**INCREASING HIV TESTING AMONG MSM:
A REVIEW OF THE LITERATURE**

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**ABSTRACT**

Men who have sex with men (MSM) have the highest HIV prevalence among all other populations. Among the drivers of this epidemic among MSM are large numbers of HIV positive individuals who are not virally suppressed and who do not know they are HIV positive, thus making them highly efficient transmitters of the virus. This makes increasing testing of MSM a public health priority. With the number of MSM getting tested stagnated and an even lower number of MSM subpopulations seeking out testing, it is imperative to the success of the National HIV/AIDS Strategy’s test and treat approach that the number of MSM getting tested be increased. Getting tested is the cornerstone of almost all prevention approaches and the gateway to HIV care as well as being an effective intervention in itself. Behavioral interventions have had limited success stemming the epidemic and new approaches are needed, especially in light of the test and treat strategy. This essay seeks to identify HIV testing trends among MSM, barriers and protective factors, and new approaches to outreach that are essential to moving the field of HIV prevention forward.

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Introduction

It is estimated that out of the approximate 1 to 1.2 million individuals infected with HIV in the United States, almost one quarter of them do not know that they are infected with the virus. Not knowing their HIV status puts these individuals at greater risk for transmitting the virus to others and accounts for being the source of more than half of all new infections (Marks, Crepaz, & Janssen, 2006). The Centers for Disease Control and Prevention estimates that approximately half of individuals newly diagnosed with HIV are linked to vital services within the first 12 months after receiving their diagnosis and has made finding those infected and linking them to services as soon as possible a national priority for HIV prevention strategies (CDC, 2003). This underscores the importance of finding unidentified individuals with a positive serostatus for HIV. Reaching individuals and populations hidden from mainstream prevention efforts is vital in breaking the chain of infection within the larger population. There have been many studies based around individual risk behaviors in men who have sex with men (MSM), but less attention has been paid to the importance of their attitudes and beliefs towards HIV testing and increasing the numbers who get tested for HIV.

MSM remain the largest HIV transmission population and the only one with steadily increasing numbers of new HIV infections. These increases are especially prevalent among those aged under 25 years in nearly all racial and ethnic populations. Nearly half of these new cases have gone undetected and asymptomatic for long periods of time, making them more likely to develop AIDS soon after diagnoses. This makes when they were *diagnosed*, rather than when they became infected, more important in linking them to appropriate health care (CDC, 2008). The prevalence of individuals under 25 years becoming infected highlights the possibilities those newer generations of MSM are not being reached effectively by prevention efforts. This is all the more important as newly revised methods of calculating recent from long-standing infections increased the estimate of annual HIV incidence in the United States to over 40 percent greater than previously believed (Hall, H.I., Song, R., Rhodes, P., Prejean, J., An, Q., Lee, L.M., Karon, J., et al., 2008). In an effort to find, test, and link to services MSM at risk, the CDC funds a variety of facilities, clinics and health departments to offer testing and counseling. These organizations perform approximately 2 million HIV tests per year and have, on average, identified 1.3 percent of those tested to be HIV positive (CDC, 2011).

MSM comprise an estimated 2 percent of the population and made up 59 percent of those diagnosed with HIV. Studies show that 19 percent, nearly 1 in 5, of those tested were positive in 2008 and of those that tested positive 44 percent were unaware of their serostatus (CDC, 2010). These numbers alone indicate the need to explore more and new prevention strategies and ways to target populations hidden from testing efforts.

The National HIV/AIDS Strategy (NHAS) has set a goal of increasing HIV infection awareness from approximately 79 percent to 90 percent by 2015 (The White House, 2010). What, in current research literature, is being done towards achieving that goal forms the basis of the research question for this literature review.

## Research Question

This literature review seeks to examine research done to identify HIV testing trends among MSM. Since the beginning of the epidemic, researchers have done countless studies on how individuals are contracting HIV and spreading the infection. This focus has informed all subsequent behavioral interventions, behavioral interventions that have proven themselves successful only to a point. This focus has continued on in an age of new strategies where testing and treatment is now seen as the most viable form of prevention. HIV testing is the vanguard of modern prevention that precedes the implementation, and therefore the effectiveness, of other prevention approaches. HIV testing is the only entry way to the treatment of infection. This essay seeks to answer the question, how can HIV testing among MSM be increased?

## Background

It is crucial that we understand the dynamics and appreciate the complexity of the interweaving factors leading up to the current state of HIV testing among MSM as well as understand and appreciate the dynamics and reality of those currently being missed or underserved by traditional testing outreach. This essay attempts to review the complexity of those interweaving factors. The following sections review these dynamics and how they affect testing uptake and outreach.

### HIV AMONG MSM

Health disparities are the potentially avoidable differences in the health status between populations with differing socioeconomic levels where the socially disadvantaged populations systematically fair worse than the advantaged populations. These unjust differences in health appear in greater concentration among disenfranchised and minority populations. HIV/AIDS has always disproportionately affected MSM, especially African American MSM (AAMSM), as well as the black population in general.

MSM remain the largest HIV transmission population and the only one with steadily increasing numbers of new HIV infections. These increases are especially prevalent among those aged under 25 years in nearly all racial and ethnic populations. In 2010, MSM accounted for approximately 78 percent of HIV diagnoses among males 13 years of age and older, and 61 percent of all new cases in that year. White MSM accounted for 39 percent of these new infections while black MSM accounted for 37 percent. At the end of 2009, 51 percent of all individuals living with HIV were MSM, with approximately 48 percent of those MSM being white, 30 percent being black, and 19 percent Hispanic/Latino (CDC, 2012). In 2009, the only subpopulation experiencing a significant increase in HIV incidence was young MSM driven by a rise of 48 percent in HIV incidence among young AAMSM (Prejean et al., 2011).

African Americans make up the largest percentage of HIV diagnoses in every demographic and transmission category with the highest lifetime risk of contracting HIV at one in 22. This ratio compares to whites who are at one in 170 and Hispanics/Latinos at one in 52. Many drivers of these disparities have been explored within a social and contextual framework. African Americans experience disproportionately higher rates of other STDs, poverty, and poor housing conditions. There are many underlying factors as well, including unequal access to health care, incarceration, lack of education, stigma, homophobia, sexism, and racism (CDC, 2011b).

Studies have shown that sexual and racial minorities experience significant disparities in such psychosocial health outcomes as depression and drug and alcohol abuse when compared to their majority counterparts. It has been proposed that the high levels of HIV/AIDS, depression, drug and alcohol use and abuse, among other physical and mental issues could be syndemic among MSM and associated with environmental pressures, adverse experiences, and social oppression experienced during early developmental stages. This effect would be compounded among individuals with dual minority status such as AAMSM due to the added pressures and issues of oppression related to race and ethnicity. Thus highlighting the importance of the historical and present dynamics of social systems as well as physical environments in the makeup of social and sexual networks (Egan, J.E., Frye, V., Kurtz, S.P., Latkin, C., Chen, M., Tobin, K., Yang, C., and Koblin, B.A., 2011).

### SYNDEMICS

According to Merrill Singer (2009), the concept of syndemics is the understanding of disease from the broader effects of one’s physical and social environment. The CDC defines syndemics as “synergistically interacting epidemics” (CDC, 2002). Research has shown a significant prevalence of psychosocial issues within the MSM community around depression, drug and alcohol abuse, and intimate partner violence. These issues have been shown to occur within this community at much greater levels than other communities of men (Stall, Mills, Williamson, Hart, Greenwood, Paul, et al. 2003). These psychosocial health issues also happen earlier in developmental stages for MSM and therefore affect the decision making processes in regards to personal health and safety of this population as adults (Friedman, Marshal, Stall, Cheong, and Wright. 2008).

Attention to the additive effects of multiple negative health issues in regards to HIV and attitudes towards self care, including HIV testing uptake, have been shown to be increasingly beneficial and necessary to most marginalized and minority populations as health disparities happen at higher levels in these populations in general. In response to the wider and more accurate view syndemics gives on the outlook of self care within marginalized and minority populations disproportionately affected by HIV, it is necessary to develop interventions as multifaceted and dynamic as the populations they are to serve. Looking into the complex interactions of behaviors and psychosocial health issues from the vantage point of syndemics theory affords the view of not only what is driving the HIV epidemic, but how are the people fairing well doing just that (Mustanski, Garofalo, Herrick, and Donenberg, 2007; Operario & Nemoto, 2010; Singer, Erickson, Badiane, Diaz, Ortiz, Abraham, and Nicolaysen, 2006; Stall et al., 2003). Focusing on these resiliencies shows great potential for more affective future interventions and will be discussed in later sections of this essay.

### RESILIENCE IN HIV TESTING AND THE TREATMENT CASCADE

Most research focuses on the numbers that represent negative health outcomes. This focus serves as an alarmist call to action by skewing the larger picture of health. As important and impactful as these numbers may be, it is essential for prevention development that we understand what these numbers are actually saying. For every one out of five individuals that did something harmful, there are four out of those five that did not engage in that harmful activity. When those four out of five come from a background suggesting they will engage in that harmful activity, yet don’t, they are exhibiting *resilience*. In this manner, resilience is positive adaption in the face of adversity (Gwadz et al., 2006).

As we explore the possible drivers of HIV testing engagement such as syndemics, it is of utmost importance to note those individuals who exhibit resilience to the effects of these drivers. The numbers gathered to show the treatment cascade show that nearly 80 percent of HIV positive individuals were identified leaving approximately 20 percent lost to testing engagement. It has been shown through the Minority Stress Model that social discrimination, such as homophobia and racism, result in a lower health profile for the individuals who experience the discrimination. Among sexual and racial minorities, research suggests that these stressors increase an individual’s likelihood of experiencing multiple health issues and risk behaviors. (Herrick et al., 2011).

Resilience focuses on vulnerabilities and protective factors that mitigate the negative effects of adversity and understanding the process by which this happens. While vulnerabilities are markers for dynamics that foster the negative outcomes of adversity, protective factors mitigate those negative outcomes (Luthar, Cicchetti, and Becker, 2000). The active research of the underlying paths taken in successful navigation of adversity has great implication on prevention and retention in care designs by enhancing the access to skill and mind sets that made that successful navigation possible.

Research has shown that marginalized populations make better health choices when exposed to protective factors such as social support, employing adaptive coping strategies, education, goal setting, and spiritual support (Bachanas et al., 2002). Some of these protective factors, such as education and social support, have been found to be crucial in self care skill building among minorities (Miller & Macintosh, (1999).

An aspect of resilience called hardiness, originating in general population research on stress-illness relationships, has been positively associated with better outcomes in mental and physical health overall. Hardiness is defined within the realms of commitment, control, and challenge: commitment is the extent of meaning one puts on life in relation to self, others, and activities, control is the extent of an individual’s sense of guiding their own life, and challenge is the extent of an individual’s recognition of the inevitability of change. While seemingly tailored made to the problems of syndemics and resilience in HIV testing, very few studies have focused on hardiness and HIV populations (Farber, Schwartz, Schaper, Moonen, and McDaniel, (2000).

Loss to care happens at all stages of the care continuum beginning with HIV testing identifying HIV positive individuals, ART initiation, through continued adherence to a care regimen and the achievement of a suppressed viral load. It has been shown that there are significant predictors of delayed testing, late linkage to medical care after a new HIV diagnosis, as well a host of barriers to retention in care (Mugavero, 2011). What we have rarely seen is a systematic review of protective factors that facilitate individuals engaging in self care, especially towards seeking out testing as well as successful strategies used in finding these individuals.

By shifting our focus to resilience, what the treatment cascade shows is that approximately 80 percent of infected individuals are successfully being identified through testing. Investigating the strategies used, protective factors present, and barriers perceived by these individuals would satisfy the suggested area of research in the identification of successful navigation models of self care outlined in the NHAS.

We have reached an age where researching boundaries is no longer enough and have begun to understand the importance of standing back and looking at that research in relation to the dynamics that affect it. It has been established for quite some time that marginalized communities face mounting health disparities based on the adversities they face in their physical and psychosocial environment, yet we are only now beginning to see how different aspects of prevention and care can come together to exploit the strengths of this population in fighting HIV.

### BACKGROUND SUMMARY

Being unaware of HIV infection puts an individual at greater risk of transmitting the infection as well as of experiencing negative health outcomes. MSM have the highest rates of HIV of all other populations with a quarter of infected individuals not knowing their serostatus. Although practically everyone infected is eventually identified, the diagnosis comes too late in the disease process for treatment to be an effective form of prevention, making early detection critical for not only personal health, but for community health. There is a wide range of individual and structural factors that impede or facilitate MSM seeking out HIV testing as well as that impede or facilitate the success of HIV testing outreach. Research on sexual and racial minorities has recently gained ground in uncovering many characteristic dynamics, syndemics, that affect these populations in the engagement of self care in care and underlie the importance of a deeper examination of these characteristics by involving these populations in the design of more effective interventions. The development of these interventions to increase testing among this high risk population is in keeping with the National Strategy on HIV/AIDS.

Even more important than exploring the dynamics surrounding care involvement from the participants and care givers stand points is the exploration of our perception of what information is of use and of the most importance. Just as important as the discovery of vulnerabilities in willingness to test in these high risk populations is the discovery of strengths and protective factors incorporated in overcoming these vulnerabilities and barriers. These resiliencies are key to the development of action plans and policy towards interventions that are realistic and attainable by the populations that they are designed for.

Increased early and routine HIV testing is essential among MSM as a facilitator to treatment, reducing viral load, and decreasing the transmission of the virus.

# methods

In the planning stages of this essay, a number of resources were consulted. Dr. Ronald D. Stall, the advisor for this essay, was consulted on the topic, its public health relevance, as well as its relevance to the Positive Health Clinic Study. Dr. Anthony Silvestre, second reader for this essay, suggested appropriate steps in insuring the integrity of the essay as a critical review, including review of student examples, of which informed the basic format of this essay, and the utilization of a practical guide to literature reviews for structure. Dr. Silvestre also suggested meeting with Barbara Folb, a librarian at the University of Pittsburgh Health Sciences Library, who suggested search themes and phrases as well as appropriate databases. Dr. Mary Hawk, an unofficial essay reader, was also essential in the development of the essay. Dr. Stall, Dr. Silvestre, and Dr. Hawk’s ongoing advice and guidance during the planning and writing process were invaluable aspects of the process. Advice and guidance from Suzanne Kinski was also of great help.

## Search criteria

This literature review focuses on efforts to increase HIV testing among MSM, therefore the search criteria focused on research dedicated to identifying HIV testing trends among the different subgroups of MSM. A number of searches were conducted using a variety of sources, such PubMed and the Ovid-Medline database, Google Scholar, as well as bibliographies of relevant articles, which allowed for a larger net in the search for relevant results. The following words and phrases were searched initially in Medline with the number of identified articles in parenthesis: HIV testing (18,998), Syndemics (23), resilience (6,950), MSM (4,568), HIV treatment cascade (189), STI testing strategies (92), barriers to testing (658), HIV treatment as prevention (47,200). To narrow the search, the following combination searches were conducted: HIV testing and men who have sex with men (1,247), resilience and men who have sex with men (19), treatment cascade and HIV testing (16). Searches in other fields such as social networks of MSM (433), young MSM (1,010) were also performed. A search of Ovid, Google Scholar, and Google books was also conducted in an effort to identify other publications that may be used to supplement the gathered information. No additional, non-duplicated, research was identified using these search tools although articles on the need for increased testing and on resilience by Herrick et al. were identified and reviewed. References in articles identified after the inclusion criteria were implemented were also searched for additional relevant information.

## Inclusion criteria

The titles and abstracts were read and only articles including research or literature reviews on HIV testing among MSM were identified (47). Articles on research and reviews focusing on the United States were used. In an effort to appraise the most up to date information, with great consideration given the recent attention given the importance of the test and treat strategy, literature prior to 2009 was excluded. In all 34 articles were identified for review.

# findings

### TRENDS

The NHAS has called for an increase in HIV testing by 10 percent by 2015. In acknowledgement of this target, the CDC recommends all high risk individuals, especially MSM, be tested at least annually. The literature reviewed in this section provides insight to the general state of HIV testing among MSM and lays the groundwork for further exploration in the following sections.

A study release this year in *AIDS Care* explored the differences in frequent HIV testers among MSM and those that tested less frequently and found that that those that sought out testing more frequently were likely to be under age 34, be aware of their last sexual partners HIV status, and be more likely to have seen a doctor in the last year. These frequent testers were also significantly less likely to being newly HIV positive (Phillips et al., 2013). This study stands out as a call to frequent testing and called into question the cost-effectiveness of this strategy as well as the need to encourage clinic policy change towards increased testing. An increase in routine testing specifically among high risk populations is likely the best strategy toward cost effectiveness, but implementing this strategy has been beset by challenges. A study of six southeastern community health centers adopting routine rapid testing showed that despite the policy change, only 28 percent of patients were offered the HIV rapid test by care givers and among those offered the test fewer than 70 percent agreed to be tested (Myers et al., 2009).

The findings in this study are in line for MSM as a recent study found that, despite the CDC’s recommendations for testing among high risk populations, there were few studies on how often or how routine the offering of HIV tests occurred. Researchers surveyed a section of MSM and found that even when MSM disclose their risk status, less than a third were offered an HIV test by their care provider (Wall, Khospropour, and Sullivan, 2010). This theme of care providers not offering testing runs through most of the literature on HIV testing among MSM with little research done on increasing the offering of these tests among MSM care providers or clinic policy change towards this goal.

With this information in mind, an article in *Sexually Transmitted Infections* performed a systematic review of effectiveness and cost-effectiveness of HIV testing promotion among MSM. Out of a host of intervention types, only 12 studies on effectiveness and one on cost-effectiveness were identified from past research. Beyond finding the need for a more comprehensive study on effectiveness and cost-effectiveness of HIV testing among MSM, the review did reveal evidence suggesting strategies to increase the uptake of testing among this high risk population (Lorenc et al., 2011). I will discuss these strategies in a later section.

Delving back into the population in focus, another study looked at the characteristics of first-time and repeat testers among MSM. They found a strong association of first-time testers that tested positive with being older, African American, and from the southern parts of the U.S. They also identified racial differences in testing. While African American MSM were tested positive at a higher rate, white MSM accounted for the highest rate of overall tests conducted, highlighting a need to target AAMSM especially (Fisher et al., 2011). An article by Maulsby et al. (2013) backed up this finding by exploring differences between HIV rates of white and AAMSM and finding inconclusive evidence of traditional drivers, but a strong suggestion that, among other things, undiagnosed seropositivity may be driving the disparity. Both of these articles suggested the offering of HIV tests by care providers and that a special focus should be on high risk subpopulations of MSM, such as the young and AAMSM.

Another subpopulation of MSM being considered as significant in regards to testing uptake is young MSM. One of the fastest rising rates of HIV, over half of newly infected individuals among 13-24-year-olds were unaware of their infection. This, along with findings from two articles that found young MSM were less likely than their counterparts to get tested, puts this demographic at the top of the trends in the need to increase HIV testing among MSM (Hall, Walker, Shah, and Belle. 2012).

The overall trends in HIV testing among MSM suggest that traditional outreach, though effective, has had only limited success in engaging this high risk population in regular HIV testing. Those getting tested regularly are showing better health outcomes and engagement in self care while those no getting tested regularly are fairing much worse. The literature reviewed in this section alludes to the need to better understand the drivers of this disparity, understand the barriers to getting tested, as well as the need to update policy to normalize testing. None of this literature approached the need to understand why some MSM naturally engage in self care.

### BARRIERS AND FACILITATORS

In the context of these trends, this section addresses research that has evaluated the barriers and facilitators of HIV testing uptake among MSM. A study seeking to identify the factors that are associated with delayed HIV testing compared testers who delayed and testers who did not delay in Seattle, Washington area. This research largely ignored factors facilitating the uptake of testing in favor of factors associated with delayed testing. The factors found included being African American, homeless, and not “out” to 50 percent or less people. Delayed testers were found to often not identify as part of the MSM community, did not understand that they were at high risk of HIV infection, and did not feel responsibility towards themselves or others in finding out or disclosing their serostatus. These delayed testers also disclosed that sickness played a major role in their decision to delay testing as well as fear of testing and denial about their HIV status (Nelson et al., 2010).

In order to understand the impact that the actual test and the dynamics surrounding it as a potential barrier played in this willingness to test, a recent study sought to assess this willingness among MSM using conjoint analysis. The research found that specific attributes of the testing process play a role in MSM’s willingness to get tested by innovatively estimating what discrete attributes of a product (testing) played into consumer (MSM) preferences. The research looked at such attributes as location, price, how the sample was collected, how quickly the results were returned, how the results were given, the type of counseling that accompanied the test, and privacy. Price was found to have the highest impact on willingness to test followed closely by both timeliness of results and location. The study strongly suggested that, if the price was reduced, at-home over the counter HIV testing could potentially greatly increase the uptake of HIV testing among MSM (Lee, Brooks, Bolan, and Flynn, 2013). This research, while not suggesting it directly, offers insight to ways around other traditional barriers such as stigma, fear, and privacy concerns.

Another study seeking to understand personal and institutional barriers to the uptake of HIV testing among MSM found factors strongly associated with not having a recent HIV test included being less educated in general, serodiscordant unprotected sex, and having never had an HIV test. This study also found more traditional barriers present such as substance abuse, perceptions of the difficulty of using condoms, isolation from the MSM community, and not seeing a health care provider regularly. They also found that a significant barrier for those who did visit a PCP in the last year was the provider not offering a test. A high prevalence of not getting tested among AAMSM was also found, suggesting further investigation into sexual and minority as well as cultural barriers (Mimiaga et al., 2009).

Two recent studies have found significant association with not being “out” or non association with an MSM identity with delayed or infrequent HIV testing. Parent, Torrey, and Michaels (2012) found that gender role conformity not only impacted health behaviors, but that perceived masculine norms possibly strongly affect “closeted” MSM’s willingness to get tested. Heterosexual self-presentation among these MSM was associated with no or delayed testing due to the potential to view HIV testing as an “outing” experience. Another recent study also found that these MSM may not be getting tested due less awareness of their high risk status and the importance of testing due to missing traditional outreach targeting MSM populations (Reilly et al., 2013).

Among racial minority MSM, a recent study found that one of the largest barriers to testing uptake among this population was institutional mistrust stemming from systematic discrimination and conspiracy beliefs. It is believed that a culture defined by stigma and discrimination fosters a greater amount of organizational mistrust when added to the effects of syndemic process associated with being a sexual minority to result in less likelihood of being tested for HIV (Hoyt et al., 2011).

Very little literature expressly focused on protective factors that facilitated the uptake of HIV testing among MSM. In the literature already reviewed, it was suggested (by the obverse focus) that protective factors included having a higher education, a strong sense of community, openness of sexual orientation, a strong sense of self and identity, and high engagement in self care. One recent study explored the sense of community factor among hard to reach MSM by engaging regular electronic chat room users that identified as “chatters” in HIV testing with great success (Rhodes et al., 2011). Two other recent studies suggested that getting tested with a partner as well as being in long term partnerships greatly increased the chances of getting tested, even among young MSM and AAMSM. Couples-based voluntary testing, in these studies, was seen as a sign of commitment and an integral part of open communication between partners (Stephenson et al., 2011; Wagenaar et al., 2012).

### STRATEGY

Looking at the current trends and barriers and protective factors that drive them, provides a frame for the current strategies in the literature used to reach MSM in regards to HIV testing uptake. A number of strategies towards the goal of increasing HIV testing among MSM have been discussed and evaluated in the HIV prevention literature and a review of current discussion is important in understanding attitudes towards testing uptake and outreach.

Three studies were identified that were not included in this review due to inclusion of populations outside of the United States that, never the less, suggest a framework for the studies that were included. These studies identified clear preferences among MSM in how they are reached with testing promotion including the use of gay friendly service providers, community based and confidential outreach, using peer outreach, media campaigns including social media, and opt-out testing procedures where testing is routine unless a patient declines.

While there is limited recent data focused on engaging high risk populations in testing uptake, especially young MSM, a recent study has shown great success in using social marketing campaigns targeting MSM as well as the members of their social and sexual networks within a number of settings to increase testing uptake and linkage and retention in care (Hightow-Weidman, Smith, Valera, Matthews, and Lyons, 2011). This study showed that using new media as an innovative outreach has the potential to engage more MSM in testing by normalizing the procedure. Another study suggested that utilizing motivational interviewing with more traditional outreach methods increased the effectiveness of the outreach. By adding a motivational component to counseling as well as peer counseling greatly increases the chance of testing uptake as well as engagement in self care (Outlaw et al., 2010).

A study published in *Health Promotion Practice* found that when marketing HIV testing to MSM, particular attention should be paid to differences in subpopulations along ethnic and racial lines. The study indicated that while a majority across these lines were being tested in a physician’s office, they differed on preference of how to receive marketing information on testing. Non-Hispanic White and Hispanic MSM preferred seeing information from advertisements in mainstream media outlets while AAMSM showed a preference to receiving the same information from peer leaders and authority figures (Lechuga, Owxzarzak, and Petroll. 2013). This study showed the importance of culture and ethnicity in marketing and location preferences.

Most of the literature on outreach strategy to increase testing among MSM focused on racial and ethnic subpopulations. Erausquin et al. (2009) found that by combining venue-based and media outreach centered on ethnic preference, HIV testing could be increased. These venues and preferences, another study showed, should consider psychosocial needs of subpopulations of MSM such as young and AAMSM, who may need more counseling support in the lead up to actually testing due to the possibility of a life changing diagnosis. This study also found that a range of options was optimal across subpopulations and ages to accommodate preference and increase the likelihood of testing (Cohall et al., 2010).

Two recent studies also suggest that a several complimentary strategies used in combination attracted the most success in HIV testing uptake among higher risk subpopulations of MSM. One study out of Baltimore and one out of New York City found that among AAMSM aged 18-64-years-old, using a combination of social networks strategy, provider referral, and alternate venue testing was successful at increasing testing uptake. The studies also found that MSM responding more to the social network strategy reported a higher rate of sexual risk and that MSM responding to the alternate venue strategy were younger (Halkitis et al., 2011; Ellen et al., 2013). This underlies the importance of social and sexual networks as well as generational considerations in marketing testing uptake to MSM.

Location based strategies have also proven to be effective in current literature. One recent study showed that not only was voluntary counseling and testing at bathhouses a proven strategy for testing uptake, their study showed that it also had no affect on patronage (Huebner, Binson, Pollack, and Woods, 2012). Two studies in the literature reviewed suggested that offering free take home HIV tests was a successful strategy at increasing testing among MSM. While both showed an increase in interest, one showed that interest among self testers and the other included high risk testers also using it to test high risk sex partners before engaging in sex (Sharma, Sullivan, and Khosropour, 2011; Carballo-Diequez, Frasca, Balan, Ibitoye, and Dolezai, 2012). Both of these showing potential for future perceptions about the usage of take home HIV tests.

# discussion

HIV testing is the cornerstone of nearly all prevention approaches, largely dictating their effectiveness and implementation, and is the point that all new HIV positive individuals must pass through on their way to being engaged in care. The intrinsic value of testing for HIV among MSM, the highest risk population for infection, seems self-evident, especially in light of the NHAS focus on a test and treat strategy to reduce new infections, yet a new wave of literature on how best to engage this population in testing uptake has been slow to appear. With data showing evidence that discovery of a positive serostatus leads, among most, to steps to reduce the transmission to others, HIV testing is an intervention in itself.

To engage MSM in increased testing new and more effective strategies must be devised and used in order to detect new infection, engage those individuals in care, and reduce transmission of the virus. Traditional barriers such as stigma, discrimination, homophobia, socioeconomic issues, and psychosocial issues must maintain high visibility in focus, especially within more vulnerable subpopulations such as AAMSM who have higher rates of HIV and lower rates of testing. The additive effects of these stressors over a lifetime have cumulative effect on, not only health outcomes, but engagement in self care as well.

Despite this syndemic effect, MSM have shown incredible resilience and managed to engage in self care at an incredible rate. It is worth noting that the vast majority of research focuses on what MSM are doing wrong while systematically ignoring what they are doing right. With a high number of MSM successfully engaging in HIV testing, more research is needed to discover why and how these successes happen and if they are able to be generalized across different populations since HIV prevention strategies have proven successful only to a point in curbing the HIV epidemic.

Current trends in HIV testing uptake among MSM show a stagnated rate with young and AAMSM showing a declining rate of HIV testing. These subpopulations have traditionally been hidden from study and prevention efforts and therefore may be at an elevated risk for infection due to a lack of education or prevention efforts. These individuals may also be less knowledgeable of services available to them such as HIV testing and may also be hesitant to engage service providers due to their disassociation from the mainstream MSM population. This increases the chances that they are unaware of their HIV serostatus. Personal and social factors that make up social network dynamics have been linked to self care engagement. The high prevalence of delayed testing can also be associated with issues surrounding socioeconomic status such as access to high quality health care, prevention education and housing’ Conspiracy beliefs have also been shown to be an important barrier among African Americans in HIV prevention efforts. These beliefs, which largely contribute to negative attitudes towards condom use and partner variables, mitigate the effects of prevention efforts and are bolstered by discriminatory practices in the health care system and in the larger context of historical race discrimination.

These barriers are compounded by fears of the disease itself and the desire of avoidance and the belief of an individual that they are immune to the circumstance of infection as well as financial fears. These, in turn, are compounded by perceived long waiting periods between testing and diagnosis as well as testing fears such as fear of needles and blood. Two of the largest barriers within the AAMSM population may be historical lack of trust in healthcare providers and a deep seated fear of discrimination due not only to race, but serostatus as well. Addressing these last two barriers may be key to effectively addressing the others and therefore instrumental in developing more effective prevention efforts towards AAMSM. The African American community tends to place more trust in their own community leaders such as clergy, civic groups and other community level organizations made up of members of the community. Engaging these community leaders is essential in overcoming the trust issues inherent in the population.

 Choices and risk behaviors do not occur independently of their environment and are largely informed by context and culture. Many of these barriers have been addressed from an outside in perspective with limited engagement with participants beyond their involvement based on personal risk factors, but getting prevention messages out to hard to reach populations is still not being done effectively. Tailoring efforts to the unique characteristics of populations is an essential step toward this goal.

Current literature suggests that outreach considering cultural, ethnic, and racial preferences are markedly more successful at engaging those populations in self care. The use of social marketing, social and sexual network strategies, community mobilization, peer support and motivational counseling can have a normative effect on HIV testing perceptions making routine testing a seeming possibility. Other research shows the importance of care givers offering testing, especially opt-out testing, as well as making free take home testing widely available. Care providers have the potential to create the biggest impact on testing frequency by encouraging policy change towards making HIV tests standard care. Combination strategies is shown to be the most effective at increasing testing among MSM and to stimulate an increase in testing among this population new approaches must be researched.

## Recommendations

Promoting testing is essential in increasing testing. Research into testing promotion is needed to identify effective strategies to facilitate frequent HIV testing and to make frequent routine testing normative. More in-depth research is needed regarding HIV testing policies and care giver perceptions towards implementing routine testing and suggesting testing until then. Research on opt-out testing in these clinic environments also deserves more attention. In addition, this literature review suggests the need for more research on the interplay of race, ethnicity, and cultural beliefs on testing uptake as well as perceptions of health care providers from potential testees and perceptions of risk level by testers.

Research has struggled for years to create a clearer picture of why individuals delay or ignore HIV testing while systematically ignoring researching why, or better yet how, they seek out and access testing. The narratives created by this line of questioning have the potential to create stronger and more relevant and appropriate interventions for those that need it most. This focal shift into a deeper exploration of resilience is in line with the NHAS. Additional research into structural strengths of clinics and outreach where testing is performed is also needed.

Education and research must be an ongoing process with an eye to new and innovative ideas as well as a shift in focus towards resilience. Targeting both care providers as well as MSM in strategy development is integral to this research development. The information gathered from this type of research could prove critical to increasing testing among MSM which is crucial if a national “test and treat” strategy is to be successful.

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