The Problem with PrEP:

Intersectional Stigma and Modern HIV Prevention in the United States

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POV 423 - Poverty: A Research Seminar

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4/5/2019

I. Introduction

In the United States, gay and bisexual men who have sex with men (MSM) have the highest current and historic rates of HIV infection (Centers for Disease Control and Prevention, 2018a). While MSM as a general subpopulation accounted for the highest share of HIV diagnoses in the United States from 2005 to 2014, there were distinct racial differences in diagnosis rates between white and black MSM (Centers for Disease Control and Prevention, 2016a). In that decade timespan, the number of HIV diagnoses among white MSM declined by 18% while the number of diagnoses among black MSM increased by 22% (Ibid.). However, if current rates of HIV infection persist, 1 in 2 black MSM have a lifetime risk of acquiring HIV compared to 1 in 11 white MSM (Centers for Disease Control and Prevention, 2016b).

Some Americans may view the HIV/AIDS epidemic as an artifact of the 20th century rather than an ongoing epidemic. While many individuals shifted their attention toward international HIV epidemics in the early 21st century, there was a sustained "invisible epidemic" among black MSM in America that has led to shocking HIV statistics. Journalist Linda Villarosa offers a perspective on this issue by comparing rates of HIV infection among African American MSM to rates of infection in the African nation of Swaziland, the nation with the highest global rate of HIV. Villarosa states:

> *"If gay and bisexual African-American men made up a country, its rate would surpass that of this impoverished African nation -- and all other nations." (Villarosa, 2017)*

Along with the empirical evidence cited in her article, Villarosa recounts hearing themes of stigma, fear, and social isolation among interviewed black MSM. She identifies these themes as key barriers for traditional forms of HIV prevention (Villarosa, 2017). The pronounced racial

disparities in HIV rates described above indicate that traditional prevention methods have failed to reach or impact the black MSM subpopulation with large-scale efficacy potentially due to differential patterns of stigma and discrimination.

While more traditional prevention methods (*e.g.*, condoms, abstinence) have failed to yield equitable reductions in HIV incidence, there is hope that novel prevention options could allow for HIV reduction in the most at-risk populations. For this paper, I will focus on the most prominent of these treatments, pre-exposure prophylaxis (PrEP). PrEP is a daily oral drug regimen taken by a HIV-negative individual at risk for HIV to prevent HIV infection (Food and Drug Administration, 2012). While this treatment is an optimal prevention strategy for populations at risk for HIV infection due to its reported efficacy, adoption of PrEP has been a slow but gradual process in the United States. Particularly within the gay and bisexual male population, there has been an evident gap between the rates of PrEP uptake between white and black communities that is predicted to exacerbate racial disparities in HIV incidence (Huang, Zhu, Smith, Harris, & Hoover, 2018).

Because stigma may act as a barrier to traditional HIV prevention, one could question how varying degrees of homophobic stigma within racial communities can shape modern prevention choices. Historically, there has been a general stigma against homosexuality in American society, yet this stigma can impinge itself differentially based on community norms. For example, norms related to masculinity and religiosity within the black community can lead black MSM to experience heightened levels of stigma based on their homosexuality. The greater degree of homophobic stigmatization among black MSM could shape their choices to seek out modern HIV prevention through psychosocial mechanisms that alter their evaluations of self-worth and belonging.

Although differential degrees of homophobic stigma can be thought of as a probable mechanism to explain disparities, prevention failures among black MSM have also been framed as an issue of lower access to healthcare and race-based medical mistrust. This mechanism could be especially true of modern biomedical prevention options that require visits to medical establishments and consultations with physicians.

Even though the literature published on PrEP is still relatively new, there has already been a lack of coherence between studies to understand which social mechanisms and individual factors underlie large disparities in use between white and black MSM. Studies will frequently focus solely on the consequences of stigma, correlates of healthcare access, or effects of medical mistrust without considering how these processes may feed into or interact with each other.

To bridge this gap, my goal is to analyze a series of questions using the findings from selected studies to ascertain the ways in which various sociocultural and health factors, namely homophobic stigma, have been shown to shape PrEP usage patterns among white and black MSM. Such questions include: (1) Do greater degrees of homophobia within the black community mediate the lower propensity of black MSM to seek a PrEP prescription, and to what extent?; (2) Is there evidence of factors relating to healthcare access or medical mistrust that may interact with stigma to further shape PrEP usage patterns?; and (3) What measures and models should future studies pertaining to the racial disparities of PrEP highlight and address? By analyzing homophobic stigma alongside issues of healthcare access and medical mistrust, my hope is to contribute insights into the ways in which problematic social norms and stigma are operative in health-seeking behaviors that can reinforce and perpetuate HIV disparities within the United States.

II. Background

A. Pre-Exposure Prophylaxis (PrEP): The Future of HIV Prevention?

In the late 1990s and early 2000s, the primary HIV prevention methods involved advocating for abstinence in sex education courses as well as promoting consistent condom use (Villarosa, 2017). From 2008 to 2014, the annual rate of HIV incidence in the United States declined overall by 18% but this trend was not distributed equally among all populations (Centers for Disease Control and Prevention, 2018b). Although there were observable declines in annual HIV incidence among white MSM and heterosexuals, no decline was observed among black MSM (Ibid.). Due the inconsistent efficacy of past HIV prevention strategies in equitably reducing HIV incidence, biomedical researchers sought to create a pharmaceutical treatment option that would allow for the prevention of HIV acquisition in high risk individuals. In the early 2000s, the U.S. Public Health Service recommended that existing antiretroviral drug therapies be utilized in a non-occupational setting as post-exposure prophylaxis to reduce the chances of HIV infection shortly (within 72 hours) after a potential exposure to the virus (Smith et al., 2005). The application of existing antiretroviral drugs in new formulations and indications to avert HIV infections inspired researchers to see if they could possibly use such drugs as a pre-exposure prophylactic.

Following basic and translational biomedical research on the feasibility of using antiretroviral drugs as a pre-exposure prophylactic for HIV, medical researchers conducted a multinational clinical trial, the Pre-exposure Prophylaxis Initiative (iPrEx), from 2007 to 2010. This phase III trial was testing a new oral drug combination of the antiretroviral emtricitabine (FTC) and tenofovir disoproxil fumarate (TDF) among populations of MSM to determine drug safety and efficacy in preventing HIV infection (Grant et al., 2010). At the conclusion of the clinical trial, researchers found that participants assigned the daily FTC-TDF oral medication saw

a 44% reduction in the incidence of HIV and reported few adverse side effects other than temporary nausea (Grant et al., 2010). In 2012, the Food and Drug Administration (FDA) used findings from Grant et al. (2010) along with results from additional clinical trials with intravenous drug users and heterosexual women to approve the oral FTC-TDF drug formulation for PrEP under the brand name Truvada (U.S. Food and Drug Administration, 2012).

In the years since the FDA approval of Truvada, the U.S. Public Health Service (USPHS) and Centers for Disease Control and Prevention (CDC) have released a variety of clinical guidelines and public health information pertaining to PrEP. Two issues that have continually received attention by these agencies are the issues of PrEP adherence and use of supplementary HIV prevention measures. During the clinical trial, the researchers discovered the issue of nonadherence. Participants would often forget or choose not to take the medication daily, resulting in diminished efficacy (Grant et al., 2010). For PrEP to be a viable HIV prevention measure, at-risk individuals need to follow a strict adherence regimen which is a daunting task for many individuals. Due to the potential for missed doses, and given that PrEP is not 100% effective at preventing HIV or other STDs, the CDC and U.S. Public Health Service has continually recommended the use of supplementary prevention measures such as condoms alongside PrEP (Centers for Disease Control and Prevention, 2018b). The fact that PrEP is still not 100% effective in preventing HIV has led some to wonder if there really is a benefit in utilizing this new, more expensive drug as a form of prevention when effective, inexpensive solutions already exist (*e.g.*, condoms). Within the Clinical Guidelines for PrEP published by the CDC, the agency counters this claim by stating that there are still over 40,000 new infections of HIV each year. The CDC employs this statistic to confirm the substantial need for novel prevention methods to further reduce HIV infections (Centers for Disease Control and Prevention, 2018b). Furthermore, the

2015-2020 National HIV/AIDS Strategy for the United States emphasized expanding the use of combination prevention methods with PrEP as a focus in order to most effectively reduce HIV infections (Office of National AIDS Policy, 2015). While PrEP alone may not be the sole solution to HIV prevention, the published materials from key public health agencies indicate that it will be an indispensable tool for reducing the incidence of HIV if implemented effectively within populations most at risk.

B. Disparities in PrEP Usage Among White and Black MSM

Although PrEP has only been recently approved as a HIV prevention measure, there is growing evidence that there are already distinct gaps in its use along racial lines. A recent article found that within a national prescription database of users with available race/ethnicity data, white individuals received a majority of prescriptions at 68.7% while black individuals accounted for 11.2% of prescriptions (Huang, Zhu, Smith, Harris, & Hoover, 2018). The presence of this imbalance is significant because black MSM are the population most likely to meet the various indicators for initiating PrEP use (Smith, Van Handel, & Grey, 2018). Considering these disparities by race, I question how recent studies have sought to analyze the sociocultural or public health factors that may be producing this gap in PrEP use, particularly between white and black MSM.

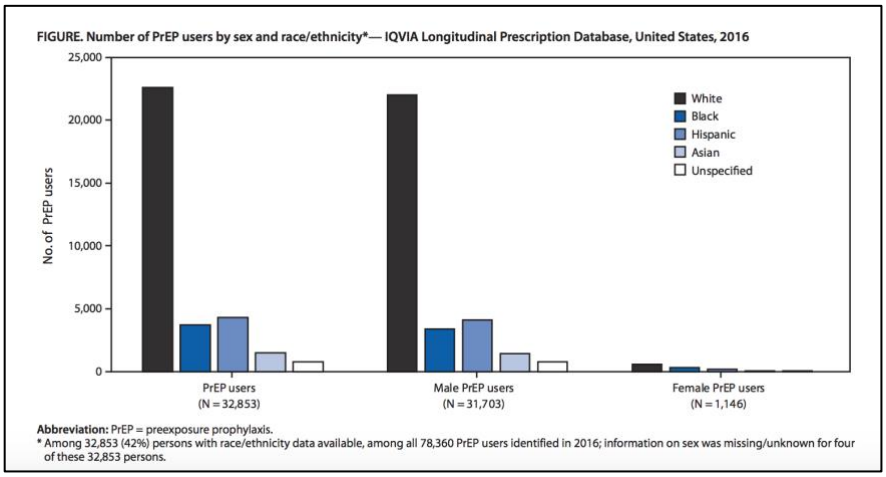


Figure 1: Racial disparities in PrEP prescriptions, particularly among males (Huang et al., 2018)

C. Race, Homophobia, and HIV Risk: Theoretical and Empirical Approaches

Given the racial disparities of HIV infection among MSM and the potential consequences of these disparities being conserved in prevention treatments, many researchers have sought to determine which health or sociocultural factors may drive such disparities. One explanation for these disparities is differential rates of stigma, particularly homophobic stigma, between racial communities. Historic assumptions may state that a cultural stigma such as homophobia affects its targeted group, homosexuals, without gradation based on other statuses. However, this assumption fails to consider social context and the fact that an individual can hold multiple identities. I use two social theories that address conceptions of stigma and status to better explain how racial differences in homophobic stigma can manifest.

Erving Goffman theorized the social construction of stigma and its impacts on individual identity. Goffman conceptualized a stigma as "a special kind of relationship between attribute and stereotype," with certain attributes of individuals being "deeply discrediting" among a group of "normals" (Goffman, 1963, pp. 3-5). Race, ethnicity, disability status, and sexual orientation are all various attributes by which an individual could experience stigma, with the process of stigmatization occurring when a specific attribute of an individual violates the constructed norms of a society (Goffman, 1963). Individuals that find themselves stigmatized often struggle to manage their "spoiled identity" and develop a strong disapproval of self that can lead to negative behavioral and psychosocial consequences (Goffman, 1963). For homosexual men, this could mean internalizing societal stigma against homosexuality and subsequently developing a lower sense of self-worth. This internalization process, as will be further contextualized below, can be theorized as being greater for black homosexual men compared to white homosexual men due in part to the additional attribute of race.

A more recent theory that pertains to issues of status and oppression is intersectionality theory, popularized largely through writings from sociologist Patricia Hill Collins. Although she wrote more specifically about the experiences of black women, Hill Collins opens the theory to include any "particular forms of intersecting oppressions" that could "work together in producing injustice," (Hill Collins, 2000, p. 18). Examples of intersecting oppressions given by Hill Collins include race, gender, sexuality, and financial means, all of which are particularly pertinent to the topic of HIV/AIDS among white and black MSM (Hill Collins, 2000). A virtue of intersectionality theory when compared to Goffman's theory of stigma is that it brings more nuance to Goffman's ideas of "stereotype and attribute," allowing for enhanced understanding of the ways in which different groups uniquely experience stigma. Intersectional paradigms reveal the fact that individual statuses are not isolated elements of a person's identity, but rather can combine to yield very different life outcomes for individuals of the same race, socioeconomic status, or gender (Hill Collins, 2000). This means that low-income black MSM can experience greater forms of injustice in their life compared to middle-class white MSM, a paradigm that could come into play to shape patterns of HIV vulnerability and access to prevention options.

One of the first examples of higher stigmatization of homosexuality within in the black community was an article by Stokes & Peterson (1998) that recounts observations from qualitative interviews conducted by the researchers with young black gay men in Atlanta and Chicago. Researchers asked respondents about their perceptions of homophobia within their community, as well as its effects on their self-esteem. The study found that many interviewees felt the black community was less tolerant of homosexuality compared to white communities, and thus they were more affected by negative attitudes toward homosexuality (Stokes & Peterson, 1998). Furthermore, respondents reported lower self-esteem and higher psychological stress stemming

from the homophobic attitudes within the wider black community, leading to engagement in riskier sexual behaviors (Stokes & Peterson, 1998). This article lends evidence to the idea that different racial community norms toward homosexuality can influence the choices black MSM make regarding HIV prevention measures.

Building on Stokes & Peterson's finding that there are attitudinal differences toward homosexuality between white and black communities in America, later studies focused on identifying empirical evidence that would either support or refute this claim. One such study was by Lewis (2003), which examined the differences in attitudes toward homosexuality and gay rights between white and black communities based on the General Social Survey data dating back to 1973. Through baseline statistical analyses of survey items that asked respondents about their attitudes toward homosexuality and gay rights, Lewis found that black respondents were 11 percentage points more likely to respond that homosexual relations were "always wrong" and were 14 percentage points more likely to report the opinion that high AIDS prevalence in gay communities was "God's punishment," (Lewis, 2003). However, black respondents were similar to white respondents in reference to beliefs about gay civil rights and were even more supportive of prohibiting anti-homosexual discrimination in the workplace. After adjusting for various demographic factors such as education level and religious attendance, the attitudinal differences that were previously statistically significant between the two groups of respondents became insignificant as responses from white and black individuals were largely similar. Lewis does not interpret this to mean that there are no differences between how white and black communities view homosexuality, but claims that this result after adjusting for demographic characteristics indicates that homophobic beliefs within the two communities stem from different demographic roots (*e.g.*,

black communities more commonly orient their views on homosexuality with their religious beliefs) (Lewis, 2003).

Golden & Glick (2010) updated Lewis' analysis by including more recent data from the General Social Survey (2003 – 2008) while also looking more closely at temporal shifts in attitudes toward homosexuality between white and black respondents. They found substantial differences with reference to the survey item that asks if respondents believe that homosexual relations are "always wrong." The researchers further found that on average attitudes toward homosexuality have improved across all racial categories since 1973, but that there was a substantial positive change in white respondents' attitudes around the late 1990s that led to a large and persistent gap along racial lines (Glick & Golden, 2010). While Glick & Golden (2010) do note that the disparities in attitudes toward homosexuality may not be a direct cause of high HIV rates, they posit that a lack of acceptance of homosexuality within the black community can lead to a higher rate of internalized homophobia. This concept of internalized homophobia, as recounted by Glick & Golden, represents a psychosocial process by which homosexual individuals may incorporate society's negative opinions of homosexuality to the detriment of their sense of social belonging and self-worth. Glick & Golden hypothesize that elevated rates of internalized homophobia that could with the disapproval of homosexuality in the black community could affect the propensity of black MSM to seek out risk reducing measures such as routine HIV testing (Glick & Golden, 2010).

While some studies that analyze the role of homophobia indicate that higher rates of internalized homophobia among black MSM can lead to certain patterns of sexual and health behaviors that leave them vulnerable to HIV, there has been some debate within the literature over whether there is actual evidence that black MSM do engage in risker behaviors. One article that

explicitly enters this debate is the meta-analysis by Millett, Peterson, Wolitski, & Stall (2006) which investigated a series of hypotheses that could account for the high prevalence of HIV among black MSM. The researchers found that the hypothesis "Black MSM Are More Likely Than Other MSM to Engage in High-Risk Sexual Behavior" was not supported by the scientific literature, with only five out of twenty-three studies showing supportive findings (Millett et al., 2006). The researchers did find support, however, for the hypothesis that indicated black MSM were less likely to be tested for HIV or know their HIV status, causing more exposures to occur unwittingly (Millett et al., 2006).

Interestingly, the primary author of the meta-analysis, Gregorio Millett, along with a series of colleagues affiliated with the Centers for Disease Control and Prevention (CDC) later wrote an article that somewhat complicates the debate over whether black MSM engage in higher risk sexual behaviors. Using cross-sectional survey data from over 1,000 black MSM in Philadelphia and New York City, Jeffries et al. (2013) found that black MSM that reported experiencing a greater number of homophobic events in the past 12 months had greater odds of engaging in unprotected sex. The researchers again employ the concept of internalized homophobia as a mechanism that could explain this pattern in their analyses, as those who internalized these negative views of self could have a decreased motivation to protect themselves (Jeffries et al., 2013).

D. The Influence of Discrimination and Stigma on Routinely Accessing Healthcare

Given that a large segment of the literature indicated that greater degrees of homophobia and internalized homophobia in the black community could lead to reduced levels of protective behaviors among black MSM, it is important to consider how this psychosocial mechanism could extend to shape healthcare accessibility. While the term "healthcare access" can take on many

meanings, I am defining access in terms of seeking out or visiting a healthcare establishment to obtain its resources. Theoretically it seems plausible that higher levels of internalized homophobia could influence how an individual values health maintenance and routine wellness visits. However, there is a surprisingly small amount of studies that explore the relationship between internalized homophobia and healthcare access. Some of the literature that describes access barriers among black MSM explores patterns of internalized racial discrimination rather than internalized homophobia. In a study by Malebranche et al. (2004), researchers conducted a series of focus groups with black MSM throughout New York state to determine how experiences of racial discrimination with medical establishments impacted their subsequent interactions with these institutions. The researchers found that individuals that indicated negative experiences in medical settings due to perceived racism were less likely visit a physician or get tested for HIV (Malebranche et al., 2004). There was also a pronounced decrease in communication due to perceived racism, leaving these individuals without access to health information and knowledge about prevention options (Ibid.).

While the qualitative work of Malebranche et al. (2004) communicated a clear process by which increased internalized racism among black MSM leads to decreased access, a later quantitative study found surprisingly contradictory findings. In the study by Irvin et al. (2014), researchers conducted a survey among a large sample of black MSM that assessed the impact of healthcare-specific racial discrimination on healthcare utilization and HIV testing. Within analyses that estimated the odds of utilizing healthcare and being tested for HIV based on healthcare-specific racial discrimination, results indicated that racial discrimination was linked to statistically significant increases in the odds of both healthcare utilization and HIV testing (Irvin et al., 2014). The researchers propose that these counterintuitive findings could indicate that there are different

underlying barriers to access or that behaviors related to accessing healthcare are confounded by a complex system of psychosocial buffers. Nevertheless, researchers also acknowledge that there are methodological limitations within their study, such as the cross-sectional nature of the survey and the use of novel metrics that could threaten the findings' validity (Ibid.).

The mixed and limited findings pertaining to healthcare access among black MSM leaves me to wonder if access alone can explain observed HIV prevention disparities. Access is likely one piece of a larger complex mechanism that depends heavily on contextual factors. Given this assumption, it will be important to consider how recent studies pertaining to PrEP disparities assess the impact of healthcare access and it potential interactions with stigma or racial discrimination.

E. Legacies of Race-based Medical Mistrust on HIV Vulnerability

One final factor that is necessary to consider when investigating topics of race-based health disparities is the differential pattern of medical mistrust between racial communities. Pervasive distrust of biomedical and public health authorities among the black community is often linked to the unethical practices of the Tuskegee Syphilis Study. Within this clinical study that aimed to study the disease progression of syphilis, numerous black men with curable syphilis were deliberately left untreated by U.S. Public Health Service officials (Gamble, 1997). While this event is commonly cited as the cause for why black individuals in American exhibit higher rates of medical mistrust, the article by Gamble (1997) argues that this line of reasoning neglects broader historical legacies of race-based medical exploitation that date back to the antebellum period. Gamble further argues that this sustained fear of exploitation directly connects to the birth of conspiracy beliefs about HIV/AIDS, namely that AIDS was a genocide crafted by biomedical institutions to wipe out marginalized groups (Ibid.). These conspiracy beliefs have been empirically measured as being endorsed by a non-trivial proportion the black community, with

one study finding that over a quarter of their sample population believed that the federal government made the virus to specifically kill black people (Klonoff & Landrine, 1999).

Given that HIV/AIDS conspiracy beliefs are an extension of general medical mistrust, it is likely that holding these beliefs could lead to lower rates of prevention-seeking behaviors. Therefore, researchers sought to analyze the extent to which these beliefs altered black individuals' propensity to seek out traditional forms of prevention. Using a randomized sample of black individuals within the United States, the study by Bogart & Thorburn (2005) found that stronger conspiracy beliefs, controlling for sociodemographic and psychosocial factors, were significantly correlated with inconsistent condom use. The researchers elaborate that the association between conspiracy beliefs and inconsistent condom use could be due to increased suspicion in adopting the prevention methods recommended by government agencies, viewing them as intentionally faulty (Bogart & Thorburn, 2005).

Moving beyond HIV/AIDS conspiracy beliefs among the black community in general, there has been some research conducted on the influence of these beliefs in determining antiretroviral treatment adherence among black men with HIV. The study by Bogart et al. (2010) revealed that within their sample of black men with HIV (majority MSM), there were two distinct conspiracy beliefs held by participants: "HIV is manmade by the government" and "People who take antiretroviral treatments are human guinea pigs for the government." In statistical analyses with full adjustment sets, only treatment-related conspiracy beliefs were found to significantly predict lower levels of treatment adherence (Bogart et al., 2010). Given that modern prevention options such as PrEP are biomedical treatments with some government connections (*e.g.*, CDC and USPHS endorsement), it is important to consider the ways in which conspiracy beliefs and race-based medical mistrust could be driving racial disparities in PrEP use.

III. Methodology

A. Synthetic Review of Current Literature on PrEP Use Among MSM

To generate more coherent insights about which sociocultural or public health factors (*e.g.*, homophobic stigma, medical mistrust) shape PrEP usage disparities, I conducted a synthetic review of the recent literature to identify studies that specifically measured or addressed these factors in relation to PrEP usage. Given the novelty of this research topic, I felt this approach would allow me to best elucidate how researchers in the years since PrEP's approval have conceptualized social mechanisms and assessed factors that generate observed racial disparities.

While studies that center on homophobic stigma will be principal in subsequent analyses, literature addressing public health aspects such as medical mistrust or healthcare access will also be included to see if these factors may further interact with stigma to produce the observed patterns of PrEP use. Using major academic databases (*e.g.*, PubMed, Google Scholar, EBSCO Academic Search Complete), I initially employed the search terms "PrEP", "Truvada", or "Pre-Exposure Prophylaxis", along with "HIV", "MSM" and "Stigma" in a Boolean logical search. To broaden the topic range of the articles to include additional public health factors that could intersect with stigma, I conducted subsequent Boolean searches using the same terms as above while adding the search terms "Healthcare Access" or "Medical Mistrust." Articles were selected if they were primary research studies published after 2012, had at been cited by other pieces of literature, and their research question focused on predictors of PrEP usage within MSM populations. Because PrEP is a relatively recent advancement in HIV prevention, there were some limitations in the number of articles that could be identified that specifically addressed PrEP usage alongside a series of socioeconomic measures and covariates. As a result, the final sample was only twenty articles. While I have confidence that this group of selected articles is a strong representation of the studies

done on this topic, I acknowledge the possibility of omitting articles that weren't widely cited in searched databases or by the selected articles as of March 2019.

Following the search, I reviewed qualitative and quantitative studies that met my parameters to capture all possible findings from differing methodological perspectives. I utilized an open coding scheme whereby I sorted interview or focus group question items from selected qualitative studies into emergent categories. This coding procedure was also performed on studies that utilized a quantitative approach through survey data. As with the qualitative studies, I categorically coded reoccurring survey measures or survey items to assess commonalities.

B. Descriptive Summary of Selected Articles

Table 1 shows the sample of twenty studies identified for analysis. These studies employed a variety of methodological approaches and analytic techniques to better understand social processes that underlie gaps in PrEP usage. Of these articles, fourteen utilized a quantitative approach with statistical analyses while only six utilized a qualitative approach with focus groups or interviews. One aspect that could explain this unequal pattern in methodological approaches is the common placement of these articles in public health and epidemiological journals. While the fields of public health and epidemiology often rely on previously published qualitative case studies to inform research questions, there is a strong emphasis within these domains to employ statistical methods and analyses that aim to answer causal questions through empirical data. For many of the identified studies, the causal question that researchers ask is: "What factors significantly influence the willingness of MSM to take PrEP?"

Table 1: Summary of Selected Articles

Authors	Year	Journal	Methodology	Analysis
Wingood et al.	2013	*Journal of Acquired Immune Deficiency Syndrome*	Telephone Survey (Quantitative)	Univariate and Multivariate Logistic Regression
Eaton et al.	2014	*Sexual Health*	Cross-Sectional Survey (Quantitative)	Univariate and Multivariate Logistic Regression
Eaton et al.	2015	*American Journal of Public Health*	Cross-Sectional Survey (Quantitative)	Univariate and Multivariate Logistic Regression
Rendina et al.	2016	*Social Science & Medicine*	Longitudinal Survey (Quantitative)	Analysis of Variance (ANOVA); Multinomial Logistic Regression
Philbin et al.	2016	*AIDS Patient Care and STDs*	In-Depth Interviews (Qualitative)	Thematic Analysis Using the Constant Comparative Method
Fallon et al.	2016	*AIDS and Behavior*	Cross-Sectional Survey (Quantitative)	Univariate and Multivariate Logistic Regression
Cahill et al.	2017	*AIDS Care*	Focus Groups (Qualitative)	Within-case and Across-case Thematic Analysis
Eaton et al.	2017	*AIDS and Behavior*	Cross-Sectional Survey (Quantitative)	Univariate and Multivariate Logistic Regression
Arnold et al.	2017	*PLOS One*	Semi-structured Interviews (Qualitative)	Thematic Analysis Using Open and Axial Coding
Kuhns et al.	2017	*AIDS and Behavior*	Longitudinal Survey (Quantitative)	Univariate and Multivariate Logistic Regression
Parker et al.	2017	*Culture, Health & Sexuality*	In-Depth Interviews; Participant Observation (Qualitative)	Thematic Analysis Using Open Coding
Patel et al.	2017	*PLOS One*	Patient Clinical Data Review (Quantitative)	Univariate and Multivariate Logistic Regression
Ojikutu et al.	2018	*AIDS and Behavior*	Cross-Sectional Survey (Quantitative)	Univariate and Multivariate Logistic Regression
Goedel et al.	2018	*Journal of Acquired Immune Deficiency Syndrome*	Agent-based Modeling (Quantitative)	Descriptive Analysis of Modeling Results
Hammack et al.	2018	*PLOS One*	Telephone and Mail Survey (Quantitative)	Bivariate and Multivariate Logistic Regression
Sullivan et al.	2018	*Annals of Epidemiology*	Review of Commercial Prescription Data for PrEP (Quantitative)	Estimates of Annual PrEP Use and PrEP-to-need ratio by subgroup
Siegler et al.	2018	*Annals of Epidemiology*	Review of PrEP Locator Database (Quantitative)	Geographic and Spatial Analysis of PrEP Usage
Jenness et al.	2018	*American Journal of Epidemiology*	Mathematical modeling (Quantitative)	Statistical Analysis of Modeling Results
Elopre et al.	2018	*AIDS Patient Care and STDs*	In-Depth Interviews (Qualitative)	Thematic Analysis Using Inductive Coding
Sun et al.	2019	*AIDS Education and Prevention*	Semi-structured Interviews (Qualitative)	Thematic Analysis Using Open Coding

The studies that chose to take a qualitative approach were commonly trying to ascertain how various social factors, particularly stigma and discrimination, impacted the lives of MSM and subsequently shaped their opinions about PrEP. As I will discuss further, the various methodologies employed by these studies have individual strengths that uniquely reveal trends that influence choices surrounding PrEP use among MSM. Nevertheless, I will argue that there is a substantial gap between the measures and findings among these differing approaches that contribute to a lack of coherence in understanding the social mechanisms underlying large disparities in PrEP use between white and black MSM.

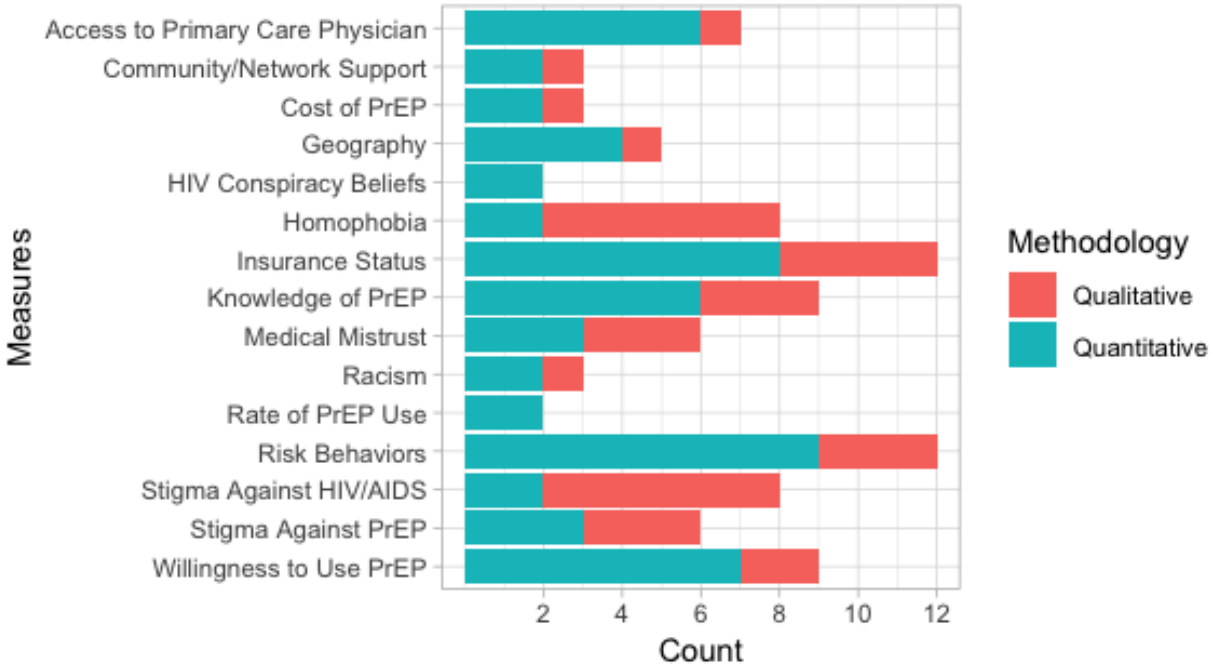
Within the group of selected articles, there is a noticeable trend (especially within quantitative survey studies) to include measures of healthcare access within models (see Figure 2). Prominent measures include access to a primary care physician and insurance status. These measures may be important in shaping PrEP use or even willingness to use PrEP, since individuals require a physician to write a prescription to initiate PrEP. Without sufficient access to healthcare resources, it is very plausible that vulnerable MSM would lack the willingness to use PrEP. Measures of various risk behaviors (*e.g.*, unprotected sex, high numbers of partners, and substance abuse) were another set of variables that were most commonly queried in surveys or asked about in interviews. These measures were most often used to establish the proportion of the sample at the highest risk for acquiring HIV, but there were times where a "risk score" was included as a covariate in regression analyses.

Figure 2 also shows that qualitative research studies that investigated questions of HIV prevention through PrEP more commonly asked individuals about the role of various forms of stigma and discrimination. The most common measure of stigma seen in these qualitative studies was homophobia, with six distinct studies utilizing interview questions that broached this subject.

The issue of HIV/AIDS stigma was also commonly seen among interview or focus group questions, being assessed as frequently as measures of homophobia in other qualitative studies. It is important to note that the studies that asked about homophobia also included questions about HIV/AIDS stigma, indicating a test of intersectional stigma frameworks.

Figure 2

Distribution of Key Measures Analyzed by Methodology



IV. Analysis

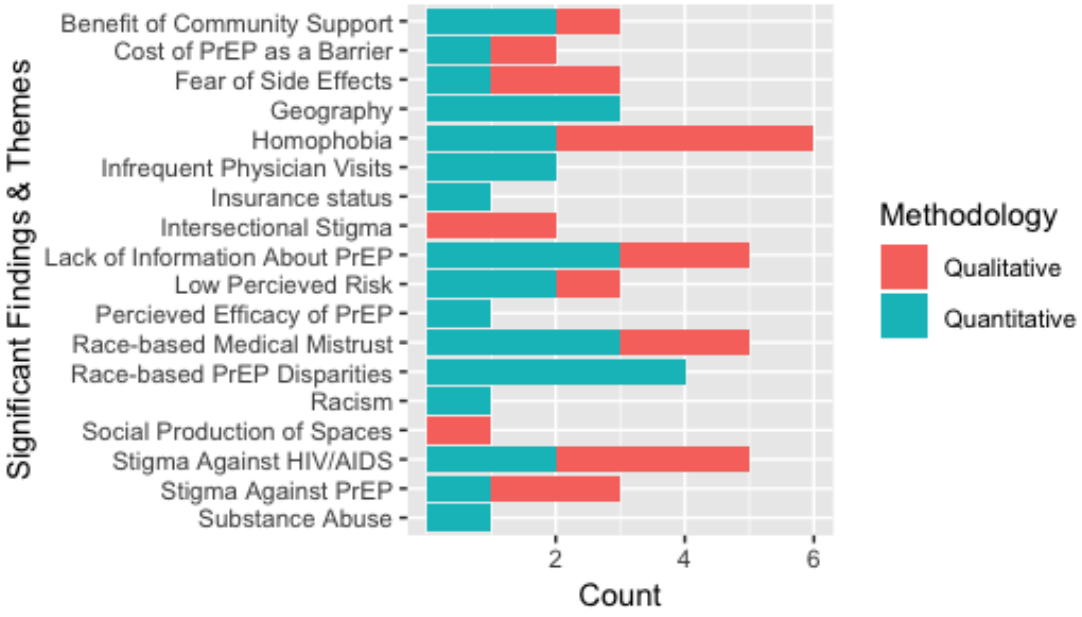
A. Inconclusive Effects of Healthcare Access on Willingness to Use PrEP

Although healthcare access and behavioral measures were most commonly included for statistical analyses, these factors were often deemed statistically insignificant to the outcome variable of willingness to use PrEP (only once for Insurance Status [Patel et al., 2017] and twice for Infrequent Physician Visits [Eaton et al, 2015; Ojikutu et al., 2018]). More often, higher rates of insufficient knowledge and information would estimate significantly lower odds of willingness to use PrEP. This lack of information may also stem from a lack of healthcare access, but the

analyses are unclear with respect to the direction of causation between this pattern (*e.g.*, whether lack of information leads to lower healthcare access or whether low levels of healthcare access leads to lower levels of information about PrEP). Empirically establishing the mechanism by which limited health information about PrEP occurs could help to increase willingness to use PrEP among MSM.

Figure 3

Distribution of Significant Findings & Themes Related to PrEP Use by Methodology



While the quantitative studies that include healthcare access covariates in statistical model specifications have found mixed results, two studies published in the last 6 months (Goedel et al., 2018 and Jenness et al., 2018) moved beyond hypothetical willingness to use PrEP to focus on predicted public health consequences of current PrEP disparities. By using agent-based and mathematical modeling, these studies analyzed the predicted HIV incidence for white and black MSM given disproportionate rates of PrEP use. Godel et al. (2018) found that their agent-based model predicted HIV incidence disparities to grow even more between white and black MSM given current rates of PrEP use. The researchers noted, however, that their model distinguished

between PrEP coverage (related to insurance status or payment assistance) and PrEP access (related to structural aspects of medicine), and their model indicated that it was necessary to correct inequities in both aspects for predicted disparities in HIV incidence to be alleviated. This was similarly echoed in Jenness et al. (2018), with the researchers advocating for a "PrEP continuum of care" that ensured patients were accounted for in each step of the medical process to obtain and adhere to regimens. These findings, which showcase the complex and challenging landscape of PrEP implementation to correct HIV disparities, could partially explain why more simplified measures of healthcare access fail to capture meaningful effects in surveys. As social network analysis and epidemiological modeling continue to advance, perhaps complex social issues such as racial disparities in PrEP use will be able to be more precisely understood empirically.

B. Medical Mistrust Uniquely Shapes Choices About PrEP Among Black MSM

Another factor found to significantly shape PrEP willingness was medical mistrust, especially when race-based. In the study by Cahill et al. (2017), researchers utilized qualitative focus groups that assessed PrEP awareness and uptake among white and black MSM in Boston, MA and Jackson, MS. While both white and black MSM described a set of concerns about lack of general knowledge regarding the treatment, black MSM from the Jackson, MS focus group uniquely discussed issues of medical mistrust and skepticism as factors that shaped their opinions about PrEP (Cahill et al., 2017). Below is an example of a response that addressed this type of skepticism:

> *"I don't believe that PrEP works, because if it did, then they'd be handing out the pill like they do condoms. I'm gonna need some facts before I try it. I need to see someone do it and get their results." (Cahill et al., 2017)*

A similar study completed by Philbin et al. (2016) corroborated these findings. By completing over thirty in-depth interviews with black MSM in New York City, the researchers confirmed that medical mistrust was a common community-level factor that affected participants' willingness to adopt PrEP. The following quote from a black MSM participant from Philbin et al. (2016) exemplified the theme of medical skepticism:

> *"The government is trying to make money off us because there's money in medicine. The government is trying to get us to just pop a pill and just be done with it or whatever." (Philbin et al., 2016)*

Some researchers, such as Eaton et al. (2017), note that the historical legacies of unethical medical research on racial minorities could account for high levels of race-based medical mistrust. A lack of trust in healthcare establishments can directly influence the amount of information one receives as well as the perception of access to health resources. Because willingness to use PrEP often requires confidence in a physician and a discussion involving potentially sensitive topics (*e.g.*, sexual history, sexual orientation, and substance abuse), it is intuitive that black MSM that report race-based medical mistrust are less likely to obtain and use the prescription. Researchers often conclude that PrEP's success within the black community largely depends on improving overall trust in medical establishments.

C. Multiple Intersecting Forms of Stigma Shape Racial Disparities in PrEP Use

As was stated previously, many of the qualitative research studies that investigated questions of HIV prevention through PrEP most commonly ask individuals about their experiences with various forms of stigma and discrimination. Many of the questions pertaining to homophobia yielded common thematic components from interview respondents in reference to their willingness to utilize PrEP, with many stating that this form of stigma was a hindrance to their adoption of PrEP. This theme of homophobia shaping prevention decisions, specifically as reported by black

MSM, is showcased the series of quotes below from Cahill et al. (2017) and Philbin et al. (2016), respectively:

> *"If you're taking the PrEP to prevent HIV infection, the stigma could be you're taking it [because] you are having gay sex, ... and that could discourage some individuals from taking the drug, because it's being attached to it [gay sex]." (Cahill et al., 2017)*

> *"If somebody knew I was asking about that pill, then there is a stigma that goes along with that…they usually associate that with being gay, and then they would look at you differently for being gay. That's still in the black community.'' (Philbin et al., 2016)*

Interestingly, some qualitative studies revealed that is a novel form of stigma that has emerged alongside increased dissemination of PrEP. Many individual respondents indicated that they feared social repercussions pertaining to associations of PrEP being for people who were "promiscuous," with researchers qualifying this as "stigma against PrEP." Formulations of interview questions (*e.g.*, Elorpe et al., 2018; Sun et al., 2019) as well as certain survey items (*e.g.*, Eaton et al., 2017) would often include this type of stigma and assess whether it was salient in their sample. Both Elorpe et al. (2018) and Sun et al. (2019) showed the presence of such stigma in their vastly different samples of MSM, with participants stating:

> *"I've heard the term Truvada whore. Like shaming people who take it. It's like in the gay community, it's like gay shaming. People think that guys who are on PrEP are overly promiscuous and all they want to do is have all this unprotected sex, these orgies and all this stuff."(Elorpe et al., 2018)*

> *"There is a very specific stigma that comes with the idea that somebody is on PrEP… they must be a very sexually active gay male who wants to have unprotected sex" (Sun et al., 2019)*

The ability of both qualitative and quantitative studies to respond to and incorporate the novel emergent theme of stigma against PrEP shows that there are possibilities for "cross-talk" between these various streams of PrEP research. However, these possibilities have seemingly been limited to this narrow example and many quantitative studies from this group of articles ignore or insufficiently measure various forms of stigma. As shown in Figure 3, qualitative studies often revealed that interviewed MSM would commonly cite various forms of stigma along with intersectional frameworks of stigma as discernible barriers that affected their choices regarding PrEP. Although only two of the six qualitative studies directly mentioned "intersectionality" or "intersectional stigma" as an emergent theme discussed by respondents, many of the other studies, such as those that commonly saw homophobia cited in interviews, indirectly mentioned how other features respondents' life experiences could shape their willingness to use PrEP. Participants from Elorpe et al. (2018) exemplified this theme of intersectional stigma, where the black MSM participants often recounted that their intersecting minority statuses of being black and gay in the rural South negatively impacted how comfortable they were in accessing PrEP. It should be noted that this research by Elorpe et al. (2018) only focused on black MSM without conducting a cross-comparison to white MSM, causing there to be a slight gap in their findings. Future research should continue to implement cross-comparisons within the research design to establish which factors generate unique experiences or finding among white and black MSM.

The findings from many of these studies show that stigma is likely influencing white and black MSM differently in their choice to take PrEP, though the type of stigma involved varied being centered on homosexuality to stigma being specifically about PrEP use. There has yet to be a complete consensus in the literature over whether these different types of stigmas may intersect with each other as well as with other factors such as race-based medical mistrust or imperfect

health information to produce observed patterns of PrEP use. Nonetheless, the findings from these recent studies on PrEP as well as past findings on HIV risk indicate that complex iterations of stigma likely play a substantial role in shaping individual choices and behaviors among MSM that have a direct bearing on HIV risk and vulnerability.

D. Future Directions for Assessing and Analyzing Stigma's Impact on PrEP Use

There may be some difficultly in cleanly using survey techniques to operationalize stigma due to its complex nature and unique manifestation in individual contexts. In addition, potential issues of desirability bias may exist with self-reports of stigmatization when conducting surveys. As a result, I would argue that close attention to data from qualitative analyses is the best way to move quantitative research forward. This type of study allows for greater levels of nuance and often reveals unexplored or novel concepts, exemplified in the case of stigma against PrEP ("Truvada whores").

Furthermore, there are additional statistical tools that could be implemented within regression analyses that could help to better understand the moderating effect of multiple forms of stigma on willingness to use PrEP. In a way, these moderation analyses could advance the quantitative research to a level that is more conducive to testing hypotheses and social mechanisms related to the assumptions of intersectionality theory. In a hypothetical analysis that I derived from the findings above, a multivariate logistic regression (the most common form of analysis for selected quantitative studies) could be implemented including interactions between stigma-based covariates (see Equation 1).

$$Willingness\ to\ Use\ PrEP =$$

$$\alpha + \beta_1 Homophobia + \beta_2\ Medical\ Mistrust + \beta_3 HIV\ Stigma +$$

$$\beta_4 Homophobia \times Medical\ Mistrust \times HIV\ Stigma + X_i + \varepsilon \quad (1)$$

Additional covariates (represented as X_i in the equation) should be added alongside these stigma measures, namely race, socioeconomic factors, and measures of healthcare access to see if these factors significantly alter estimates of willingness to use PrEP after adjustments within the model.

V. Conclusions and Public Policy Implications

After reviewing the findings from my analysis of several studies, I conclude that there is an urgent need to decrease community-level stigma and increase faith in medical establishments to avoid perpetuating disparities in HIV incidence. One of the challenges that accompanies the enactment of policy solutions to address HIV prevention disparities is this need for reduced stigma. Given the pervasiveness of racism and homophobia in American society, funding a policy initiative to reduce the associated stigma often seems to be impossible task.

Nevertheless, the 2015-2020 National HIV/AIDS Strategy for the United States has clearly articulated a series of recommended actions to "reduce stigma and eliminate discrimination associated with HIV status" as Step 3.C of their policy plan (Office of National AIDS Policy, 2015). The necessary actions that accompany this policy goal include mobilizing communities, promoting evidence-based approaches to HIV prevention, and strengthening the enforcement of civil rights laws to protect against further discrimination based on race, HIV status, or sexual orientation (Ibid.). The plan also suggests that multiple levels of government (federal, state, and local) and various agencies (*e.g.*, Department of Justice, Department of Health and Human Services) should assist in funding and supporting these actions to maximize intervention effects.

While the National HIV/AIDS Strategy demonstrates its strength in formulating concise solutions to the complex social issues that encumber HIV/AIDS, many of these solutions lack a

concrete path to implementation. Some agencies are specifically identified as entities that should take point on enacting enumerated solutions, as was the case with the solution to HIV stigma, but the funding sources and costs of implementation are left vague. The plan frequently cites the Affordable Care Act (ACA) or Ryan White CARE Act without illustrating how the budget for these programs would be altered to address the policy goal at hand. However, given recent claims made by President Trump in his 2019 State of the Union Address, novel forms of funding for HIV/AIDS programs may soon become available independent of policies already signed into law (Trump, 2019).

> *"My budget will ask Democrats and Republicans to make the needed commitment to eliminate the HIV epidemic in the United States within 10 years. Together, we will defeat AIDS in America."*
>
> *–President Trump in the State of the Union, 2019*

Time can only tell whether President Trump will honor this political promise and if a 10-year timescale will be sufficient to eradicate HIV in the United States. Perhaps these prospects may be overzealous and misguided, but coverage of HIV in this widely-viewed media event can be taken as an optimistic sign of increasing visibility of the sustained HIV epidemic within the U.S.

If there is an increase in access to PrEP through public means, it is important for researchers as well as policymakers to also investigate the underlying ethical considerations that could be made for and against this decision. Being that HIV/AIDS has often been framed as a disease of unmanaged risk and deviance, there is the potential for some to argue that there is not an ethical obligation to prevent HIV with treatments such as PrEP through public means or support. This argument is often based on moral paradigms that may stem from religious beliefs that still vilify

homosexuality or those that view personal choices (and subsequent consequences) that are "deviant" as the fault and responsibility of the individual rather than that of the society. One problematic aspect of this stance would be its inability to address underlying injustices and the relegation of afflicted individuals to a diminished social status purely based on a medical condition.

Another argument could be made that not correcting health disparities that stem from dehumanizing stigma and historical medical mistreatment of minority populations violates principles of justice and undermines notions of human dignity. An application of Martha Nussbaum's Capabilities Approach is apt in framing this argument. Nussbaum defines her ethical framework as focusing "on the protection of areas of freedom so central that their removal makes a life not worthy of human dignity," (Nussbaum, 2011, p. 31). These "areas of freedom" are grouped into a series of ten "central capabilities," with these capabilities ranging from topics pertaining to human physical flourishing to notions of personal autonomy. In Nussbaum's view, all ten capabilities must be met at a basic level to qualify a society as just. Two of the central capabilities that I believe are particularly undermined with pronounced disparities in HIV incidence and prevention are *life* and *bodily health*. According to Nussbaum, the central capability of *life* is defined as "being able to live to the end of a human life of normal length," (Ibid., p. 33). *Bodily health*, on the other hand, is stated as "being able to have good health, including reproductive health" (Ibid., p. 33). Given that black MSM have a 1 in 2 chance of acquiring HIV in their lifetime, I would argue that their capabilities of *life* and *bodily health* are not being fully satisfied. It is true that HIV can be managed with medications to allow for a "normal life," yet this is not universal for all individuals with HIV. Some individuals, unfortunately, live shortened lives due to opportunistic infections. However, now that we have effective tools that can prevent HIV infection, we should strive to connect individuals with these prevention options to fulfill all their

health-related capabilities. It is imperative that we remedy observed disparities in PrEP by increasing awareness and reducing stigma so that all individuals in our society will able to exercise their most basic capabilities fundamental to living a dignified life.

While an increase in PrEP usage may allow for a more just system of HIV prevention, there is an additional layer of ethical complexity that needs to be considered if public policy comes into play. A feasible policy solution is to have a mandatory counseling session that gives information about the PrEP and the various assistance programs that may facilitate a patient to obtain a prescription following each negative HIV-test screening. Programs that emphasize counseling sessions that coincide with HIV testing have begun to appear with the support of local and municipal governments, with a notable example existing in the city of West Hollywood, CA. West Hollywood's City Council passed the strategic plan entitled "HIV Zero" in 2015 to significantly reduce HIV incidence within the city, and a key feature of this initiative was increased PrEP counseling pre- or post-HIV testing (City of West Hollywood, 2018). Given that a lack of understanding about PrEP was commonly cited as influencing participant choice in the studies I previously analyzed, these sessions could help to reshape disparities by arming more individuals with information about prevention.

It is unclear from the strategic plan if this type of counseling is a mandatory aspect of the city's current HIV testing policy. However, mandating this type of counseling could infringe upon an individual's autonomy to choose which prevention options they feel would work for themselves. This is especially true if the participant was not aware or did not consent to this counseling session at the beginning of the testing process. To respect personal autonomy while upholding principles of justice, solutions that increase access to PrEP treatments must ensure that consent and full information transparency is given to each patient.

All things considered, this paper was not designed to suggest the HIV prevention landscape can be completely changed through a simple "silver bullet" policy recommendation. Modern HIV prevention is a complex social issue that involves a tension between personal agency and constraints imposed by social structures and norms. Nevertheless, it is my hope that this investigation has the feasible outcome of increasing awareness to the potent effects of stigma and intersectional statuses in influencing individual prevention choices for HIV. By bringing conceptions of stigma to the forefront of HIV prevention discussions, society can begin to address ways in which problematic social norms and institutions can be altered to better respect human dignity and inspire continued efforts for reducing HIV disparities in the United States.

References

Arnold, T., Brinkley-Rubinstein, L., Chan, P. A., Perez-Brumer, A., Bologna, E. S., Beauchamps, L., ... Nunn, A. (2017). Social, structural, behavioral and clinical factors influencing retention in pre-exposure prophylaxis (PrEP) care in Mississippi. *PLOS ONE, 12*(2), e0172354.

Bogart, L. M., & Thorburn, S. (2005). Are HIV/AIDS conspiracy beliefs a barrier to HIV prevention among African Americans?. *Journal of Acquired Immune Deficiency Syndrome, 38*(2), 213-218.

Bogart, L. M., Wagner, G., Galvan, F. H., & Banks, D. (2010). Conspiracy beliefs about HIV are related to antiretroviral treatment nonadherence among African American men with HIV. *Journal of Acquired Immune Deficiency Syndrome, 53*(5), 648–655.

Cahill, S., Taylor, S. W., Elsesser, S. A., Mena, L., Hickson, D., & Mayer, K. H. (2017). Stigma, medical mistrust, and perceived racism may affect PrEP awareness and uptake in black compared to white gay and bisexual men in Jackson, Mississippi and Boston, Massachusetts. *AIDS Care*, *29*(11), 1351–1358.

Centers for Disease Control and Prevention. (2016a). *Trends in U.S. HIV diagnoses, 2005-2014*. Atlanta, GA: Author.

Centers for Disease Control and Prevention. (2016b, February 23). Lifetime risk of HIV diagnosis. Retrieved from https://www.cdc.gov/nchhstp/newsroom/2016/croi-press-release-risk.html

Centers for Disease Control and Prevention. (2018a). *Diagnoses of HIV infection in the United States and dependent areas, 2017*. Atlanta, GA: Author.

Centers for Disease Control and Prevention. (2018b, March). *Preexposure prophylaxis for the prevention of HIV infection in the United States—2017 Update: a clinical practice guideline*. Atlanta, GA: Author

City of West Hollywood. (2018) *HIV zero strategic plan*. West Hollywood, CA: Author.

Eaton, L. A., Driffin, D. D., Kegler, C., Smith, H., Conway-Washington, C., White, D., & Cherry, C. (2015). The role of stigma and medical mistrust in the routine health care engagement of black men who have sex with men. *American Journal of Public Health*, *105* (2), e75–e82.

Eaton, L. A., Driffin, D. D., Smith, H., Conway-Washington, C., White, D., & Cherry, C. (2014). Psychosocial factors related to willingness to use pre-exposure prophylaxis for HIV prevention among black men who have sex with men attending a community event. *Sexual Health*, *11*(3), 244. https://doi.org/10.1071/SH14022

Eaton, L. A., Kalichman, S. C., Price, D., Finneran, S., Allen, A., & Maksut, J. (2017). Stigma and conspiracy beliefs related to pre-exposure prophylaxis (PrEP) and interest in using PrEP among black and white men and transgender women who have sex with men. *AIDS and Behavior*, *21*(5), 1236–1246.

Elopre, L., McDavid, C., Brown, A., Shurbaji, S., Mugavero, M. J., & Turan, J. M. (2018). Perceptions of HIV pre-exposure prophylaxis among young, black men who have sex with men. *AIDS Patient Care and STDs*, *32*(12), 511–518.

Fallon, S. A., Park, J. N., Ogbue, C. P., Flynn, C., & German, D. (2017). Awareness and acceptability of pre-exposure HIV prophylaxis among men who have sex with men in Baltimore. *AIDS and Behavior*, *21*(5), 1268–1277.

Gamble, V. N. (1997). Under the shadow of Tuskegee: African Americans and health care. *American Journal of Public Health*, *87*(11), 1773-1778.

Glick, S. N., & Golden, M. R. (2010). Persistence of racial differences in attitudes toward homosexuality in the United States. *Journal of Acquired Immune Deficiency Syndrome*, *55*(4), 516–523.

Goedel, W. C., King, M. R. F., Lurie, M. N., Nunn, A. S., Chan, P. A., & Marshall, B. D. L. (2018). Effect of racial inequities in pre-exposure prophylaxis use on racial disparities in HIV incidence among men who have sex with men: A modeling study. *Journal of Acquired Immune Deficiency Syndrome*, *79*(3), 323–329.

Goffman, E. (1963). *Stigma: notes on the management of spoiled identity*. New York: Simon & Schuster.

Grant, R. M., Lama, J. R., Anderson, P. L., McMahan, V., Liu, A. Y., Vargas, L., … Glidden, D. V. (2010). Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *New England Journal of Medicine*, *363*(27), 2587–2599.

Hammack, P. L., Meyer, I. H., Krueger, E. A., Lightfoot, M., & Frost, D. M. (2018). HIV testing and pre-exposure prophylaxis (PrEP) use, familiarity, and attitudes among gay and bisexual men in the united states: A national probability sample of three birth cohorts. *PLOS ONE*, *13*(9), e0202806.

Hill Collins, P. (2000). *Black feminist thought: knowledge, consciousness, and the politics of empowerment* (Rev. 10th anniversary ed). New York: Routledge.

Huang, Y. A., Zhu, W., Smith, D. K., Harris, N., & Hoover, K. W. (2018). HIV preexposure prophylaxis, by race and ethnicity — United States, 2014–2016. *MMWR. Morbidity and Mortality Weekly Report*, *67*(41), 1147–1150.

Irvin, R., Wilton, L., Scott, H., Beauchamp, G., Wang, L., Betancourt, J., … Buchbinder, S. (2014). A study of perceived racial discrimination in black men who have sex with men (MSM) and its association with healthcare utilization and HIV testing. *AIDS and Behavior*, *18*(7), 1272–1278.

Jenness, S. M., Maloney, K. M., Smith, D. K., Hoover, K. W., Goodreau, S. M., Rosenberg, E. S., . . . Sullivan, P. S. (2018). Addressing gaps in HIV preexposure prophylaxis care to reduce racial disparities in HIV incidence in the United States. *American Journal of Epidemiology, [Epub ahead of print]*.

Jeffries, W. L., Marks, G., Lauby, J., Murrill, C. S., & Millett, G. A. (2013). Homophobia is associated with sexual behavior that increases risk of acquiring and transmitting HIV infection among black men who have sex with men. *AIDS and Behavior*, *17*(4), 1442–1453.

Klonoff, E. A., Landrine, H., & Ullman, J. B. (1999). Racial discrimination and psychiatric symptoms among blacks. *Cultural Diversity and Ethnic Minority Psychology*, *5*(4), 329 - 339.

Kuhns, L. M., Hotton, A. L., Schneider, J., Garofalo, R., & Fujimoto, K. (2017). Use of pre-exposure prophylaxis (PrEP) in young men who have sex with men is associated with race, sexual risk behavior and peer network size. *AIDS and Behavior*, *21*(5), 1376–1382.

Lewis, G. B. (2003). Black-white differences in attitudes toward homosexuality and gay rights. *Public Opinion Quarterly*, *67*(1), 59–78.

Malebranche, D. J., Peterson, J. L., Fullilove, R. E., & Stackhouse, R. W. (2004). Race and sexual identity: perceptions about medical culture and healthcare among Black men who have sex with men. *Journal of the National Medical Association*, *96*(1), 97 –107.

Millett, G. A., Peterson, J. L., Wolitski, R. J., & Stall, R. (2006). Greater risk for HIV infection of black men who have sex with men: a critical literature review. *American Journal of Public Health, 96*(6), 1007–1019.

Nussbaum, M. C. (2011). *Creating capabilities: the human development approach*. Cambridge, Mass: Belknap Press of Harvard University Press.

Office of National AIDS Policy. (2015). *National HIV/AIDS Strategy for the United States: Updated To 2020*. Washington D.C.: The White House.

Ojikutu, B. O., Bogart, L. M., Higgins-Biddle, M., Dale, S. K., Allen, W., Dominique, T., & Mayer, K. H. (2018). Facilitators and barriers to pre-exposure prophylaxis (PrEP) use among black individuals in the United States: Results from the national survey on HIV in the black community (NSHBC). *AIDS and Behavior*, *22*(11), 3576–3587.

Parker, C. M., Garcia, J., Philbin, M. M., Wilson, P. A., Parker, R. G., & Hirsch, J. S. (2017). Social risk, stigma and space: Key concepts for understanding HIV vulnerability among black men who have sex with men in New York City. *Culture, Health & Sexuality*, *19* (3), 323–337.

Patel, R. R., Mena, L., Nunn, A., McBride, T., Harrison, L. C., Oldenburg, C. E., . . . Chan, P. A. (2017). Impact of insurance coverage on utilization of pre-exposure prophylaxis for HIV prevention. *PloS One*, *12*(5), e0178737.

Philbin, M. M., Parker, C. M., Parker, R. G., Wilson, P. A., Garcia, J., & Hirsch, J. S. (2016). The promise of pre-exposure prophylaxis for black men who have sex with men: An ecological approach to attitudes, beliefs, and barriers. *AIDS Patient Care and STDs*, *30*(6), 282–290.

Rendina, H. J., Whitfield, T. H., Grov, C., Starks, T. J., & Parsons, J. T. (2017). Distinguishing hypothetical willingness from behavioral intentions to initiate HIV pre-exposure prophylaxis (PrEP): Findings from a large cohort of gay and bisexual men in the U.S. *Social Science & Medicine*, *172*, 115–123.

Siegler, A. J., Bratcher, A., Weiss, K. M., Mouhanna, F., Ahlschlager, L., & Sullivan, P. S. (2018). Location location location: An exploration of disparities in access to publicly listed pre-exposure prophylaxis clinics in the United States. *Annals of Epidemiology*, *28*(12), 858–864.

Smith, D. K., Grohskopf, L. A., Black, R. J., Auerbach, J. D., Veronese, F., Struble, K. A., … U.S. Department of Health and Human Services. (2005). Antiretroviral postexposure prophylaxis after sexual, injection-drug use, or other nonoccupational exposure to HIV in the United States: recommendations from the U.S. Department of Health and Human Services. *MMWR. Recommendations and Reports: Morbidity and Mortality Weekly Report. Recommendations and Reports*, *54*(RR-2), 1–20.

Stokes, J. P., & Peterson, J. L. (1998). Homophobia, self-esteem, and risk for HIV among African American men who have sex with men. *AIDS Education and Prevention*, *10*(3), 278–292.

Sullivan, P. S., Giler, R. M., Mouhanna, F., Pembleton, E. S., Guest, J. L., Jones, J., . . . Siegler, A. J. (2018). Trends in the use of oral emtricitabine/tenofovir disoproxil fumarate for pre-exposure prophylaxis against HIV infection, united states, 2012–2017. *Annals of Epidemiology*, *28*(12), 833–840.

Sun, C. J., Anderson, K. M., Toevs, K., Morrison, D., Wells, C., & Nicolaidis, C. (2019). "Little tablets of gold": An examination of the psychological and social dimensions of PrEP among LGBTQ communities. *AIDS Education and Prevention*, *31* (1), 51–62.

Trump, D. (2019). State of the Union 2019. Retrieved from https://www.cnn.com/2019/02/05/politics/donald-trump-state-of-the-union-2019-transcript/index.html

U.S. Food and Drug Administration. (2012, July 16). FDA approves first drug for reducing the risk of sexually acquired HIV infection. Retrieved from https://aidsinfo.nih.gov/news/1254/fda-approves-first-drug-for-reducing-the-risk-of-sexually-acquired-hiv-infection

Villarosa, L. (2017, June 6). America's Hidden H.I.V. Epidemic. *The New York Times*. Retrieved from https://www.nytimes.com/2017/06/06/magazine/americas-hidden-hiv-epidemic.html

Wingood, G. M., Dunkle, K., Camp, C., Patel, S., Painter, J. E., Rubtsova, A., & DiClemente, R. J. (2013). Racial differences and correlates of potential adoption of preexposure prophylaxis: Results of a national survey. *Journal of Acquired Immune Deficiency Syndrome, 63 Suppl 1*, S95–101.