clinical presentation of infectious syphilis cases diagnosed in the MDHD STD clinic in a period of 8 months in 2009. It also compares these characteristics among the two main ethnic groups, NH Blacks and Hispanics. We found that most of the individuals diagnosed with infectious syphilis in our clinic are over 22 years of age and male gender. About half of them belong to each of the ethnic minority groups studied. There was low rate of condom use, high rates of multiple sexual partners and high rates of co-infections with other STIs and HIV. In the younger populations and in females, the infection was more common in NH Blacks. Among older and MSM individuals infectious syphilis was more common in Hispanics.

Syphilis is an old STI on the rise. Numbers of syphilis cases are increasing in all states and co-infections with HIV and infections in the MSM population are the hallmarks of the infection in the recent years (Heffelfinger et al., 2007; Brewer, Schilling et al., 2011). Racial and ethnic disparities have long been noted in syphilis, especially in urban communities in the past. In 2005, according to the CDC, rates were 5.4 times higher among Blacks when compared to Whites (Newman & Berman, 2008). In 2008, high rates among Blacks were seen in Miami, Philadelphia, and New York. A retrospective review analyzing this trend in Blacks over the prior 8 years showed increases in the male, younger, and MSM populations (Brewer, Peterman et al., 2011). In our sample, and according to the demographics of Miami-Dade County, not surprisingly, we also found a high number of cases in the Hispanic population.

In the NH Black population in Miami-Dade County, most of the cases were found in young heterosexual males. Most of the Hispanic cases with infectious syphilis, however, were of older age and

MSM. Prior reports have described a nationwide increase among Hispanics particularly during the recent resurgence between 2000 and 2008 (Brewer, Peterman et al., 2011). Social and behavioral studies have been performed identifying birth origin and cultural assimilation as risk factors for STD/HIV

transmission in Hispanics. Gindi et al. (2010) reported higher rates of syphilis among the English-proficient Latinos in comparison to the Spanish-speaking Latinos a study based in Baltimore based study. Various cultural factors also have been implicated in STD transmission among Hispanics such as

**Table 1. Descriptive Characteristics of the Sample**

N = 169	
<i>Variables</i>	<i>Frequency (%)</i>
Age	
≤21	36 (21.3)
22-34	68 (40.2)
≥35	65 (38.5)
Gender	
Female	32 (18.9)
Male	137 (81.1)
Race	
Black	90 (53.3)
Hispanic	79 (46.7)
Birth country	
U.S.	93 (55)
Non-U.S.	76 (45)
Sexual partners	
Opposite sex	91 (53.8)
Same sex	78 (46.2)
Sexual modality*	
Vaginal	97 (57.4)
Oral	132 (78.1)
Anal	88 (52.1)
Sexual behavior	
Condom use in the last encounter	61 (36.1)
>3 partners in 12 months	62 (36.7)
STI history	
Prior syphilis infection	19 (11.2)
Prior STI (CT/GC/trichomonas)	54 (32)
Symptoms of syphilis within 60 days	72 (42.6)
STI Co-infections/Re-infection	
CT	29 (17.2)
GC	12 (7.1)
CT + GC	35 (20.7)
HIV	52 (30.8)
Syphilis re-infection	12 (7.1)
Stage of syphilis	
Primary	8 (4.7)
Secondary	72 (42.6)
Early latent	49 (29)
Unknown duration	40 (23.7)

\*Patients may have reported multiple sexual modalities

**Table 2. Associated Factors Comparing by Race/Ethnicity**

	NH Blacks N=90	Hispanics N=79	
<i>Variables</i>	<i>Frequency (%)</i>		<i>p value</i>
Age			
≤21	29 (32.2)	7 (8.9)	<.01 *
22-34	39 (43.3)	29 (36.7)	.24
≥35	22 (24.4)	43 (54.4)	<.01 *
Gender			
Female	23 (25.6)	9 (11.4)	.02 *
Male	67 (74.4)	70 (88.6)	.02 *
Birth country			
Non-U.S.	8 (8.9)	68 (86.1)	<.01 *
U.S.	82 (91.1)	11 (13.9)	<.01 *
Sexual partners			
Opposite sex	62 (68.9)	29 (36.7)	<.01 *
Same sex	28 (31.1)	50 (63.3)	<.01 *
Sexual modality			
Vaginal	63 (70.8)	34 (44.7)	<.01 *
Oral	65 (73)	67 (87)	.02 *
Anal	28 (31.5)	60 (77.9)	<.01 *
Sexual behavior			
Condom use in the last encounter	32 (44.4)	29 (43.9)	.55
>3 partners in 12 months	31 (34.4)	31 (39.2)	.31
STI history			
Prior syphilis infection	10 (11.1)	9 (11.4)	.57
Prior STI (CT/GC/trichomonas)	26 (28.9)	28 (35.4)	.23
Symptoms of syphilis within 60 days	35 (38.9)	37 (46.8)	.19
STI Co-infections/Re-infection			
CT	21 (23.3)	8 (10.1)	.02 *
GC	6 (6.7)	6 (7.6)	.52
CT + GC	22 (24.2)	13 (16.5)	.14
HIV	38(42.2)	17(21.5)	.40
Syphilis reinfection	6 (6.7)	6 (7.6)	.52

p < .05

low rate of condom use. However, although rates of condom use were low, there were not different when compared with the NH Black population. Also, it has been suggested that Hispanics are less likely to admit high risk sexual behavior, and stigma associated with homosexuality still plays an influential role in the Hispanic culture (Hardy, 2010). These factors were not observed in our sample where rates of multiple sex partners and MSM were high among Hispanics.

*Limitations*

This study was a retrospective chart review. Data about sexual risk behavior and ethnicity were self-reported. Because data were collected by clinicians, risk factors may have been under-reported. We also included syphilis of unknown duration in individuals with high risk behavior because we con-

sidered those cases likely infectious. This could have resulted in a higher number of cases analyzed.

**Conclusions**

We described the cases of infectious syphilis in a multi-ethnic urban STD clinic in south Florida where most cases were in NH Blacks and Hispanics. HIV co-infection was common. Our data showed different characteristics in syphilis infections in these two minority groups with higher rates among older, MSM Hispanics and younger heterosexual NH Black males, suggesting co-existence of distinct epidemics in the same metropolitan area. Multiple studies have reported disease disparity among Blacks regarding syphilis and other STDs with few studies highlighting the increasing numbers in Hispanics.

Future studies will improve understanding of disparities so that targeted language and cultural interventions can be advanced.

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