

Stigma/discrimination and sexually transmitted infections (STIs) among Black men who have sex with men (BMSM): HPTN 061

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Take home message

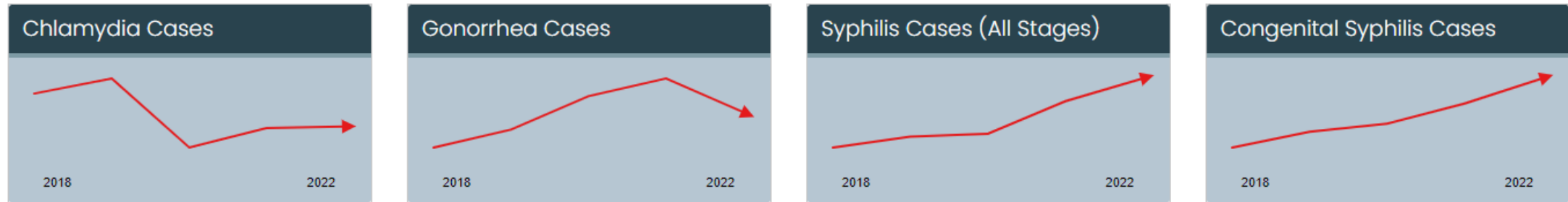
- Healthcare related discrimination and racism (high vs low/never) are associated with reduced odds of having a STI diagnosis at baseline
- Perceived HIV stigma (high vs low) and sexual discrimination (high vs never/low) are associated with increased odds of having a STI diagnosis
- In the follow-up analyses, only healthcare related stigma was associated with reduced odds of having a STI diagnosis (baseline to month 6)
- Experiencing multiple types of stigma (2-3) was associated with reduced odds of having a STI diagnosis at baseline but not at follow-up
- It's been ~14 years since HPTN 061, yet the HIV/STI narrative among BMSM remains the same
- The need for behavioral interventions to keep abreast with advancement in biomedical approaches

Background

CDC's 2022 STI Surveillance Report underscores that STIs must be a public health priority

Yet again, more than 2.5 million cases of chlamydia, gonorrhea, and syphilis were reported in the United States

Sexually Transmitted Infections Surveillance, 2022 provides the most current and complete data for nationally notifiable STIs for federally funded control programs. CDC's annual report underscores that STIs must be a public health priority. In 2022, more than 2.5 million cases of syphilis, gonorrhea, and chlamydia were reported in the United States. The most alarming concerns center around the syphilis and congenital syphilis epidemics, signaling an urgent need for swift innovation and collaboration from all STI prevention partners. In addition to the syphilis epidemic worsening, reported gonorrhea cases declined for the first time in at least a decade while reported chlamydia cases were level. CDC will continue to examine this finding closely and look to 2023 data for better understanding, but recognize this finding may be a cause for an even closer look at public health efforts and redoubled prevention strategies. As STI services and related resources continue to rebound from the U.S. COVID-19 pandemic and mpox outbreak, we must act now to mobilize and execute a whole-of-nation approach if we hope to turn the tide.



Disease	Cases					Percent Change	
	2018	2019	2020	2021	2022	5 Year	1 Year
Chlamydia	1,758,668	1,808,703	1,579,885	1,644,416	1,649,716	-6.2	0.3
Gonorrhea	583,405	616,392	677,769	710,151	648,056	11.1	-8.7
Syphilis (All Stages)	113,739	127,943	131,797	173,858	203,500	78.9	17.0
Congenital Syphilis	1,325	1,882	2,162	2,875	3,755	183.4	30.6
Total Reported STIs	2,457,137	2,554,920	2,391,613	2,531,300	2,505,027	1.9	-1.0

U.S. STI Epidemic Showed No Signs of Slowing in 2021 – Cases Continued to Escalate

Media Statement

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Reported cases of the sexually transmitted infections (STIs) chlamydia, gonorrhea, and syphilis all increased between 2020 and 2021 – reaching a total of more than 2.5 million reported cases – according to CDC's [final surveillance data](#). To reverse this trend, CDC is calling for more groups from local, healthcare, industry, and public health sectors to contribute to STI prevention and innovation efforts.

The new report provides final surveillance data for 2021, and shows that overall in a single year (2020-2021):

- Gonorrhea rates increased more than 4%
- Syphilis rates surged, increasing nearly 32% for combined stages of the infection
 - Among the syphilis data, cases of [congenital syphilis](#) rose by an alarming 32% and resulted in 220 stillbirths and infant deaths.
- Chlamydia rates increased nearly 4%, but – unlike gonorrhea and syphilis – still did not return to pre-pandemic levels
 - This raises concerns that screening continued to be impacted by [COVID-19 related disruptions](#) the second year of the pandemic, because the infection is often asymptomatic.

Release of First-Ever Sexually Transmitted Infections National Strategic Plan

In December 2020, the U.S. Department of Health and Human Services (HHS) released the **first-ever STI National Strategic Plan (STI Plan)**. The STI Plan was developed through a robust process that included gathering feedback from stakeholders across health care and related fields. Partners throughout the federal government, as well as hundreds of non-federal stakeholders, including state, tribal, territorial, and local governments, researchers, health plans and providers, community groups, and national and local organizations that work in STI and related fields, helped shape the goals, objectives, and strategies in this plan.

The plan will serve as a roadmap to help federal and non-federal stakeholders at all levels, and in all sectors, reverse the sharp upward trends in STI rates and further address this growing public health epidemic.

HHS Releases First-Ever *STI Federal Implementation Plan*

The new plan outlines federal actions to reduce the burden of sexually transmitted infections in the United States through 2025.

Today, the U.S. Department of Health and Human Services (HHS) released the [*STI Federal Implementation Plan*](#) to detail how various agencies and departments across the federal government are taking a comprehensive approach to making meaningful and substantive progress in improving public health. This new plan builds on other key HHS actions to protect the public's health by addressing the growing threat of sexually transmitted infections (STIs) in America.

STIs have risen dramatically between 2020–2021, with more than 2.5 million cases of chlamydia, gonorrhea, and syphilis reported in the United States. In 2021, the Centers for Disease Control and Prevention reported:

- A 4.1 percent increase in chlamydia infections from 2020, with 1.6 million cases in 2021.
- More than 700,000 cases of gonorrhea, which increased 28 percent since 2017.
- A 74 percent increase in all stages of syphilis since 2017, with 176,000 cases in 2021.
- Congenital syphilis increased 203 percent in the last five years.

When left untreated, STIs can lead to long-term, irreversible health issues, such as chronic pelvic pain, infertility, and in some cases, cancer. STIs can also increase a person's risk of getting or transmitting HIV. The rising rates of STIs profoundly impact millions of Americans. The data we are seeing across the country calls for immediate and sustained action," said Admiral Rachel Levine, M.D., Assistant Secretary for Health. "We know that the impact of the STI epidemic does not fall equally across all populations, and we're going to keep pushing to ensure every person has access to high-quality services that are free from stigma and discrimination."

- BMSM are disproportionately affected by sexually transmitted infections (STIs)
- STIs increase HIV acquisition and transmission
- BMSM have the highest rate of HIV infection in the U.S.
 - 50% lifetime risk for HIV acquisition among BMSM
- Stigma is a formidable barrier to engaging in HIV/STIs prevention and treatment among BMSM which exacerbates HIV/STIs transmission rates
 - Influence sexual behaviors that increase vulnerability to HIV/STIs acquisition
 - Influence testing practices, partner notification and treatment
 - Influence disclosure of same-sex relationship to health providers



HIV/STIs disproportionately affect Black MSM
Increased STI trend in the era of U=U and PrEP



Reducing the burden of STIs among BMSM is necessary to reduce HIV infections and improve health outcomes



Although stigma is widely studied, it continues to undermine HIV/STIs prevention and treatment efforts highlighting the need for further investigations



Identifying the effects of different type of stigmas on STIs could inform the development of interventions to reduce the burden of STIs among BMSM

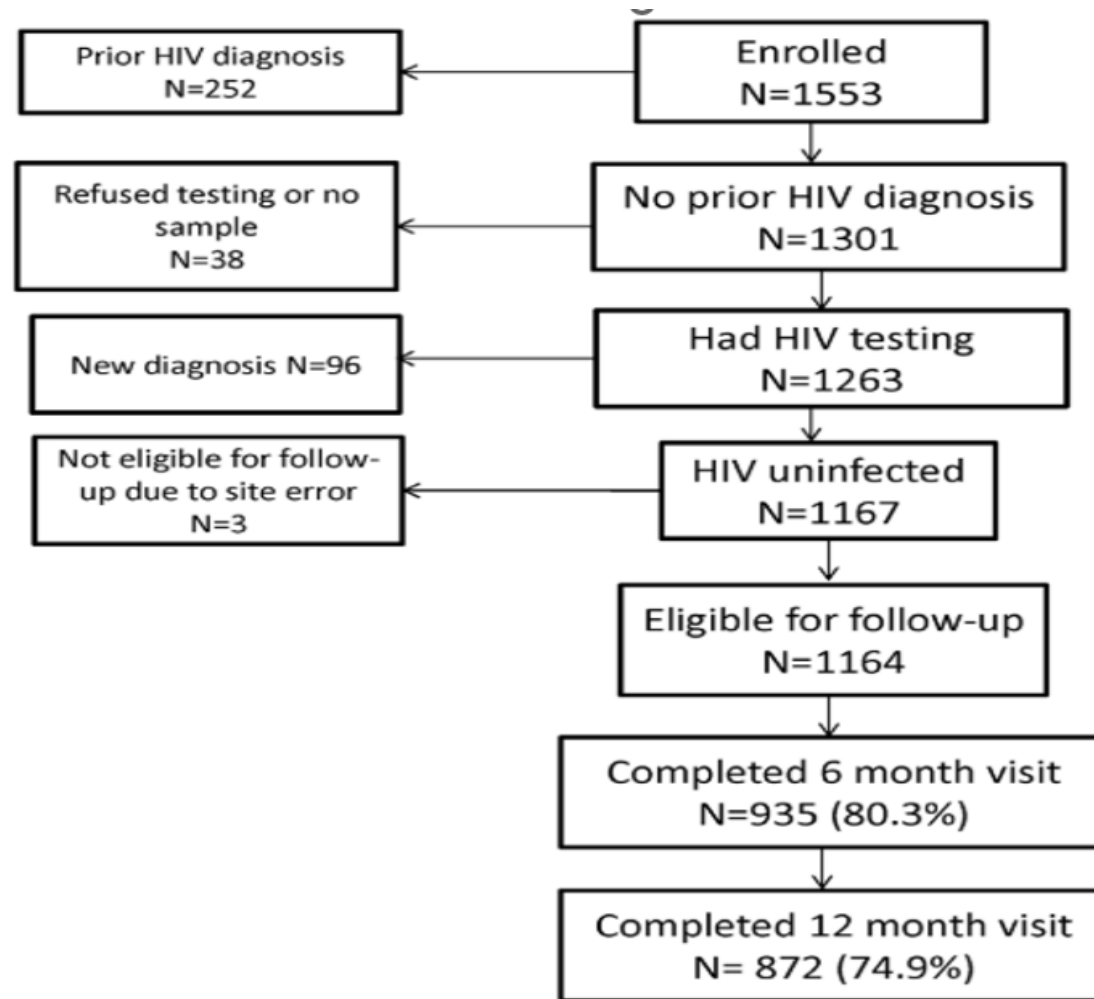
Study Aims

- Examine the association between stigmas and bacterial STIs among BMSM in 6 U.S. cities at baseline
- Assess the association between different types of stigmas on STIs among BMSM during the follow-up period (baseline to 6 months and 6 months to 12)
- Assess the combined effects of different types of stigmas on STIs (0-1, 2-3, 3 or more) during the follow-up period (baseline to 6 months and 6 months to 12)
- Hypothesis: Experience of stigma and discrimination will increase the odds of having a STI diagnosis

Methods – Parent Study

- 061 Study (The BROTHERS Study) was designed to:
 - Evaluate the feasibility of a multi-component intervention to reduce HIV incidence among Black MSM
 - Prepare for a community-level randomized trial to test the efficacy of the intervention in reducing HIV incidence among Black MSM
- 6 cities in the U.S. (Atlanta, Boston, New York, Los Angeles, San Francisco, and Washington, DC.), 2009-2011
- Primarily recruited participants using two methods:
 - Directly from the community (“community recruited” participants)
 - Sexual network partners referred by participants (“referred” participants)
- Longitudinal study (Baseline, 6-month, and 12-month)

Methods – Parent Study



Koblin et al., 2013; Lao-Tzu Allan-Blitz et al 2022

Methods

Type of variable	Description
Background factors	Age, sexual identity, education, employment, income, housing, incarceration status, depression
Stigma and discrimination (predictor)	<ul style="list-style-type: none">• Perceived racism (28-item scale, 5-point Likert scale [$\alpha = 0.95$]). Categorized as low/never happened, moderate and high• Sexual discrimination (25-item scale, 5-point Likert scale [$\alpha = 0.95$]). Classified as above• Perceived HIV stigma (5- items, 5-point Likert scale [$\alpha = 0.82$]). Categorized as low or high• Internalized homophobia (7-item, 5-point Likert scale). Categorized as low, medium, high• Health care-related stigma (1 item)
Sexual behaviors and substance use	Number of sexual partners, condomless sex, engage in exchange sex, HIV status, HIV status of partners, circumcision status, history of STIs, Alcohol Use Disorders Identification Test (AUDIT); Substance use - composite variable was created
Bacterial STI (outcome)	Neisseria gonorrhoeae (GC), Chlamydia trachomatis (CT), and/or syphilis

- Descriptive statistics used to characterize the sample
- Logistic regression models were used to assess the association between stigma and STIs at the baseline visit
- Generalized estimating equations (GEE) with a binomial distribution were used to examine incident cases of STI and stigma (baseline vs. months 6 vs 12 months)
- All multivariable models adjusted for covariates that were associated with the outcome
- Missing data points related to follow-up visits were imputed using the last observation carried forward method
- A two-sided p-value < 0.05 was considered statistically significant
- Data were analyzed using SAS version 9.4

Results

Table 1: Baseline Characteristics of Participants (N=1,518)		
	Frequency	Percent
Age, Mean (SD)	37.8 (11.8)	
Income less than \$30,000	1,093	72.7
High school or less (highest level education)	791	52.1
Health insurance	918	60.5
Homosexual or gay	777	51.2
Any STIs*	252	16.6
HIV positive diagnosis	163	10.7
No. of sex partners ≥ 2	1,349	88.9
Condomless anal sex	1,341	88.3
Received money for sex	421	27.9
Healthcare related discrimination (yes vs no)	278	18.6
Perceived HIV stigma (high vs low)	649	44.4
Internalized homophobia (moderate/high)	627	44.6
Sexual discrimination (moderate/high)	749	49.3
Racism (moderate/high)	950	70.3
Two or more types of stigma	1,035	68.2

*1 STI – N=207 (13.7%); 2 or more STIs – N=45 (3%)

Results – Aim 1

Table 2 . Multivariable logistic regression of having any STI at baseline

	Odds Ratio	95% CI
Age group (ref = ≤ 30 years)	0.54	0.37 - 0.78
Any drug use (ref = No)	0.87	0.60 - 1.25
Any HIV positive male partner (ref = No)	1.50	0.99 - 2.24
Any transgender partner	0.60	0.35 - 1.03
HIV status (ref = Negative)	2.46	1.48 - 4.10
Work (full-time vs. retired/unemployed)	1.74	1.09 - 2.78
Healthcare coverage (ref = No)	1.48	1.05 - 2.09
Homosexual/Gay (ref = No)	0.98	0.66 - 1.46
Unprotected receptive anal sex (ref = No)	1.55	1.08 - 2.22
Unprotected insertive anal sex (ref = No)	1.05	0.74 - 1.50
Received money for sex (ref=No)	0.58	0.36 - 0.93
Perceived HIV stigma (ref = Low)	1.47	1.04 - 2.09
Health care related discrimination (ref = No)	0.51	0.30 - 0.86
High racism (ref = never/low)	0.43	0.22 - 0.84
High sexual discrimination (ref = never/low)	1.92	1.03 - 3.60

Other variables (not statistically significant) that were included in the model: income, depression, alcohol use, housing status (e.g., live alone vs live with others)

Results - Aim 2

Table 3. Health care related discrimination and STIs: Logistic regression and GEE models

	Model 1: MLR Baseline Odds Ratio (95% CI)	Model 2: GEE month 0-6 Odds Ratio (95% CI)	Model 3: GEE month 6-12 Odds Ratio (95% CI)
Age group (ref = ≤ 30 years)	0.47 (0.34 - 0.67)	0.54 (0.41 - 0.72)	0.51 (0.35 - 0.72)
Any drug use (ref = No)	0.88 (0.62 - 1.24)	0.78 (0.58 - 1.05)	0.79 (0.56 - 1.10)
Any HIV positive male partner (ref = No)	1.48 (1.01 - 2.16)	1.54 (1.15 - 2.06)	1.05 (0.72 - 1.55)
Any transgender partner (ref = No)	0.60 (0.36 - 0.98)	0.72 (0.49 - 1.06)	0.92 (0.60 - 1.40)
HIV status (ref = Negative)	2.37 (1.48 - 3.82)	2.07 (1.50 - 2.88)	3.72 (2.59 - 5.32)
Work (full-time vs. retired/unemployed)	1.77 (1.14 - 2.75)	1.56 (1.06 - 2.30)	0.98 (0.62 - 1.54)
Healthcare coverage (ref = No)	1.51 (1.09 - 2.08)	1.40 (1.06 - 1.86)	1.17 (0.85 - 1.62)
Homosexual/Gay (ref = No)	1.05 (0.73 - 1.50)	1.36 (0.99 - 1.86)	1.61 (1.09 - 2.36)
Uprotected receptive anal sex (ref = No)	1.51 (1.08 - 2.12)	1.39 (1.09 - 1.77)	0.94 (0.68 - 1.29)
Uprotected insertive anal sex (ref = No)	1.00 (0.72 - 1.39)	1.28 (0.99 - 1.65)	1.51 (1.10 - 2.07)
Received money for sex (ref = No)	0.70 (0.46 - 1.07)	0.84 (0.60 - 1.17)	0.95 (0.60 - 1.50)
Healthcare related discrimination (ref = No)	0.53 (0.33 - 0.85)	0.69 (0.48 - 0.99)	0.85 (0.52 - 1.41)

Other variables (not statistically significant) that were included in the model: income, depression, alcohol use, housing status (e.g., live alone vs live with others)

Results – Aim 2

We generated a similar model for each type of stigma:

- **Perceived racism**
- **Sexual discrimination**
- **Perceived HIV stigma**
- **Internalized homophobia**

There were no statistically significant association between these stigmas and having a STI diagnosis.

Results - Aim 3

Table 4. Combined effects of stigmas and STIs: Logistic regression and GEE models

	Model 1: MLR Baseline Odds Ratio (95% CI)	Model 2: GEE month 0 -6 Odds Ratio (95% CI)	Model 3: GEE month 6-12 Odds Ratio (95% CI)
Age group (ref = ≤ 30 years)	0.46 (0.33 - 0.65)	0.53 (0.40 - 0.71)	0.50 (0.35 - 0.71)
Any drug use (ref = ≤ 30 years)	0.89 (0.63 - 1.25)	0.79 (0.59 - 1.06)	0.79 (0.57 - 1.11)
Any HIV positive male partner (ref = No)	1.49 (1.02 - 2.18)	1.55 (1.16 - 2.07)	1.04 (0.71 - 1.52)
Any transgender partner (ref = No)	0.58 (0.35 - 0.95)	0.70 (0.47 - 1.03)	0.92 (0.60 - 1.41)
HIV status (ref = Negative)	2.28 (1.43 - 3.65)	2.07 (1.50 - 2.87)	3.69 (2.58 - 5.29)
Work (full-time vs. retired/unemployed)	1.81 (1.16 - 2.81)	1.57 (1.07 - 2.30)	0.98 (0.62 - 1.54)
Healthcare coverage (ref = No)	1.54 (1.12 - 2.12)	1.41 (1.07 - 1.87)	1.17 (0.85 - 1.61)
Homosexual/Gay (ref = No)	1.01 (0.71 - 1.45)	1.32 (0.96 - 1.80)	1.59 (1.08 - 2.34)
Uprotected receptive anal sex (ref = No)	1.54 (1.10 - 2.14)	1.37 (1.07 - 1.74)	0.94 (0.68 - 1.29)
Uprotected insertive anal sex (ref = No)	1.00 (0.72 - 1.39)	1.25 (0.98 - 1.60)	1.50 (1.09 - 2.07)
Received money for sex (ref = No)	0.90 (0.62 - 1.30)	0.82 (0.59 - 1.14)	0.94 (0.59 - 1.48)
Experienced 2-3 types stigmas (ref = 0-1)	0.53 (0.33 - 0.85)	0.88 (0.65 - 1.19)	0.85 (0.53 - 1.35)
Experienced 3 or more types stigmas (ref=0-1)	0.91 (0.60 - 1.37)	1.03 (0.77 - 1.36)	0.74 (0.54 - 1.01)

Other variables (not statistically significant) that were included in the model: income, depression, alcohol use, housing status (e.g., live alone vs live with others)

Aim 1:

- **Healthcare related discrimination, racism (high vs low/never)**, older age, received money for sex were associated with **reduced odds** of having a STI diagnosis
- **Perceived HIV stigma (high vs low), sexual discrimination (high vs never/low)**, HIV positive status, employment (work (full-time vs. retired/unemployed), having healthcare coverage, unprotected receptive anal sex (ref = no) were associated with **increased odds** of having a STI diagnosis

Aim 2

- **Healthcare related stigma** (yes vs no) was associated with **reduced odds** of having a STI diagnosis; all other stigmas – no association was observed

Aim 3

- **Experiencing multiple types of stigma (2-3)** was associated with **reduced odds** of having a STI diagnosis at baseline but not at follow-up

Limitations

- Self reported data
 - May result in social desirability bias, recall bias etc.
- Potential spurious associations
- The findings may not be generalizable to broader communities of BMSM
- Prior history of STIs was not included in the current study
- The study did not adjust for intervention effects
- The study was conducted in 2009 - 2011. So much has changed including the sexual landscape and experiences of stigma which must be taken into consideration

Implications/Future Considerations

- It has been ~14 years since HPTN 061, yet the HIV/STI narrative among BMSM remains the same
- Further research is needed to assess the effects of different types of stigma on sexual behaviors, uptake of prevention/treatment services and STI outcomes
- The increase rates of STIs amidst the remarkable progress in HIV treatment and prevention highlights the need for behavioral interventions to keep abreast with advancement in biomedical approaches
- Rebranding/reframing condom use and STI prevention messages is crucial
 - Create more opportunities to learn from BMSM

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Questions, comments, suggestions?

Thank you for participating!

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