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Does Stigma toward Anal Sex Impede Engagement of Men Who Have Sex with Men  
in HIV Services and Sexual Prevention Strategies?  
A Mixed-Methods Study with Structural Equation Modeling

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**Abstract**

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**Background:** Men who have sex with men (MSM) continue to have the highest rates of HIV infection in the United States. Combinations of biomedical and behavioral interventions could lower incidence, but engagement of MSM has not occurred at the pace necessary to curb the epidemic. HIV primarily infects MSM during anal sex and social factors like stigma toward sexual behavior are likely barriers to healthcare engagement and HIV prevention in general. **Objectives:** We examined men's perspectives on stigma toward anal sexuality, and sought to quantify the effects of this devaluation on their sexual concerns and their engagement in HIV services and safer sex practices. We proposed a conceptual model based on theory and literature, and hypothesized that stigma impedes engagement, mediated through elevated concerns. **Methods:** We conducted online searches and qualitative interviews ( $N = 35$ ) to develop two new quantitative measures, an *Anal Sex Stigma Scale (ASS-S)* and an *Anal Sex Questions Index (ASQx)*; refined these in an online sample of MSM ( $N = 218$ ); then

tested our conceptual model of their effects on engagement in a new online sample ( $N = 1263$ ). **Results:** The final model accounted for 75% of the variance in engagement, had good fit, and found evidence for the effects of all factors. We did not find evidence of mediation by ASQx, but did find evidence that ASS-S impedes engagement ( $\beta = -.28$ ,  $p < .001$ ), wholly mediated by men's discomfort talking about sexual orientation and anal sex practices with health workers, after controlling for informational and emotional social support specific to anal sex and socioeconomic status. **Conclusions:** How MSM cope with stigma and concerns specific to anal sex may not be readily known or easy to disclose and address within healthcare settings, but may inform novel engagement strategies. While interest in specific questions about anal sex are not directly associated with poor engagement, responding to these questions may function as social support, and to some extent encourage greater engagement. Interventions that bolster men's emotional and informational social support with regard to anal sex may inoculate some men against the concealment effects of anal sex stigma.

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## **DEDICATION**

To the key informants and participants, from interviews through surveys,  
who risked sharing their experiences for the betterment of others.

## Chapter 1. Overview

In the United States, the human immunodeficiency virus (HIV) continues to infect gay, bisexual, and other men who have sex with men (MSM) at epidemic rates.

Efficacious HIV interventions include biomedical and behavioral approaches that reduce virulence of HIV, encourage safer sex practices, and promote the health of people living with the virus. However, engagement of MSM in HIV prevention technologies and practices has not been thorough enough to curb the epidemic. Social factors like stigma toward sexual behavior have been identified as likely barriers to engagement in both healthcare and HIV prevention practices during sex. An important and rarely studied social factor may be stigma toward anal sex, the primary route of HIV transmission between MSM. Four decades into the epidemic, we continue to know very little about the perception among MSM of social devaluation toward anal sexuality, specific concerns they harbor about anal sex apart from infectious disease, and the influence of stigma and concerns on their engagement in HIV services and prevention practices.

Formative and theory-informed research on measurement and associations between anal sex stigma, sexual concerns, and HIV is needed. To better understand these relationships, we conducted three studies, one qualitative and two quantitative. First, we interviewed experts in MSM community engagement, research, and health services. From these key informant interviews and online searches, we developed a discussion guide to explore similar topics with MSM participants recruited through the Internet. We then interviewed these MSM anonymously via telephone and online chat. We drafted two new measures, a scale comprising anal sex stigma items and an

inventory of anal sex concerns in the form of frequently asked questions. In our second study, we surveyed MSM anonymously online to pilot test our measures and to inform item reduction and validation. In our final study, we surveyed a new and larger sample of MSM, to validate these measures and to test a conceptual model of associations between devaluation of anal sex, concerns about anal sex, and behavioral outcomes related to HIV prevention.

We hypothesized that stigma toward anal sex might relate to two primary evidence-based approaches in HIV prevention: safer sex practices and healthcare utilization. Our model, based in theory on concealable stigmatized identities, sexual stigma, and fundamental causes of disease, posits that three distinct forms of stigma (experienced, internalized, and anticipated devaluation) of anal sex contribute to concerns about anal sex. These concerns in turn contribute to behavioral health responses among MSM that impede both their safer sex practices and engagement in health care, thereby elevating HIV risk during anal sex.

Ultimately, we aim to help public health officials better understand anal sexuality among MSM. If anal sex stigma does indeed appear to increase behavior associated with HIV transmission and acquisition, mediated by sexual concerns about anal sex, our findings can then inform novel interventions. Although MSM continue to have the highest rates of HIV infection in the U.S., mitigating stigma and leveraging concerns about the most proximate behavior associated with HIV, anal sex, may promote health-seeking engagement among those at highest risk, and may help us move closer to the difficult but urgently needed public health goal of ending the epidemic (Stahlman, Hargreaves, Sprague, Stangl, & Baral, 2017).

## **Chapter 2. Introduction**

A more comprehensive literature review of MSM and stigma toward sexual behavior is located in Appendix J.

### **2.1 MSM at disproportionately elevated risk of HIV**

The HIV epidemic continues as a major public health problem across the globe. Though HIV incidence overall has declined since 2001 (UNAIDS, 2010), an estimated 40 million people are living with the virus and an estimated 1.8 million people were newly diagnosed in 2016 (WHO, 2017). In the U.S., despite many advances, HIV also continues as an epidemic, with an estimated 1.1 million people living with HIV and an estimated 37,600 people contracting the virus in 2014 (CDC, 2017c).

Among most populations in the U.S., HIV incidence has remained stable or decreased, but the epidemic has disproportionately burdened MSM from its beginning and incidence among subpopulations of MSM has increased in recent years (CDC, 2017b; Prejean et al., 2011). MSM account for only 2 to 4% of the U.S. population (CDC, 2014c; Glick & Golden, 2010; Purcell et al., 2012) but a disproportionate 56% of domestic HIV cases and 70% of new infections (CDC, 2017a). The epidemic also appears to have expanded among MSM (CDC, 2011a; 2013; 2014b). Beginning in 2001, HIV incidence rose 8-12% per year (CDC, 2010; 2012), and then stabilized from 2010 to 2014 for MSM overall but with a disproportionate burden among young MSM and racial and ethnic minority MSM (CDC, 2017b). One estimation indicates the potential for a cohort of young MSM to reach an HIV prevalence of 40% by age 40 (Stall et al., 2009).

## **2.2 Effective interventions could curb the HIV epidemic among MSM**

The alarming pattern in incidence among MSM occurs despite the existence of behavioral and biomedical interventions that can prevent HIV acquisition and transmission (Crepaz et al., 2006; Kasaie et al., 2017; Rodger et al., 2016); increase the use of protective behaviors among both people living with HIV (Crepaz et al., 2006) and people at high risk of HIV acquisition (Flowers et al., 2017; Johnson et al., 2008); and promote health for people living with the virus (Crepaz et al., 2008).

On their own, behavioral interventions have yet to demonstrate reductions in HIV incidence (Sullivan et al., 2012), but meta-analyses support their efficacy in lowering sexual risk behavior (Flowers et al., 2017; Johnson et al., 2008). One problem with reliance on behavioral interventions alone is that relative decreases in sexual risk may not be protective enough against HIV acquisition when at least some condomless events still occur (Remis, Alary, Liu, Kaul, & Palmer, 2014; D. K. Smith, Herbst, Zhang, & Rose, 2015). For example, among MSM living with HIV, a diagnosis appears to prompt behavior change that shows a significant preventive effect on population level incidence (Khanna, Goodreau, Gorbach, Daar, & Little, 2014). Still, the prevalence of serodiscordant condomless anal sex among men living with HIV is estimated to be 26% (Crepaz et al., 2009). In addition, relying on behavioral interventions that only target individual behavior like condom use likely will not curb HIV incidence among Black MSM (Maulsby et al., 2013), who report less sexual risk behavior than White MSM yet are disproportionately living with HIV (CDC, 2017b), likely due to social and structural factors that elevate the chance of their contact with the virus (Millett, Flores, Peterson, & Bakeman, 2007).

Biomedical interventions, on the other hand, have remarkable efficacy in reducing incidence, morbidity, and mortality – but require behavioral and structural components in order to be effective (Beyrer, Baral, et al., 2012a; McDaid & Hart, 2010; Sullivan et al., 2012). Pre-exposure prophylaxis (PrEP), for example, reduces the likelihood of acquisition by 99% among those who show biomarkers of daily adherence (Fonner et al., 2016). Among MSM living with HIV, adherence to antiretroviral treatment (ART) also dramatically reduces the likelihood of HIV transmission as well as disease progression (Bavinton et al., 2017; Cohen et al., 2013). However, both PrEP and “treatment as prevention” (TasP) rely on optimal adherence, a behavioral target relatively difficult to maintain (Simoni, Pearson, Pantalone, Marks, & Crepaz, 2006).

Behavioral interventions in concert with biomedical interventions could avert a significant number of new infections among MSM (Sullivan et al., 2012). Combination HIV prevention that is comprehensive may be particularly important in addressing racial disparities, as substantial drivers of disparity among MSM appear to be structural, and include limited sexual networks, delayed diagnosis of HIV and other STIs, and other factors further upstream from, but influential on, individual behavior (CDC, 2010; Doherty, Schoenbach, & Adimora, 2009; Lisa Bond, 2009; Millett et al., 2007; Millett, Peterson, Wolitski, & Stall, 2006; Nelson et al., 2010; Oster et al., 2011).

In sum, in the face of a daunting domestic HIV epidemic, biomedical and behavioral interventions have shown some efficacy individually but hold far greater promise in combination. Still, a stubbornly increasing level of incident HIV infections occurs each year among MSM, suggesting that novel targets to optimize engagement in

HIV services and prevention practices are urgently needed, especially among at-risk MSM who are the least likely to access these prevention opportunities.

### **2.3 Limited engagement of MSM in HIV interventions**

Despite advances in HIV prevention and treatment, engagement of MSM has not occurred at the necessary pace to curb incidence (Beyrer, Baral, et al., 2012a; CDC, 2014d; Coates, Richter, & Caceres, 2008; Khanna et al., 2014; McDaid & Hart, 2010; Sullivan et al., 2012). Few HIV-negative or HIV status unknown MSM report participation in behavioral interventions (Finlayson et al., 2011; 2014; Sanchez et al., 2006). Receipt of condoms, on the other hand, has been proportionally much higher but has declined significantly (Finlayson et al., 2014; Sanchez et al., 2006), just as the number of MSM reporting condomless intercourse at least once in the past year has increased (Paz-Bailey et al., 2013). Granted, increases in condomless anal sex may reflect the adoption of other behavioral strategies intended to lower HIV risk, like partnering with someone of the same HIV serostatus (serosorting) or positioning as the receptive or insertive partner during intercourse based on the serostatus of partners (seropositioning) (Vallabhaneni et al., 2012). These harm reduction strategies hold the promise of risk reduction, but accurate discernment of serostatus is difficult (Paz-Bailey et al., 2013).

Use of biomedical interventions, like PrEP and post-exposure prophylaxis (PEP), also remains low (Finlayson et al., 2014). In the 2014 cycle, only 4% of MSM surveyed in the National HIV Behavioral Surveillance System (NHBS) reported taking PrEP in the past 12 months (Hoots, Finlayson, Nerlander, Paz-Bailey, & Study, 2016). In another

nationally representative sample, only 25% of MSM surveyed in 2014 knew that ART significantly reduced the risk of passing HIV to sexual partners and only 26% knew about PrEP (KFF, 2014). Additionally, retention in health services among MSM prescribed PrEP appears to be suboptimal (Chan et al., 2016).

Among MSM living with HIV, surveillance data suggest a similarly significant problem with engagement, reflected in successively lower percentages of MSM diagnosed, linked to care, retained in care, and virally suppressed (CDC, 2014a; Singh et al., 2014). This “treatment cascade” declines even more dramatically among Black MSM (Rosenberg, Millett, Sullivan, del Rio, & Curran, 2014). Difficulties with retention in HIV care may pose a significant risk to community-level viral suppression (Miller, Powers, Smith, & Cohen, 2013), as the virus is more infectious among those undiagnosed and those diagnosed but not receiving ART (Rodger et al., 2014).

#### **2.4 Sexual stigma may impede engagement of MSM**

In light of limited involvement of MSM in otherwise effective behavioral and biomedical HIV interventions, recent efforts have increased to better understand social and structural factors that impede their engagement. Social barriers, including stigma toward sexual identity and behavior, have been identified as barriers to MSM engagement in healthcare more generally and specifically in HIV prevention and treatment (Calabrese, Earnshaw, Underhill, Hansen, & Dovidio, 2013a; Institute of Medicine, 2011; Krakower & Mayer, 2012; Mantell et al., 2009; Wolitski & Fenton, 2011). Indeed, even though HIV infects men primarily through anal sex (Baggaley, White, & Boily, 2010; Dosekun & Fox, 2010), health workers rarely discuss sex with

MSM. By some estimates, discussion occurs in less than 50% of clinical encounters in HIV care (Flickinger, Berry, et al., 2013a) with discussion of specific sexual practices in only 6% of encounters (Morin et al., 2004). Providers also report particular difficulty broaching the subject of sexual behavior between men (Drainoni, Dekker, Lee-Hood, Boehmer, & Relf, 2009), which may explain why MSM, historically, have been less likely than heterosexuals to receive prevention counseling in HIV clinics (Marks et al., 2002). A qualitative study of HIV healthcare providers in 6 U.S. cities also recently observed variability in comfort obtaining a sexual history with MSM, an essential component to identify and tailor opportunities for intervention (Carter, Hart-Cooper, Butler, Workowski, & Hoover, 2014).

For MSM, health worker discomfort and stereotyping as well as men's general discomfort and difficulty disclosing sexual identity and activity do appear to interfere with access to HIV interventions, including condoms, lubricants and medications (Ayala et al., 2014; 2013; Calabrese et al., 2013a; Kinsler, Wong, & Sayles, 2007; Krakower & Mayer, 2012; Mantell et al., 2009). However, the relationships between social barriers, like stigma, and healthcare among MSM has been understudied. From 1989 to 2012, only 0.4% of NIH-funded studies focused on MSM; of these studies, only 2.8% involved the topic of health services (Coulter, Kenst, Bowen, Scout, 2014).

Within the scant research on MSM and health services, across review studies *stigma toward HIV* is consistently associated with poor engagement in the very healthcare interventions and safer sex practices necessary to curb the epidemic among MSM. A systematic review of studies published between 1991 and 2010 concluded that HIV-related stigma and discrimination impede successful HIV testing and treatment

among MSM and also have been associated with increased sexual risk among both HIV-positive and HIV-negative men (Smit et al., 2012). A different systematic review across populations, including MSM, also found that HIV stigma acts as a barrier to HIV testing and treatment in several settings (Mahajan et al., 2008), but that little is known about how HIV stigma might impede use of novel prevention technologies like microbicides and PrEP, as has been suggested by others (Mahajan et al., 2008; Sugarman & Mayer, 2013). The review authors also note a dearth of measures to specify distinct forms of stigma at structural and institutional levels and that many stigma measures have not been validated (Mahajan et al., 2008). In addition, measures of stigma directed toward those living with HIV and those at risk of acquiring HIV do not specifically capture stigma toward sexual behavior, despite that several studies suggest that sexual stigma interferes with health worker comfort, and several hypothesized models, some empirically supported among MSM, suggest that *stigma toward same-sex behavior* may play a complicated role in the health of sexual minorities (Herek, Chopp, & Strohl, 2007).

## **2.5 Theory-based models of sexual stigma**

One theory-based model, the sexual stigma model (SSM), describes the process by which MSM experience discrimination, and downstream behavioral health responses that may elevate HIV risk (Herek et al., 2007). Sexual stigma refers to the inferior regard, status, and power accorded to any non-heterosexual behavior, identity, relationship, or community. Sexual stigma can be embodied in three distinct, temporal forms. *Experienced stigma* involves negative actions, including acts of neglect and

discrimination, which are then *internalized* as part of one's personal value system and self-concept, then eventually *anticipated* as enacted by others in the future (Herek et al., 2007).

The SSM aligns well with public health literature on “fundamental causes” of disease, which posits that social conditions produce multiple risk factors and health effects that cannot be eliminated by simply addressing the links between individual behavior and disease (Link & Phelan, 1995). As a fundamental cause, sexual stigma begets structural inequalities that privilege heterosexuality (Herek et al., 2007), such as anti-sodomy laws that may have inhibited research on anal sex (Kelvin, Smith, Mantell, & Stein, 2009), sex education that focuses solely on reproduction, or delayed research on the safety of lubricants on rectal cells during anal intercourse (Begay et al., 2011) or of intercourse itself on rectal cells (Kelley et al., 2016), despite that anal sex accounts for a large proportion of HIV cases (Baggaley et al., 2010; Beyrer, Sullivan, et al., 2012b; Dosekun & Fox, 2010). These structural inequalities in turn potentiate acts of explicit discrimination, as well as further acts of omission, which have been posited as barriers to healthcare engagement for sexual minorities (Herek, 2009b; 2009a; Institute of Medicine, 2011; Stahlman et al., 2017). Likewise, if sexual stigma and racism are both “fundamental causes,” then all MSM and MSM of color in particular are not just vulnerable to a specific disease, like HIV, but to a whole set of diseases and health outcomes that flow from those causes (Link & Phelan, 1995). This is supported by recent exhortations about anorectal cancer as the next epidemic among MSM (Deshmukh et al., 2017; Engels et al., 2012), and by meta-analyses documenting that racial disparities in HIV among MSM cannot be explained by individual behavior alone

(Millett et al., 2007) and, instead, appear to be explained by structural barriers further upstream from individual behavior that are associated with not engaging in care, such as limited access to healthcare (Millett et al., 2012).

If MSM are susceptible to sexual stigma as one fundamental cause of HIV disparities, differentiating between stigma mechanisms and their interactions (e.g., HIV status, sexual orientation, sexual behavior, racism) is important to the extent that they predict different outcomes and help identify critical components for intervention on particular health targets (Earnshaw & Chaudoir, 2009; Earnshaw, Smith, Chaudoir, Amico, & Copenhaver, 2013).

Recent models of “concealable stigmatized identities” may offer a novel way to specify outcomes of sexual stigma as it manifests toward anal sex, the most proximate individual-level behavior associated with HIV risk acquisition and transmission among MSM. Concealable stigmatized identities (CSIs) are devalued social identities or attributes that can be kept concealed from others (Quinn & Earnshaw, 2011). Like the SSM, CSI models include experienced, internalized and anticipated forms of stigma, each with the potential for distinct effects (Earnshaw et al., 2013; Earnshaw & Chaudoir, 2009; Quinn & Earnshaw, 2011). In addition to specifying psychological, physical, and behavioral health outcomes, CSI models add measures of valence and magnitude. Valence refers to the range of both negative and positive beliefs about the CSI, including each form of stigma, and the moderating effect of counterstereotypic or positive information (for example, experiences of pleasure during anal sex despite exposure to stigma toward anal sex). Magnitude refers to the relative importance of the CSI for the self via measures of centrality and salience (Quinn & Earnshaw, 2011).

## 2.6 Devaluation of anal sex may lead to concealment of sexual behavior

One possibly novel area for identification of stigma mechanisms as they affect MSM would be to quantify the extent to which social devaluation specifically toward anal sexuality encourages concealment of sexual behavior, and impedes men's engagement in HIV health services and prevention practices. Limited evidence suggests that men harbor concerns about anal sex, apart from its role in HIV acquisition and transmission, that are nonetheless intimately related to HIV risk. For example, use of alcohol, amyl nitrite (i.e., "poppers"), and methamphetamine is popular among MSM (Colfax et al., 2004) and may both minimize concern about receptive role or pain during anal sex (Collier, Sandfort, Reddy, & Lane, 2014; Damon & Rosser, 2005; J. Morin, 2010; Myers et al., 2004; Romanelli, Smith, & Thornton, 2004; Semple, Patterson, & Grant, 2002) and maximize pleasure (Myers et al., 2004), but each substance is strongly associated with HIV transmission (Buchbinder et al., 2005; Colfax et al., 2004; Koblin et al., 2011; Menza, Hughes, & Celum, 2009). Likewise, MSM may use lubricants to prevent painful intercourse (Collier et al., 2014). Lubricants are necessary for effective rectal use of condoms, but paradoxically are also associated with increased rectal susceptibility to HIV and other sexually transmitted infections (Begay et al., 2011; Chow et al., 2016). Douching is common among MSM (Mitchell, Sophus, Lee, & Petroll, 2015) and may mitigate concern about contact with feces (Calabrese, Rosenberger, Schick, Novak, & Reece, 2013b; Carballo-Diequez et al., 2007; Carballo-Diequez, Bauermeister, Ventuneac, Dolezal, & Mayer, 2010; Hensel, Rosenberger, Novak, & Reece, 2012; Noor & Rosser, 2014), but douching renders mucosa more susceptible to HIV

acquisition (Noor & Rosser, 2014) and the odds of a sexually transmitted infection (STI) are elevated among those who douche (Javanbakht, Stahlman, Pickett, LeBlanc, & Gorbach, 2014).

These behaviors that both mitigate concerns about anal sex and appear to elevate HIV risk occur in the context of limited evidence-based information about best practices in anal sexuality, an experienced form of stigma by omission. Interestingly, in terms of health care engagement, MSM do appear more willing than heterosexuals to discuss anal health, at least with regard to harmful symptoms (e.g., pain, discomfort, and bleeding). However, MSM who report serodiscordant sex appear less likely to disclose, which suggests the possibility that anticipation of stigma might inhibit disclosure of health needs and therefore impede access to preventive care (Rosa-Cunha, Cardenas, Dickinson, & Metsch, 2010).

## **2.7 A preliminary Anal Health Stigma Model (AHSM)**

To better understand how different forms of stigma toward anal sex, and concerns that may flow from this stigma, influence MSM engagement in HIV services and prevention practices during sex, we drew from theory on sexual stigma, HIV stigma, and concealable stigmatized identities (Earnshaw & Quinn, 2012; Herek, 2009b; Herek et al., 2007; Mahajan et al., 2008; Quinn & Chaudoir, 2009), to conduct a series of studies. This research aims to test a new conceptual model of the associations between stigma specifically toward anal sex and behavioral health outcomes. The Anal Health Stigma Model (AHSM) describes how *stigma toward anal sex* leads to two behavioral responses that elevate HIV risk: risky *anal sex practices* (e.g., douching, substance

use, unprotected serodiscordant intercourse) and **poor healthcare engagement** (e.g., concealment of sexual behavior and orientation, less identification of MSM for biomedical and behavioral intervention, less retention in HIV care). These poor engagement outcomes are themselves linked; for example, condomless serodiscordant anal sex while using ART or PrEP as prescribed would not be an equivalent risk to the same anal sex practice in the absence of healthcare utilization (Cohen et al., 2013; Grant et al., 2010). We posit that relations between anal sex stigma and engagement are mediated by **anal sex concerns**, which may include HIV but also broader interests like mitigation of pain and discomfort, management of personal hygiene to prevent contact with feces, and maximization of sexual functioning and pleasure.

We conceptualize stigma toward anal sex as **experienced** negative actions, including acts of omission (e.g., public health messages to avoid anal sex, derogation of MSM who enjoy receptive anal sex, or the absence of sex education or knowledge about normal physiological functioning during sex). These experiences may be **internalized** or accepted as part of one's personal value system and self-concept, as in thoughts of disgust even while enjoying anal sex or resignation that preventable pain is punishment for pleasure or an unconscious sign of fear about HIV (Middelthon, 2002). Eventually, an individual who experiences and internalizes stigma develops **anticipated stigma** or the expectation that other people, including health workers, will enact stigma in their responses toward the individual. This in turn provokes the need to hide concerns during anal sex and in healthcare settings (Quinn & Chaudoir, 2009), and subsequently elevates the likelihood of the HIV-related behavioral responses described above.

The behavioral responses subsequent to experienced, internalized and anticipated stigma may be mediated by additional valenced content, such as *counterstereotypic information*. For example, pleasure during anal sex (Middelthon, 2002), social support (Ayala, Bingham, Kim, Wheeler, & Millett, 2012; McKechnie, Bavinton, & Zablotska, 2013; Rao et al., 2011), informative and nonjudgmental discussions about physiology (Middelthon, 2002), and simple empathy from a clinician (Gu, Lau, Wang, Wu, & Tan, 2015) have been either posited or demonstrated as moderators between other forms of stigma and behavioral responses. These counterstereotypic exposures may inoculate some MSM against anticipated stigma, emboldening future health-seeking behavioral responses like engagement in anal sex practices and healthcare utilization that lessen HIV risk.

Likewise, the centrality and salience by which MSM identify with anal sex (e.g., frequency, desire) may also magnify the extent to which stigma produces behavioral responses. Stigma may be more negatively or positively valenced among MSM who frequently engage in or desire anal sex, as some evidence suggests that more sexually active MSM are more facile with harm reduction strategies to reduce HIV risk (Card et al., 2017). In addition, rates of mood and anxiety disorders among MSM are twice that seen among other men (Bostwick, Boyd, Hughes, & McCabe, 2010) and mental health has been demonstrated as a mediator between stigma and sexual risk behavior (Preston, D'Augelli, Kassab, & Starks, 2007). This suggests that stigma-related sequelae, like anxiety and depression, may influence the internalization of and cognitions about experienced stigma and, subsequently, behavioral responses.

## 2.8 Summary

Men who have sex with men (MSM) continue to have the highest rates of HIV infection in the United States. Even though a combination of biomedical and behavioral HIV interventions could lower HIV incidence, engagement of MSM in HIV prevention has not occurred at the pace necessary to curb the epidemic. Innovative methods to engage MSM in HIV services and prevention practices are urgently needed. HIV primarily infects MSM during anal sex and social factors like stigma toward sexual behavior have been identified as likely barriers to healthcare engagement and HIV prevention in general. How MSM cope with their concerns about anal sex may not be readily known or easy to disclose and address within healthcare settings, but their behavioral responses to already identified anal sex concerns appear to elevate their HIV risk.

While there is increasing concern about the effects of social factors in the HIV epidemic, potential associations between exposure to anal sex stigma and MSM engagement in HIV prevention and treatment have not been investigated quantitatively, nor have MSM been broadly surveyed about their concerns related to anal sex. The rarity of these research targets occurs despite the likelihood that anal sex concerns among MSM are broader than infectious disease, are influenced by devaluation of anal sexuality, and likely influence both men's HIV-relevant decision-making during sex as well as their decisions to conceal sexual concerns and prevention needs in healthcare encounters. Ultimately, we seek novel pathways to engage MSM most at risk of HIV acquisition, transmission and disease progression, to inform public health interventions.

To this end, we conducted three studies. In Study I, we developed an initial item pool of anal sex stigma and anal sex concerns, based on a literature review and in-depth interviews with key informants ( $N = 10$ ) and MSM participants ( $N = 25$ ). Once items were developed, we then conducted cognitive interviews with a subset of 7 of these same MSM participants. In Study II, we pilot tested these initial measures with a new online sample of MSM ( $N = 218$ ), and conducted scale development analyses, including exploratory factor analyses, to inform item reduction. In Study III, we surveyed a larger sample of MSM ( $N = 1263$ ) with our revised measures, adding hypothesized behavioral responses and other covariates posited in our conceptual model, and conducted new exploratory and confirmatory factor analyses, followed by structural equation modeling to test hypothesized pathways.

## **2.9 Hypotheses**

Hypothesis I: Higher endorsement of stigma toward anal sex will be positively associated with less engagement in HIV services and less engagement in HIV prevention strategies during anal sex.

Hypothesis II: The association between stigma and these HIV-related behavioral responses will be partially mediated by concerns MSM harbor about anal sex.

## Chapter 3. Construction of Initial Item Pools (Study I)

To generate potential items for two new measures related to anal sexuality, we searched online content and literature databases, sought professional and community knowledge by interviewing key informants in the field of MSM health, and conducted in-depth interviews with MSM. We then drafted measures and revised them iteratively based on cognitive interviews with a subset of previously interviewed MSM.

### 3.1 Method

All procedures across sub-studies were reviewed and approved by the University of Washington Human Subjects Division (Study ID 50334).

#### 3.1.1 *Participants*

A total of 10 key informant and 25 MSM participants were interviewed (Tables 1 and 2). Key informants identified as counselors, medical providers, sex educators, activists, advocates, researchers, and community stakeholders. They ranged in age from 29 to 63 ( $M = 44.6$ ,  $SD = 12.6$ ). Nine identified as cisgender male and one as cisgender female. Two identified as Black/African-American, 6 as White, and 3 as Latino, including 1 White Latino. In terms of education, 8 reported a master, doctoral, or professional degree, and 2 reported some or 4 years of college. The majority ( $n = 6$ ) reported income greater than \$90,000 per year, with 2 reporting \$60,000-\$74,500, and 1 each reporting \$45,000-\$59,000 and below \$15,000. Most ( $n = 6$ ) lived in the eastern region (New York, New Jersey, Washington DC), and 1 each lived in Alabama and

Illinois, and 2 in Washington state. Most ( $n = 7$ ) identified as gay, 1 as bisexual, 1 as queer, and 1 as heterosexual.

MSM participants ranged in age from 23 to 56 ( $M = 34$ ,  $SD = 9.1$ ) and all identified as cisgender male. Eleven (44%) identified as Black/African-American, 8 (32%) as non-Latino White, 2 (8%) as Asian or Asian-American, and 6 (24%) as Latino ethnicity (4 White and 2 Black). Half ( $n = 12$ ) reported less than a 4-year college degree, 8 (33%) a 4-year degree, and 5 (20%) a master or doctoral degree. Nine (36%) reported annual income below \$30,000 and 2 (8%) reported income at or above \$60,000. Participants lived in 16 states, mostly in the eastern region ( $n = 9$ ), with roughly equivalent numbers living in the southern ( $n = 4$ ), central ( $n = 5$ ) and western ( $n = 6$ ) regions. Most ( $n = 21$ , 84%) identified as gay.

One MSM participant reported never testing for HIV and 17 (68%) reported last testing HIV-negative, with 4 of these prescribed PrEP. Of the 7 MSM (28%) who reported living with HIV, all but one reported undetectable viral load. Most interviewees also reported having a primary care physician ( $n = 21$ , 84%). About half ( $n = 12$ , 48%) reported a boyfriend or girlfriend, 10 (40%) reported being single or casually dating, and 3 (12%) reported a partnership, marriage, civil union or commitment ceremony. Seven (28%) reported an open relationship. The majority ( $n = 15$ , 60%) reported a preference for versatile sexual positioning, 7 (28%) preferred bottoming, 2 (8%) topping, and 1 (4%) reported no preference because he had yet to experience penile-anal intercourse. One quarter ( $n = 6$ ) reported a single past year anal sex partner, 20% ( $n = 5$ ) reported between 2-5 partners, a third ( $n = 9$ , 33%) reported between 6-25 partners, and another 20% ( $n = 5$ ) reported more than 25 partners.

### 3.1.2 **Data Collection**

The Internet has become a powerful tool for behavioral surveillance and HIV prevention interventions among MSM (Groves, Ventuneac, Rendina, Jimenez, & Parsons, 2013; Hooper, Rosser, Horvath, Oakes, & Danilenko, 2008; Liao, Millett, & Marks, 2006; D. Zhang, Bi, Hiller, & Lv, 2008). Both key informants and MSM participants were recruited in snowball sampling online through announcements via email listservs, community organizations, and social media. Consent and demographic questionnaires were administered prior to interviews via an online survey through the University of Washington Psychology Department's license with Qualtrics Survey Software (Qualtrics, 2017).

Key informant interviews were conducted either by phone ( $n = 5$ ) or in-person ( $n = 5$ ), were not anonymous, and were quota-informed to reflect racial, ethnic, age and geographic diversity, in consideration of disparities in the HIV epidemic. All interviews were conducted in December 2015.

Interested MSM participants who reported as cisgender male; living in the U.S.; English speaking, reading, and writing; 18 years of age or older; with at least one male anal sex partner in the past year were screened by the online survey for interviews. MSM participants were given the option to protect anonymity by requesting online chat rather than telephone interview. To include a broad set of concerns and exposure to stigma, 'anal sex' could involve any form of anal sexuality, including oral and manual manipulation with toys, objects or fingers. This resulted in a pool of 75 eligible respondents from 21 states and the District of Columbia, from which we selected 25 MSM based on quota sampling (Table 2).

Quota sampling reflected diversity in age, geography, socioeconomic status, medical engagement (no primary care physician), number of past year anal sex partners, HIV status and PrEP use, racial and ethnic diversity, and presumed interest in greater anonymity via online chat. All in-depth interviews (17 phone, 6 online chat, 2 both formats) were completed in March and April 2016, and all cognitive interviews (7 phone) were completed in August 2016.

### 3.1.3 *Interview Procedures*

Interviews were conducted by the first author (BAK), either in the private offices of key informants or, if telephone or online chat, a secure location to ensure privacy. For chat interviews, participants were asked to log in to a study-designated email account with an individualized password. Immediately following each online chat, transcripts were downloaded verbatim, passwords changed, and online history deleted to further protect anonymity. Audio interviews were also downloaded and the original file deleted from the recording device, then transcribed verbatim and reviewed for accuracy. Personal identifying information was removed from audio files prior to transcription. Audio files and sensitive survey data were password-protected on an external drive and kept in a secure, locked office, or housed on a secure, password protected HIPPA-compliant UW server in order to allow secure off-site access by study staff.

Interviews lasted approximately 1 hour. Key informants were not reimbursed for their time. MSM participants were allotted one raffle entry per interview to win one of three \$50 gift certificates to an online retailer.

Interview guides (Appendices A-C) were informed by literature and online searches and allowed for pre-existing concepts, theories, and findings to inform components of the interview, rather than constrain theory to be generated exclusively from the interviews (Strauss & Corbin, 1994). We considered limiting the number of interviews in light of saturation of key concepts (Guest, Bunce, & Johnson, 2006; O'Reilly & Parker, 2012), but determined that continuation would generate a better understanding of the diversity of stigma mechanisms and anal sex concerns. Key informant interviews occurred first and informed the development of interview guides for MSM participants. Cognitive interviews occurred only after generation of an initial item pool, which participants and the interviewer viewed simultaneously on the study's survey platform.

#### 3.1.4 ***Instrument Generation for Scale Development***

Instrument generation occurred by first identifying key constructs and emergent themes shared by key informants, which then lead to a coding manual, with sub-codes and flags delineated as needed in ATLAS.ti 7.5.2 (Muhr, 2012). The first author and an honors undergraduate student then double-coded 10 percent of MSM transcripts using the initial codebook, allowing for discussion and documentation of emergent codes in regular meetings and in consultation with the larger research team.

We followed established guidelines for item generation in scale development (DeVellis, 2016). Key illustrative comments by MSM participants helped generate phrases as individual items under each coded theme. We used MindNode software (Müller-Simhofer, 2017) to brainstorm a map of potential items and to build clusters and

branches of key informant and MSM participant speech that could inform items for the constructs we aimed to measure. Several measures of stigma toward concealable stigmatized identities, including toward people living with and at risk for HIV, were also examined for adaptation (e.g., Bunn, Solomon, Miller, & Forehand, 2007). Likewise we consulted a compendium of sexuality-related measures to determine if items could be adapted for our purposes (Fisher, Davis, Yarber, & Davis, 2011).

We revised items iteratively, after each cognitive interview, to better reflect participants' experiential world and to reduce response errors (Alaimo, Olson, & Frongillo, 1999). For the anal sex stigma measure, we attempted to distinguish between the forms posited in SSM and CSI literature (experienced, internalized, anticipated). For both measures, we sought to balance brevity with the potential for endorsement across diverse experiences among MSM, in particular racial and ethnic group differences, sexual position preferences, and potential concealment of sexual orientation and behavior. For example, experienced stigma was not limited to enactment directly on the respondent (e.g., "I was shamed for bottoming") and instead could be witnessed or 'felt' (Herek et al., 2007) by a respondent who was not himself identifiable as a direct target (e.g., "I have seen bottoms shamed for enjoying anal sex"). Similarly, we revised language to optimize the likelihood of reliability, validity, and inclusion of a breadth of anal sex practices beyond penile-anal intercourse, including across the potential gender diversity of men's sexual partners.

After the completion of cognitive interviews, we assessed readability scores of the items in Microsoft Word and conducted informal review by MSM community

members unfamiliar with the study objectives and hypotheses, then further revised our measures.

### **3.2 Results and Discussion**

Data include overlapping themes related to the two constructs of anal sex stigma and anal sex concerns, responses to draft items during cognitive interviews, and readability scores. Factors derived from interviews are presented in the final drafts of each measure in Appendices E and G. A selection of themes relating these factors to one another, relevant to stigma mechanisms and behavioral responses, are presented below.

#### **3.2.1 *In-Depth Interviews with Key Informants and MSM Participants***

One of the most strongly endorsed interview themes involved shaming of anal sex, in particular receptive intercourse, by relatives, fellow MSM, and health care providers. Interviewees also reported devaluation that appeared to produce anticipation of stigma, and inhibit disclosure of sexual concerns to potentially supportive acquaintances, despite men's interests in finding accurate, counterstereotypic information about anal sex. MSM also reported acts of omission that impeded addressing specific anal sex concerns to others, including health workers.

#### ***Theme 1: Experiences of devaluation discourage disclosure of sexual behavior and concerns***

Several participants noted exposure to denigration of men who enjoy receptive anal sex. Anticipation of judgment, or "bottom shaming", occurred even among men who felt relatively supported about their sexual orientation. One participant reported

concealing his anal sexuality and concerns, both from his father and those who might possibly help him with his questions about anal sex.

*I couldn't talk to anybody about that [bottoming] ... Because I'm like, I enjoy it, but my Dad's like, 'He's still my son – as long as you ain't getting fucked.'* (32, Black Latino, seronegative on PrEP, Western U.S.)

This same respondent described how his anticipation that others would likewise denigrate bottoming prompted concealment of his sexual behavior even as he sought medical attention for a painful anal fissure that followed initial efforts at anal sex. During his medical encounter, he denied any anal sexual activity, though his medical provider appeared willing to coax a disclosure.

*I was kind of embarrassed to tell them [my doctor] what had happened [with the fissure] because ... automatically if you disclose as a gay man, the perception is that you are being penetrated. ... [W]hen I had that surgery [for the fissure], I hid it from everyone I knew ... except my friend that came with me. ... It made me uncomfortable talking about it. Literally I didn't tell my mom even when I had after-surgery procedures like follow-up appointments. ... [T]here's only one person in my life, besides yourself right now, that actually knows that I had that procedure done.*

He now reports a greater “comfort level” advocating for himself in healthcare settings, but still notices lingering hesitance to talk about anal sex even when invited by a health worker: “I would almost think I would deny it because of the embarrassment that I felt during that [initial] situation. I just felt like I had done something wrong.”

Fellow participants reported similar devaluation of bottoming, with men who vocalize their desire and pleasure often slandered with slurs like “used goods,” “trash,” and someone to “watch your man around.” This double-standard – that receptive anal

sex is not acceptable, but insertive is – exists despite that intercourse naturally requires at least one receptive partner.

*I've had patients say, "I'm not gonna let somebody do that to me." Do that to you?!? What does that mean "Do that to you"? Almost like this is a bad thing that's happening. So, you're being an insertive partner with the person you're having sex with and that's okay – but you don't feel like it would be okay for them to do that to you. Somehow there's something somehow going on here that may not necessarily be kosher, y'know? (Key informant, 58, White, medical practitioner, Southern U.S.)*

We also heard more direct evidence that anticipation related to this form of devaluation inhibited seeking social support. One respondent described a disappointing initial bottoming experience that he hid from friends out of fear that people might “look down on being a bottom” and taunt him.

*[If] you say you are bottom, the girls gonna be like, 'Aw bitch, you're a bottom, you get ran through!' The girls fuck you down. In a black gay scene, they make being a bottom like a bad thing, like you should not be a bottom. (29, Black, seropositive and undetectable, Midwest)*

Even among men who do share their concerns, many reported truncating or circumscribing what they would disclose, including their desires for greater pleasure.

*When we talk about anal health, it's usually always the same old, same old. Make sure you use condoms, make sure you're not bleeding. But I think we don't go into the emotional standpoint and the repercussions of what can happen when things don't work out right. (25, Black, seropositive and undetectable, Southern U.S.)*

*I hear a lot of men who do not talk about the specifics of anal sex. They talk about doing it or having it done. But not really discussing their discomforts, their fears, their worries, how they could maybe enjoy it more. (Key informant, 33, Latino, psychotherapist, East Coast)*

Hiding concerns for fear of a negative response may be normative, though moderated somewhat by supportive social interactions. One key informant (34, White, Midwest)

who works in an anal dysplasia clinic reported that self-disclosure seems to clear a path for patients to disclose themselves: “They are afraid to go into detail unless they know that you enjoy the same type of activity.” One respondent (36, Black, seronegative not on PrEP, East Coast) reported that he “didn’t feel ashamed [about anal sex], even though I was in a culture that says you should be, because of the way I was brought up.” He was “shielded” by a mother who educated herself and her son about anal sex after he came out: “She didn’t know much, but she helped me to research, which was nice to be able to have that.” Another man described that practical information from a friend who was “exclusively a bottom” informed his own hygiene practices, and also encouraged him not to conceal his concerns: “I think the best piece of medical advice he ever gave me was that he said, ‘If you have a problem, take care of it. Don’t ignore it.’ And that always resonated with me” (56, Black, seropositive and undetectable, Midwest).

For some men, the possibility of social support seemed insufficient in comparison to the anticipation of stigma. One respondent, a man living in a rural state, reported hiding his longstanding concerns about pain during anal sex even from close friends. He reported that his disclosure during the study was the first detailed accounting, in part because he anticipated an uncomfortable reaction among his heterosexual friends.

*[E]ven if they’re supportive of me being gay, which most of my friends are, I would still feel as if I’m making them uncomfortable if I’m talking with them about sexual experiences.* (32, White, seronegative not on PrEP, Northwestern U.S.)

Among his one or two gay friends, he could only imagine discussing his concerns while on a road trip, in a more relaxed context for sharing, and even so with ongoing vigilance

about their reactions: “I would also judge by how they were responding if I were to have that conversation with them and how much to share or not to share.”

***Theme 2: Experienced and anticipated stigma are linked to internalized devaluation of anal sex concerns***

The anticipation of a disclosure reaction by family, peers, or healthcare practitioners appears to lead some men to internalize negative messages about anal sex, and further isolate rather than seek support.

*I think a lot of shame is attached to it [anal sex]. Even the people who participate in it still have a certain level of, “Oh, maybe this is wrong,” and this is something that I think inhibits people from having conversations about it ... [W]e won’t have a conversation about it at a dinner table because it’s not appropriate. Or won’t have conversation with our doctors because he won’t understand, or she won’t understand. (36, Black, seronegative not on PrEP, East Coast)*

Some respondents very clearly described how experienced stigma produced internalized devaluation of their own needs and desires. When asked what he thought the interviewer might think about his comment that he may never let go of his “shame” related to anal sex, one MSM participant (32, Black Latino, seronegative on PrEP, Western U.S.) responded quickly, “That I’m a weirdo. That you’ve never heard anyone talk like that about engaging in sex. Like I may be like this unsound data point in your study.” Another respondent reported that, even after being sexually active for 14 years, his mental discomfort with anal sex inhibits seeking answers to his continued, longstanding concerns about hygiene, pain, and potential long-term consequences of penetration.

*Just putting another body part into your anus. It's still a little uneasy. I'm definitely more to terms with it, but it absolutely has been uncomfortable for me to think about. ... Physically, yes, too, but more I think it's on the mental side. (32, White, seronegative not on PrEP, Northwestern U.S.)*

This internal sense of mental discomfort was shared by others, and tied intimately to anticipation of further devaluation. Respondents considered a high threshold for consultation with medical providers, fearing repercussions of disclosure.

*I would feel vulnerable. I would feel I've made myself open to judgment. I feel like I'm going to be the lunchroom conversation. Like, "Yo, my last patient, you know what they had the audacity to ask me?" It's an awkward moment, and if they [the medical providers] don't have any care or concern about it – I don't want to be a dinner conversation when you get home. (36, Black, seronegative not on PrEP, Southern U.S.)*

The link between anticipation of maltreatment and internalization was evident in hesitation from one respondent (26, White, seronegative not on PrEP, West Coast) to share his concerns during an online chat. He first hinted at a concern, then discounted it by typing that it was not that important. He eventually disclosed that he enjoys eye contact during anal intercourse, something he values and finds particularly pleasurable, but that is frustratingly difficult with his primary sex partner because of their different heights. After this disclosure, he shared that he thought the interviewer, like the respondent, might also discount these concerns as “not important enough to complain about.” He hesitated, even in an anonymous context, because he did not want to be viewed, quoting his own words, as “‘complaining about something that’s not really a big deal’.”

This internalized experience of discomfort may discount the relative importance of anal sex in some men’s lives, even as they continue to engage in it, punishing

disclosure by punishing importance. Despite saying at the start of the interview that he is “very straightforward,” one respondent (29, Black, undetectable, Midwest) who was out as gay and living with HIV said that, if he could go back in time, he would tell his younger self not to have anal sex, “because, you know, it causes so much problems.” He clearly referred to social stigma, and said this was not about HIV, but instead “relationship issues and stuff like that” related to anal sex. Still, he preferred not to share further detail.

### ***Theme 3: Omission of Health Knowledge***

Omission appears to inhibit disclosure of anal concerns, in part by focusing attention on men’s own presumed knowledge because medical practitioners themselves may not have accurate information or sufficient training in anal sexuality.

*You don’t want to put those type of questions out there and then they go, “I don’t know. You can tell me more than I can tell you.” Oh, now this is awkward. (36, Black, seronegative not on PrEP, Southern U.S.)*

Some men reported vetting medical providers by first coming out as gay, noting a reaction, then girding themselves to disclose about anal sex concerns because they suspected health professionals would not know how to be helpful.

*If I just say “I’m gay” to my doctor and ... get a weird or non-response then that next step [sharing about anal sex] ... takes a lot more of you just sucking it up and doing it. ... If you’re already getting signals of like – not that it’s going to fall on deaf ears, but it’s going to fall on ears that don’t know what to do with the information – you’re like, ‘Oh, this next part is going to really suck.’ (28, White, seronegative not on PrEP, East Coast)*

During an online chat, one respondent detailed that his previous experiences with doctors, whose questions seemed to devalue same-sex behavior, continue to inform his concealment of his current health needs.

*lots of other docs framed questions from a straight heteronormative perspective that left out most of my needs but it feels awkward [sic] to stop them and go back / and not knowing them I wasn't [sic] looking for a shaming or a lecture so often things just get left out (31, White, seronegative not on PrEP, Midwest)*

Another respondent (27, White, seronegative not on PrEP, Southern U.S.) reported mistrust of the working knowledge of doctors when it comes to anal health. He described longstanding problems with hemorrhoids that previously prompted medical attention. At an STI clinic, he was given “a stern talking to” about use of condoms with secondary partners but not his primary partner, and told to adhere to HIV prevention options that he found unsuitable. He now anticipates a need “to go in with these barriers,” even with different medical practitioners. He reported that he prefers home remedies rather than even broach with clinicians his concerns about bleeding from the hemorrhoid, because he expects either similar lecturing or an insufficient response to his concern: “I never talked to them about the hemorrhoid, but it probably would’ve been about the same”.

Several respondents echoed that they did not expect providers to be competent, a different anticipation of maltreatment, by omission rather than intentional harm. This affected one respondent’s relationship to medical providers even though he now feels capable of requesting specific anal health services.

*I don't think I've really found a provider where I feel the most comfortable expressing myself – like by no means do I deny what I do ... I know that I need like anal exams and stuff like that. But I*

*just feel like it's very much perfunctory. It's not like I can really engage with this provider and get that like comfort of knowledge with the provider. (32, Black Latino, seronegative on PrEP, Western U.S.)*

Even men experienced and generally comfortable with anal sex reported inhibition when considering disclosure in medical settings. This anticipated stigma may include relatively benign feelings about a long-past culturally insensitive experience that still produces surprising vigilance and reticence to share sexual concerns in a medical setting, unless absolutely necessary.

*[I]n so many other aspects of my life, I'm totally fine being an open book and talking about things. But there is something about sitting on that table with the paper sheet and the kind of serious nature of being in a doctor's office. That still feels like the one place where I'm never absolutely sure of just like coming out and saying that I'm gay and this is what I do. (28, White, seronegative not on PrEP, East Coast)*

*There is some something a little bit more personal [about anal health], so I don't want to go to a doctor unless I'm sure it's an issue. (27, White, seronegative not on PrEP, Southern U.S.)*

Several participants described that their isolation, both from friends and health care workers, limited their knowledge of normative functioning of the human body in relation to anal sex and, in the absence of reliable information, lead to anxiety.

*When I was younger, and before I even completely understood more about my personal body, I would be freaked out for two or three days [after bottoming]. Or, I'd feel like if I used the bathroom, I was going to re-infect myself with feces and stuff, because I've teared [sic] a hole in there ... Now I know that that has not happened, and I've had enough sex to know the likeliness of that happening is not likely, but no one ever educated me or told me, before I started this process, that those things might jump out and stress me out or be concerns of mine. (36, Black, seronegative not on PrEP, Southern U.S.)*

Participants also described how other men's lack of knowledge about anal sexuality and anatomy can feel like an undue burden, as they are called upon to educate sex partners who are relatively less knowledgeable and, possibly, more burdened by internalized stigma. This leads some men to seek older or more experienced sex partners.

Somebody who's my age [25] ... they try to treat it like a vagina or they try to treat it like other bottoms that they have met and it's like, "You just can't drop in. You kind of have to do a little foreplay. You kind of have to do a little foreplay situation." ... [T]hey're like, "Why you flinching?" I'm like, "Well, you would flinch too if you had, you know, whatever size you have and you're just trying to ram it into somebody. It doesn't work like that. And whoever lets you do that to them, then apparently then they've been getting fucked for, like, forever." It doesn't work like that for me. And they don't understand that. (25, Black, seropositive and undetectable, Southern U.S.)

This concern extends beyond the physical mechanics of anal sex to include psychological inhibitions. One respondent (36, Black, seronegative not on PrEP, East Coast) shared that he does not want to have to do "work" with a sex partner who is relatively more burdened by internalized "hang ups about [anal] sex."

This urge to push away sex partners who carry internalized stigma is paradoxical, since many respondents also noted that they first learned how to have anal sex "properly" from fellow sex partners. One key informant noted that as MSM learn about anal sex, often from pornography, they may need specific social support from sexual partners, to counter this lack of practical, realistic knowledge about how to proceed during anal sex, to ground anal sex in fact rather than fantasy.

*What they all need, what all bottoms need, are a coach basically that says, 'You can stop.' You can say, "Let's take a break. Give me a time to adjust." Or "Just hold it there, baby. Just, just stay where you are inside of me. Don't pull out, don't push in, just stay where you are and let me get used to this moment right here, right now." That can be incredibly, [pause] an enjoyable*

*experience. But not a lot of people know that they can do that. They think it's supposed to look a certain way, happen a certain way.* (34, Black, sex educator and counselor, East Coast)

Several men harbored concerns about anatomical functioning and physiological responses that they wished they could ask health professionals, including what they viewed in pornography.

*[W]hat's supposed to go on during anal sex? Like, is that possible? Is this a thing that's normal? Oh, I saw a secretion. Or I saw this come out after I got done preparing for anal sex, or like this happened while I was using my enema or my Shower Shot [a rectal cleaning device] or whatever it may be. Is this normal to happen during anal sex?"* (23, Black, seronegative not on PrEP, East Coast)

One respondent (36, Black, seronegative not on PrEP, Southern U.S.) assumed that if he were to continue to have anal sex, have too much of it, or relax too much during it, then he may cause long-lasting damage. This informed a hope that his desire for receptive sex diminish as he ages, lest he end up in “adult diapers”: “I’m hoping, for my health’s sake, that that’s not something that I’m craving to have happen in my late 60s.” This concern about normative physiological functioning was shared by other men. They wondered, sometimes with a sense of humor and sometimes with trepidation, about the elasticity of anal sphincters and the potential for harmful consequences.

*No one wants to be the Lincoln Tunnel.* (29, Black, seronegative not on PrEP, West Coast)  
*You don't wanna be known as that guy with a loose hole or that guy who shits on everybody or things of that nature.* (25, Black, seropositive and undetectable, Southern U.S.)

The omission of health knowledge also appears to result in more explicit denigration of men who are less experienced, or who harbor more relaxed concerns about hygiene during anal sex. Some men reported no qualms about encountering

feces, and accepted this possibility as either unpreventable or not a problem. Others more directly castigated men whose attitudes were relatively more relaxed.

*One guy I dated, and it didn't get beyond dating, because he would be like, "Oh, well that's a natural habit for a top. We expect, every now and then, to be shit on." And I was just like, "Oh. So you've – Oh, yeah. I can't. I don't want that penis nowhere near me, knowing that you're okay with whomever may have defecated on you." It was just very casual for them, and I was just very casually grossed the hell out. (36, Black, seronegative not on PrEP, Southern U.S.)*

*If you're gonna bottom for a guy, you should definitely be clean and know how to clean yourself ... [T]hese same size queens that want big dick but then they can't take it or they'll get dick and then they'll shit on it, which is disgusting all over, you see what I'm saying? ... That's my thing with bottoms, they don't take their time, they don't take the proper techniques to do what they need to do to go into a situation. (29, Black, seropositive and undetectable, Midwest)*

Interestingly, this same respondent, when asked to share his approach to preparing for anal sex, reported that it was too personal a topic to discuss during the interview.

In sum, key informants and MSM participants echoed similar observations about stigma mechanisms and concerns MSM harbor related to anal sex. These concerns appear intimately linked to experienced, internalized and anticipated devaluation of anal sexuality. From these and additional themes, we then developed two pools of initial items (Appendices D and F), and continued with cognitive testing.

### **3.2.2 Cognitive Testing**

We selected a subset of 7 of the 25 already interviewed MSM (Table 2), weighting greater participation from men who reported lower education and income, seropositive HIV status and no primary care physician, and PrEP use if HIV

seronegative. We also selected for greater participation of Black/African-American men and variability in geographic, relationship, age and sexual orientation variables.

Cognitive testing of early drafts of anal sex stigma measures (Appendix D) revealed easier comprehension of experienced, internalized and anticipated stigma when each form of stigma was shown on a separate screen. Likewise, participants reported improved comprehension when items all aligned with the same prompt (e.g., “How much do you agree?”), rather than prompts with differing time frames (e.g., “In the past” or “In the future”).

During cognitive testing of anal sex concerns, items were phrased as statements (Appendix F). Participants interpreted these as topics of inquiry, much like ‘frequently asked questions’ or website articles that would contain answers, rather than areas of personal concern. We then offered options for different prompts and noted that posing these concerns as questions of interest rather than statements of concern seemed to lessen response bias. This aligned with observations that participants, even in initial in-depth interviews, insisted that they did not have ‘concerns’ but did endorse curiosity about unanswered questions on the part of themselves and other MSM. One goal for measurement development is to create a tool that might feasibly function to engage MSM in health-seeking behavior. To that end, items originally formatted as statements were revised to question format. Likewise, to allow for ease of response, we limited the number of Likert-type response categories.

### 3.2.3 *Item Pools*

For the anal sex stigma measure (Appendix E), item generation produced a 63-item pool, with roughly equal numbers of experienced (20), internalized (24), and anticipated stigma (19) items, all written on a 4-point Likert-type scale that ranged from 0 (*disagree strongly*) to 3 (*agree strongly*). Each form of stigma included at least one item intended to capture predominantly one of several underlying though not forcibly mutually exclusive factors or themes reflected in interviews (e.g., sexual positioning, disclosure threat, omission). Readability scores indicated ease of reading at a 6<sup>th</sup> grade level (Passive Sentences: 0%; Flesch Reading Ease Scale: 77.1; Flesch-Kincaid Reading Level: 5.7).

For the anal sex concerns measure (Appendix G), the process produced a 59-item pool of frequently asked questions, written on a 4-point Likert-type scale to measure interest in knowing an answer to each question. Options ranged from 0 (*not at all interested*) to 3 (*very interested*). Items reflected several themes within interviews (e.g., cleanliness, practical knowledge, pleasure, sexual functioning). Readability scores indicated a similar ease of reading (Passive Sentences: 3%; Flesch Reading Ease Scale: 70.0; Flesch-Kincaid Reading Level: 6.1).

## 3.3 Conclusion

Themes from qualitative interviews indicate associations between different temporal forms of stigma (e.g., experienced, internalized, anticipated) and different targets of devaluation (e.g., sexual positioning, hygiene, practical knowledge). Internalization of experienced stigma, for example related to receptive anal sex,

appears to impede disclosure of sexual behavior and concerns. Concealment of behavior and concerns then further magnify internalization by limiting access to social support that might otherwise mitigate devaluation and provide pathways to address concerns. This isolation borne of internalization, in turn, may promote conditions that perpetuate the omission of accurate information about anal sexuality by truncating discussion.

Where information is received may also be important to MSM. Some reported medical mistrust even while voicing disdain for questions and concerns from fellow MSM, yet most men reported wanting to find accurate, reliable responses to their concerns, and most relied on sexual partnerships and friendships to learn about anal sex. This may have implications for intervention development, as MSM reported reliance on pornography and preferences for anonymous and self-directed learning, rather than relatively more intimidating medical settings. This reticence to disclose concerns in a medical milieu may, in part, derive from past experiences of subtle devaluation, like culturally insensitive or uninformed responses by health workers, if not explicit maltreatment. Sets of concerns and men's ambivalence about seeking answers to these concerns from medical providers – partly wanting to learn more, partly expecting ineffective responses, partly dreading disclosure reactions – may guide practitioner training and health education materials.

It is also notable that some concerns appear to shift over time while others remain more entrenched. This provides evidence that at least a subset of MSM find ways to mitigate social devaluation of anal sex to an extent and to respond sufficiently to the concerns they once harbored about anal sex practices. Still, nearly all MSM

reported engaging in this process on their own, at least until some found friendships and sexual partnerships that offered more informational and emotional guidance.

In sum, experiences of devaluation, internalization of these experiences, and anticipation of some form of their reenactment appear to guide decisions about concealment of sexual behavior and sexual concerns both in clinical settings and between MSM during anal sex. This has implications for both health-seeking behavior in medical settings and during sexual activity, and warrants further examination by quantifying these phenomena and their potential associations with health outcomes, like HIV, that disproportionately affect MSM.

**Table 1. Key informant characteristics in Study I (N = 10)**

	n ( % )
Age in years <i>M (SD)</i>	44.6 (12.6)
Male gender	9 (90)
Professional role*	
Counselor or therapist	4 (40)
Medical provider	3 (30)
Sex educator	6 (60)
Business owner	1 (10)
Activist	3 (30)
Advocate	3 (30)
Researcher/Stakeholder Relations for Research	3 (30)
Income	
Below \$15,000	1 (10)
\$45,000 - \$59,999	1 (10)
\$60,000 - \$74,999	2 (20)
\$90,000 or more	6 (60)
Education	
Some College	1 (10)
4-year College Degree	1 (10)
Master Degree	4 (40)
Doctoral Degree	3 (30)
Professional Degree (MD)	1 (10)
Race	
Asian or Asian American	-
Black or African American	2 (20)
White or Caucasian	6 (60)
Latino, Hispanic or Spanish ethnicity	3 (30)
White or Caucasian race	1 (33)
No racial group identified	2 (67)
Sexual orientation	
Gay	7 (70)
Bisexual	1 (10)
Queer	1 (10)
Heterosexual (straight)	1 (10)
Relationship status	
Single	3 (30)
Dating (not living together)	2 (20)
Married	4 (40)
Polyamorous	1 (25)
Housing	
A house, apartment, or condo I own	3 (30)
A house, apartment, or condo I rent	5 (50)
Someone else's house, apartment, or condo	2 (20)

\*Multiple responses allowed

**Table 2. MSM characteristics in Study I**

	Consented	In-depth	Cognitive
	(n=75)	Interview (n=25)	Interview (n=7)
	n (%)	n (%)	n (%)
Age in years <i>M (SD)</i>	35.4 (10.2)	34.0 (9.1)	37.6 (12.7)
Income			
Below \$15,000	4 (5.3)	2 (8)	-
\$15,000 - \$29,999	20 (26.7)	7 (28)	2 (28.6)
\$30,000 - \$44,999	18 (24)	11 (44)	5 (71.4)
\$45,000 - \$59,999	13 (17.3)	3 (12)	-
\$60,000 - \$74,999	6 (8)	1 (4)	-
\$75,000 - \$89,999	2 (2.7)	1 (4)	-
\$90,000 or more	11 (14.7)	-	-
Education			
Some High School	1 (1.3)	1 (4)	-
High School Degree / GED	5 (6.7)	-	-
Some College	13 (17.3)	6 (24)	1 (14.3)
2-year College Degree	8 (10.7)	5 (20)	3 (42.9)
4-year College Degree	26 (34.7)	8 (32)	3 (42.9)
Master Degree	15 (20)	4 (16)	-
Doctoral Degree	4 (5.3)	1 (4)	-
Professional Degree (JD, MD)	2 (2.7)	-	-
Race			
Asian or Asian American	3 (4)	2 (8)	-
Black or African American	26 (34.7)	11 (44)	6 (85.7)
White or Caucasian	41 (54.7)	12 (48)	1 (14.3)
Biracial	4 (5.3)	-	-
Black and Asian/Asian American	1 (2.5)	-	-
Black and White	3 (7.5)	-	-
Multiracial	1 (1.3)	-	-
Latino, Hispanic or Spanish ethnicity	15 (20)	6 (24)	0 (0)
White or Caucasian race	6 (40)	4 (66.6)	-
Black or African American race	5 (33.3)	2 (33.3)	-
Biracial or multiracial	4 (26.7)	-	-
HIV status			
Never tested	1 (1.3)	1 (4)	0 (0)
Most recently tested seronegative	55 (73.3)	17 (68)	3 (42.9)
Prescribed PrEP	18 (32.7)	4 (22.2)	1 (33.3)
HIV seropositive	19 (25.3)	7 (28)	4 (57.1)
Undetectable viral load	17 (22.7)	6 (85.7)	4 (100)
Sexual orientation			
Gay	64 (85.3)	21 (84)	5 (71.4)
Bisexual	3 (4)	1 (4)	1 (14.3)
Two-spirit	2 (2.7)	1 (4)	0 (0)
Queer	4 (5.3)	2 (8)	1 (14.3)
Other	2 (2.7)	-	-
Relationship status			
Single	29 (38.7)	7 (28)	5 (71.4)
Casually dating several people	6 (8)	3 (12)	-
Boyfriend or girlfriend	6 (8)	12 (48)	-
Partner or lover	19 (25.3)	2 (8)	1 (14.3)
Married/civil partner/commit. ceremony	14 (18.7)	1 (4)	1 (14.3)
Open relationship or not sure	23 (59)	7 (53.8)	1 (14.3)

Sexual position preference			
'Bottoming'	25 (33.3)	7 (28)	4 (57.1)
'Topping'	9 (12)	2 (8)	3 (42.9)
Versatile'	37 (49.3)	15 (60)	-
No preference	4 (5.3)	1 (4)	-
Number of PY anal sex partners*			
1	16 (21.3)	6 (24)	1 (14.3)
2-5	23 (30.7)	5 (20)	1 (14.3)
6-10	10 (13.3)	2 (8)	-
11-15	8 (10.7)	4 (16)	1 (14.3)
16-20	2 (2.7)	2 (8)	2 (28.6)
21-25	4 (5.3)	1 (4)	-
26 or more	12 (16)	5 (20)	2 (28.6)
Housing			
Own	24 (32)	5 (20)	1 (14.3)
Rent	48 (64)	19 (76)	5 (71.4)
Someone else's home	1 (1.3)	1 (4)	1 (14.3)
Dormitory	1 (1.3)	-	-
Primary care physician	64 (85.3)	21 (84)	6 (85.7)
State or territory			
Alabama	2 (2.7)	2 (8)	2 (28.6)
California	13 (17.3)	4 (16)	1 (14.3)
District of Columbia	6 (8)	2 (8)	1 (14.3)
Florida	3 (4)	1 (4)	1 (14.3)
Georgia	2 (2.7)	-	-
Illinois	1 (1.3)	2 (8)	-
Indiana	10 (13.3)	-	-
Louisiana	1 (1.3)	-	-
Maryland	3 (4)	1 (4)	-
Massachusetts	4 (5.3)	1 (4)	-
Michigan	2 (2.7)	1 (4)	1 (14.3)
Missouri	1 (1.3)	1 (4)	-
Montana	1 (1.3)	1 (4)	-
New Jersey	3 (4)	1 (4)	-
New York	8 (10.7)	3 (12)	-
North Carolina	5 (6.7)	2 (8)	-
Ohio	4 (5.3)	1 (4)	1 (14.3)
Oregon	1 (1.3)	1 (4)	-
Texas	1 (1.3)	-	-
Vermont	2 (2.7)	1 (4)	-
Virginia	1 (1.3)	-	-
Washington	1 (1.3)	-	-

\*"How many people have you had anal sex with in the past year? (Anal sex here includes any sexual contact with the ass, like touching, licking or penetration.)"

## Chapter 4. Refinement of New Measures (Study II)

To support validation of our drafted measures of anal sex stigma and anal sex concerns, we conducted an online pilot survey with a new national sample of MSM. We included additional measures for preliminary assessment of convergent and divergent validity. We also evaluated item performance, including exploratory factor analyses, to identify items for inclusion in reduced forms of each measure. Our aim was to produce measures that could feasibly appeal to MSM in a longer survey, as a test of our conceptual model.

### 4.1 Method

#### 4.1.1 *Participants*

Sample characteristics are presented in Table 3 for the 218 men who completed the survey. Respondents ranged in age from 18 to 80 years ( $M = 36.4$ ,  $SD = 11.5$ ). The majority learned about the study through Facebook ( $n = 113$ , 52%), friends ( $n = 31$ , 14%), or email/listserv ( $n = 42$ , 19%). Most identified as gay ( $n = 178$ , 82%), queer ( $n = 20$ , 9%), bisexual ( $n = 9$ , 4%), or preferred not to label their sexual orientation ( $n = 6$ , 3%). The majority ( $n = 148$ , 68%) reported being out to “almost everyone.” Nearly two-thirds ( $n = 140$ ) identified as men of color, with 63 (30%) reporting Latino ethnicity. Forty-six (21%) identified as Black, 109 (50%) as White, 16 (7%) as Asian or Asian American, 7 (3%) as American Indian or Alaska Native, and 19 (9%) as bi- or multiracial. Few ( $n = 3$ , 1%) reported never testing for HIV and most ( $n = 175$ , 81%) reported last testing HIV seronegative. Of these, many reported use of PrEP ( $n = 74$ , 42%). Among the 40 (18%) seropositive men, almost all ( $n = 37$ , 93%) had been

diagnosed more than 2 years ago and all reported being prescribed ART. Few reported a recent gap in HIV care ( $n = 3$ , 8%) or recent detectable viral load ( $n = 4$ , 10%).

Nearly half of the sample reported being single ( $n = 83$ , 38%) or casually dating several people ( $n = 16$ , 7%). Of those in relationships, two-thirds ( $n = 77$ ) reported involvement or possible involvement of additional sexual partners. Over one-third of the sample ( $n = 81$ ) reported anal sex *Once a month or less*, 43% ( $n = 94$ ) *More than once a month up to twice per week*, and 17% *More than twice a week* ( $n = 36$ ) or *Every day* ( $n = 2$ ). Half ( $n = 111$ ) reported preference for versatile sexual positioning, and roughly equal numbers preferred either receptive ( $n = 52$ , 24%) or insertive ( $n = 47$ , 22%) positioning. Most rented ( $n = 23$ , 56%) or owned ( $n = 70$ , 32%) a home. The majority (71%) reported a 4-year college or more advanced degree. The median individual annual income was \$45,000-\$59,999, and nearly one-quarter reported either less than \$30,000 (24%) or more than \$90,000 (22%). Respondents reported living in 27 states and the District of Columbia, with 105 (48%) residing in a large city, 64 (29%) in a medium-sized city, 24 (11%) in a suburb, 18 (8%) in a small city, and 7 (3%) in a rural area.

#### 4.1.2 **Materials and Procedure**

Recruitment relied on a combination of snowball and targeted sampling methods, including paid and donated advertisement on Facebook, Instagram, and Scruff. Announcements were also sent electronically to community organizations and affinity groups, as in Study I, and to Study I interview participants who provided email addresses. Images for announcements reflected racial/ethnic group diversity, to

encourage recruitment of men of color that matched U.S. demographics and to account for disparities in the epidemic (Sanchez, Smith, Denson, Dinunno, & Lansky, 2012; U.S. Census Bureau, 2014). Likewise, we initiated a quota that precluded consent of additional non-Latino White men after they comprised one-third of the targeted sample size, to reserve space for racial and ethnic minority men. Both ineligible respondents who were directed away from the survey and consented participants who completed the survey were presented with options to forward the survey link to others who might be interested in participation.

Eligibility criteria mirrored those in Study I, with an additional criterion that participants be new to the research project. On the first screen participants could opt into viewing sexually explicit cartoon images which were featured intermittently throughout the survey to encourage retention and attention (Maniaci & Rogge, 2014). As in Study I, eligible participants were shown an information statement within the survey platform. At the bottom of each survey page, participants could also click hyperlinks to view Frequently Asked Questions (FAQs) about the study or to send an email directly to the principal investigators. The questionnaire and FAQs contained options for national resources relevant to MSM health. Within each measure, items were randomized to lessen response bias from a fixed item order. Respondents who completed the survey could voluntarily choose to enter a raffle to win one of three \$50 gift certificates to an online retailer.

#### 4.1.3 *De-duplication Protocol*

To address potential repeat participation or fraudulent responses, key variables were checked including eligibility criteria, age, zip code and geolocation data, email addresses, and start/stop times (Konstan, Simon Rosser, Ross, Stanton, & Edwards, 2005). We flagged and further examined responses that indicated a non-U.S. location, or whose responses matched a previously excluded respondent who ended participation within the previous two hours. We further examined straight-line responses, completion times less than one-third of the median survey length (Salsman et al., 2014), and responses to initial questions that did not align with the survey's final questions. This process excluded 8 respondents, 3.5% of those who completed the survey.

#### 4.1.4 *Analytic Plan*

Analyses were performed in SPSS 19 (IBM Corp, 2010). For the stigma measure, analyses continued to follow scale development recommendations, including the addition of dimensionality via exploratory factor analyses (EFA) (DeVellis, 2016). We examined experienced, internalized, and anticipated stigma separately, to assess the possibility of additional distinct factors within each form of stigma. First, we conducted parallel tests to obtain a statistical criterion for determination of the number of factors (O'Connor, 2000). Based on this criterion and examination of scree plots for each form of stigma, we conducted EFA with promax rotation, under the assumption of moderate factor correlation. An algorithm of item performance in the pattern matrix

guided item elimination in initial models. Items with low factor loading ( $\leq .40$ ) or with substantial cross-loading ( $\geq .30$ ) were eliminated (Matsunaga, 2010).

Deciding the number of items to retain in EFA is fairly subjective, even more so with a small sample size relative to a large set of items. We aimed to balance the elimination of badly performing items and factor solutions with the goal of a mostly harmonious, fairly identical solution across all stigma subscales. When our algorithm did not provide a clear path for retention, we considered relevance of an item based on its theoretical importance in our conceptual model. We then repeated EFA and item elimination at most twice, and chose models with relatively low factor correlation ( $r < .6$ ).

We conceptualized the anal sex concerns measure as an index, an underlying interest in answers to questions about anal sexuality, rather than a scale (Stenner, Stone, & Burdick, 2009). To guide item reduction, we examined EFA solutions, correlations, means, and distributions to assess redundancy and to maximize variance.

As a preliminary assessment of convergent and divergent validity, we examined associations with validated measures. Our developed measures were not normally distributed (Shapiro-Wilk tests,  $W < .05$ ), indicating the need for non-parametric tests of correlation using Spearman's rho ( $r_s$ ). We hypothesized that internalized anal sex stigma would be correlated both with *internalized homophobia* and with *sexual self-consciousness* during sexual activity. While *internalized homophobia* may also be associated with experienced and anticipated anal sex stigma, we strove in Study I to distinguish between these three forms of stigma as divergent phenomena, and therefore hypothesized divergence. We also hypothesized that concerns about anal sex would be associated with *sexual self-consciousness* and not with *internalized homophobia*.

Each item was missing for no more than 1% of the sample. To maximize power and because we intend to test factors associated with limited engagement by MSM, we included partial survey respondents who completed each measure under analysis. This resulted in varying analytic samples for each measure, in EFA and evaluations of item performance. Partial ( $n = 50$ ) and complete ( $n = 218$ ) respondents did not differ statistically by any demographic variables ( $p < .05$ ).

#### 4.1.5 **Measures for Convergent and Divergent Validity**

*Revised Internalized Homophobia Scale (R-IHS)*. Internalized homophobia was assessed with a 5-item measure derived from diagnostic criteria for ego-dystonic homosexuality contained in the *Diagnostic and Statistical Manual*. This revised version allows for better inclusion of bisexual men (Herek, Gillis, & Cogan, 2009). Items were administered with a 5-point Likert response scale, ranging from *disagree strongly* (0) to *agree strongly* (4). Our sample yielded strong reliability ( $\alpha = .82$ , 95% CI: .78-.85).

*Sexual Self-Consciousness Scale-Modified (SSCS-M)*. Sexual self-consciousness was assessed with a 12-item scale adapted to measure two principal factors, sexual embarrassment and sexual self-consciousness (van Lankveld, Sykora, & Geijen, 2011). We modified the original measure to specify anal sexuality and to be more inclusive of same-sex behavior. Items were administered with a 5-point Likert response scale, ranging from *strongly disagree* (0) to *strongly agree* (4). Our sample yielded strong reliability ( $\alpha = .86$ , 95% CI: .83-.89).

## 4.2 Results

The survey received a total of 857 views. After removal of 8 potentially fraudulent responses, 67 of the remaining viewers did not complete eligibility criteria, 295 did not meet eligibility criteria, and 219 non-Latino White respondents were excluded by our quota. Of the remaining 268 respondents, 218 (81.3%) completed the survey.

For both the stigma and the concerns measures, item scale-correlation and scale-variance indicated that removal of any single item would not increase either reliability or scale variance. Most items were significantly correlated at low magnitude, with few negatively correlated and none of these significantly.

Within each form of stigma, parallel test results indicated more factors than the scree plots for either the parallel tests or the raw data. We explored higher factor solutions, moving toward models that better fit the plots. The anticipated stigma measure was presented last among the forms of stigma, and therefore included relatively fewer respondents ( $n = 230$  v.  $n = 254$  for internalized and  $n = 245$  for experienced). Our ability to discern distinct factor structures with meaningful factor loadings and low factor correlations may have been limited by this relatively small sample. We therefore used a lower maximum factor loading (.30) with minimal cross-loading (at most .20) for anticipated stigma. Overall, analyses resulted in 3-factor solutions for each form of stigma, and empirical support for the retention of 11 items each for internalized stigma ( $M$  factor loading = .59; variance explained = 38.0%) and anticipated stigma ( $M$  factor loading = .64; variance explained = 38.6%), and 8 items for the externalized stigma ( $M$  factor loading = .63; variance explained = 40.7%), with factor correlations no greater than .40. EFA results are presented in Tables 5, 6 and 7. After

examining Study I themes underlying these factor structures, we retained additional items with the potential for empirical support in a larger sample and that also were relevant to our conceptual model. This resulted in the creation of a 13-item experienced scale ( $M = 1.61$ ,  $SD = .41$ ,  $\alpha = .66$ ), a 14-item internalized scale ( $M = .84$ ,  $SD = .43$ ,  $\alpha = .75$ ), and a 13-item anticipated scale ( $M = 1.28$ ,  $SD = .46$ ,  $\alpha = .75$ ) (Appendix H).

For anal sex concerns, EFA indicated a single factor, supporting the treatment of these 59 items collectively as an index ( $M = 2.04$ ,  $SD = .66$ ,  $\alpha = .98$ ; total variance explained 41.7%). Several item distributions were moderately skewed and therefore eliminated. We also examined concerns from text entry survey responses, which informed the addition of items (e.g., *“How do I maintain a firm erection during anal sex?”*) and the consolidation of items with shared face validity into single items (e.g., *“What do guys need to know about waxing, sugaring, shaving, bleaching, or otherwise grooming near the anus?”*). This resulted in the creation of a 45-item index (Appendix I). (Descriptive statistics are not presented, as this measure includes items not surveyed in Study II.)

Table 4 includes correlations among respondents who completed the survey, and indicates moderate convergent and divergent validity, with nearly all associations significant though many at low magnitude. Internalized stigma was moderately correlated with internalized homophobia ( $r_s = .42$ ,  $p < .001$ ), and slightly more correlated with sexual self-consciousness ( $r_s = .48$ ,  $p < .001$ ). Experienced and anticipated stigma were also significantly correlated with internalized homophobia, at low magnitude ( $r_s = .15$ ,  $p < .05$ ;  $r_s = .20$ ,  $p < .001$ ). Anal sex concerns (including all 59 items) were correlated with sexual self-consciousness at low magnitude ( $r_s = .28$ ,  $p < .001$ ) and

minimally though significantly correlated with internalized homophobia ( $r_s = .18$ ,  $p < .001$ ).

### **4.3 Discussion**

Our findings provide preliminary evidence for construct validity of anal sex stigma and anal sex concerns. Correlations between these measures and validated instruments were significant but with relatively low magnitude. This may indicate, for example, that anal sex stigma is a different construct than homophobia, but warrants further scale development analyses in order to distinguish any unique contributions. Additionally, our ability to determine a distinct factor structure for anticipated stigma and the addition of statistically nonsignificant items from EFA in our revised measures may limit the interpretability of correlations. To determine undue influence in our EFA analyses by respondents who successively dropped out of participation, we conducted all final EFA solutions a second time among only those who submitted responses to all three scales ( $n = 230$ ). This produced similar empirical support for item retention.

We plan to address these limitations by repeating EFA in the next survey, in a larger sample recruited with additional advertising and outreach procedures, allowing for examination of the relatively large set of items retained in both the anal sex stigma and anal sex concerns measures.

**Table 3. MSM characteristics in Study II (N = 218)**

	<i>n</i> (%)
Recruitment source	
Email or listserv	42 (19.3)
Facebook	113 (51.8)
Friend	31 (14.2)
Scruff, Grindr, or Hornet	5 (2.3)
Health worker	8 (3.7)
More than one source	19 (8.7)
Age in years ( <i>M</i> , <i>SD</i> ; range)	36.4 (11.5); 18 to 80
18-25	30 (13.8)
26-34	83 (38.1)
35-54	88 (40.4)
55 or over	17 (7.8)
Income < \$30,000	51 (23.5)
Education	
2-year College Degree or less education	63 (28.9)
4-year College Degree	78 (35.8)
Master Degree	49 (22.5)
Doctoral or Professional Degree	28 (12.8)
Latino, Hispanic or Spanish ethnicity (of any race)	63 (29.9)
Racial identification	
American Indian/Alaska Native (AIAN)	7 (3.2)
Asian or Asian American	16 (7.3)
Black or African American	46 (21.1)
White or Caucasian	109 (50)
Native Hawaiian or Pacific Islander (NHPI)	0 (0)
Biracial	9 (4.1)
Multiracial	10 (4.6)
Unsure	21 (9.6)
Own or rent domicile	193 (88.5)
Primary care physician	179 (82.1)
Urban area	105 (48.2)
HIV status	
Never tested	3 (1.4)
Most recently tested seronegative	175 (80.3)
Taking PrEP	74 (41.6)
HIV seropositive	40 (18.3)
Diagnosed > 2 years ago	37 (92.5)
Prescribed ART	40 (100)
Last medical visit > 6 months ago	3 (7.5)
Detectable viral load	4 (10)
Gay sexual orientation	178 (81.7)
'Out' to 'Almost everyone' about attraction to men	148 (67.9)
Single or casually dating several people	96 (44.0)
Open relationship or not sure if open	77 (35.3)
Anal sex more twice/week	38 (17.4)
Sexual position preference	
'Bottoming'	52 (23.9)
'Topping'	47 (21.6)
'Versatile'	111 (50.9)
No preference/Not sure	8 (3.7)
Only male sex partners in past 3 years	208 (95.4)

**Table 4. Means, standard deviations, reliability and correlations for Study II (N = 218)**

Variable	Mean (SD)	Cronbach's $\alpha$ (95% CI)	<i>Spearman's rho</i>							
			1	2	3	4	5	6	7	
1 ASS-S	1.23 (.34)	.84 (.81-.87)	—							
2 Experienced	1.61 (.41)	.66 (.59-.72)	.79**	—						
3 Internalized	.84 (.43)	.75 (.70-.80)	.67**	.25**	—					
4 Anticipated	1.28 (.46)	.75 (.70-.80)	.82**	.65**	.27**	—				
5 ASQx	2.04 (.66)	.98 (.97-.98)	.24**	.25**	.15*	.21**	—			
6 RIHS	.62 (1.01)	.82 (.78-.85)	.35**	.15*	.42**	.20**	.18**	—		
7 SSCS-MA	1.97 (.83)	.86 (.84-.89)	.44**	.27**	.48**	.26**	.28**	.30**	—	

Note pairwise deletion of missing data varied the analytic sample from 214 to 218.

\*p-value < .05, \*\*p-value < .001

ASS-S=Anal Sex Stigma Scale (40 items, Likert 0-3) with subscales: Experienced (13 items), Internalized (14 items), Anticipated (13 items); ASQx=Anal Sex Questions Index (all 59 piloted items retained, Likert 0-3); RIHS=Revised Internalized Homophobia Scale (5 items, Likert 0-4); SSCS-MA=Sexual Self-Consciousness Scale-Modified/Adapted (12 items, Likert 0-4)

**Table 5. Exploratory factor analysis of anal sex stigma items from Study II**

<b>Internalized Stigma Items (n = 254)</b>		Factors		
		1	2	3
Items	(% variance explained)	21.9	10.9	5.3
I hate myself for feeling the way I do about anal sex.		.80		
When I have anal sex, I feel like I've done something unhealthy.		.69		
I often feel like nobody else shares my same issues about anal sex.		.59		
I may never let go of the shame I feel about anal sex.		.58		
I feel like I don't know how to have anal sex properly.		.56		
A 'mess' during anal sex is the bottom's fault.			.59	
Farting during anal sex is unacceptable to me.			.51	
I can tell whether a guy tops or bottoms just by looking at him.			.50	
Compared to feminine guys, masculine guys are much better at topping.			.47	
Even with good friends, I'd feel uncomfortable talking about anal sex.				.65
Anal sex is a very personal, private topic.				.57
<b>Experienced Stigma Items (n = 245)</b>		Factors		
		1	2	3
Items	(% variance explained)	19.3	12.5	9.0
It's a hard life for guys who are really out and open about having anal sex.		.65		
In my experience, people usually don't like to talk very openly about anal sex.		.54		
Experience tells me most people think anal sex is disgusting, even if they've never said it aloud.		.52		
People think that a guy who enjoys getting fucked must want to be a woman.		.43		
People have often assumed that I'm a 'top' or a 'bottom' just by looking at me.			.91	
A lot of men have thought they knew what I wanted sexually, just because they saw my race or ethnicity.			.43	
Health workers have ignored my concerns about anal health.				.76
I've been shamed or lectured about anal sex by a health worker.				.61
<b>Anticipated Stigma Items (n = 230)</b>		Factors		
		1	2	3
Items	(% variance explained)	24.1	9.6	4.9
Health workers would treat me badly if they knew the ways I have anal sex.		.79		
Health workers will try to scare me about anal sex.		.70		
If they knew the ways I have anal sex, most health workers would shame or lecture me to stop.		.68		
Most health workers probably wouldn't want to give an anal exam.		.53		
There's no point in talking about anal sex with a health worker.		.51		
Telling someone how I have anal sex is risky.		.46		
People's assumptions about whether I'm a 'top' or 'bottom' are really annoying.			.67	-.22
I feel like I have to prove to guys that I'm masculine enough to top them.			.48	
When a guy wants to have anal sex with me, I can't tell if he's attracted to me or fantasizing about my race or ethnicity.			.45	
Even if someone brought it up, most guys would hide their true feelings about anal sex.			.44	
Most guys don't know how to prepare themselves for bottoming.				.79

Note: Factor loadings < .2 are suppressed; as noted on page 50, additional items were retained and tested in Study III based on potential for empirical support in a larger sample and relevance to the conceptual model (see Appendix H for all items from Study II tested in Study III)

## Chapter 5. Validation and Model Testing (Study III)

To further explore validation of our measures and to test a conceptual model, we conducted a new online survey with a larger national sample of MSM. We aimed to confirm the number of items and factors to retain in each of the new measures by gathering information about reliability and factor structure, and to examine component loadings and model misspecification. We also added behavioral responses and covariates posited in our conceptual model in order to conduct structural equation modeling (SEM) of hypothesized pathways.

### 5.1 Method

#### 5.1.1 *Participants*

Participant characteristics are presented in Table 5 for the 1263 MSM who completed the survey and who reported penile-anal intercourse (PAI) in the past 3 months. Respondents ranged in age from 18 to 72 years ( $M = 36.1$ ,  $SD = 11.0$ ), with half aged 34 years old or younger ( $n = 646$ ). The majority learned about the study either through the men-seeking-men geolocation apps Grindr, Hornet or Scruff and the website BGCLive ( $n = 512$ , 41%) or through Facebook ( $n = 429$ , 34%), with far fewer reporting other social media platforms like Reddit, Tumblr, Twitter or Instagram ( $n = 69$ , 6%). Most identified as gay ( $n = 1022$ , 81%), bisexual ( $n = 116$ , 9%), queer ( $n = 62$ , 5%), or preferred not to label their sexual orientation ( $n = 45$ , 4%). The majority ( $n = 763$ , 60%) reported being out to *Almost everyone*, though a sizeable minority reported being out only to *Select friends* ( $n = 161$ , 13%) or *Nobody* ( $n = 32$ , 3%). Nearly half ( $n = 590$ , 47%) identified as men of color, with 270 (21%) reporting Latino ethnicity. In terms

of specific racial groups, 204 (16%) identified as Black, 803 (64%) as White (including 130 as White Latino), 78 (6%) as Asian or Asian American, 17 (1%) as American Indian or Alaska Native, and 80 (6%) as bi- or multiracial.

The majority (64%) reported a 4-year college or more advanced degree. The median individual annual income was \$45,000-\$59,999, and 30% reported income less than \$30,000 ( $n = 376$ ) and 21% more than \$90,000 per year ( $n = 270$ ). Respondents reported living in 47 states and the District of Columbia, with 41% from the South ( $n = 520$ ), and roughly equal numbers from the Northeast ( $n = 278$ , 22%), West ( $n = 240$ , 19%), and Midwest ( $n = 224$ , 18%). Most reported residence in either a large ( $n = 586$ , 46%) or medium-sized city ( $n = 279$ , 22%), with 160 (13%) residing in a suburb, 145 (12%) in a small city, and 93 (7%) in a rural area. Most rented ( $n = 717$ , 57%) or owned ( $n = 368$ , 29%) a home.

Several ( $n = 71$ , 6%) reported never testing for HIV or never receiving a test result. Most ( $n = 999$ , 79%) reported last testing HIV seronegative, and over one-third of these reported use of PrEP ( $n = 350$ ). Among the 183 (14%) seropositive men, almost all ( $n = 160$ , 87%) had been diagnosed more than 2 years ago and had been prescribed ART ( $n = 178$ , 97%). Few reported a recent gap in HIV care ( $n = 8$ , 4%), with slightly more reporting detectable or unknown viral load ( $n = 16$ , 8%). Overall, 75% of MSM reported lifetime exposure to a behavioral HIV intervention.

Over half of the sample reported being single ( $n = 607$ , 48%) or casually dating several people ( $n = 91$ , 7%). Of those in relationships, most ( $n = 361$ , 74%) reported involvement or possible involvement of additional sexual partners. Nearly one-third reported being sexually abused or not sure of sexual abuse ( $n = 397$ , 31%). Three-

quarters of the sample ( $n = 938$ , 74%) reported more than 13 anal sex partners (including any form of anal sexuality) in the past year, and 15% reported only one partner ( $n = 191$ ). Most ( $n = 1136$ , 90%) reported only male sex partners in the past 3 years. One-third of the sample ( $n = 420$ ) reported anal sex *Once a month or less*, 50% ( $n = 631$ ) *More than once a month up to twice per week*, and 16% *More than twice a week* ( $n = 187$ ) or *Every day* ( $n = 19$ ). In terms of PAI, less than half ( $n = 550$ , 44%) reported preference for versatile sexual positioning, one-third preferred receptive ( $n = 391$ , 31%), and one-fifth insertive ( $n = 282$ , 22%). Among those reporting recent receptive intercourse ( $n = 1019$ , 81%), douching and substance use while bottoming were common ( $n = 723$ , 71% and  $n = 589$ , 58%). Among those reporting recent insertive intercourse ( $n = 963$ , 76%), substance use was also common while topping ( $n = 577$ , 60%).

In terms of healthcare engagement, some reported neither health insurance nor a primary care provider (PCP) ( $n = 90$ , 7%). Among those reporting a PCP ( $n = 1092$ ), 74% ( $n = 811$ ) reported being “out” about anal sex with men. Most reported *moderate to extreme* comfort discussing same-sex attraction with a health worker ( $n = 1002$ , 79%); fewer reported the same level of comfort discussing anal sex practices ( $n = 817$ , 65%). Nearly equal numbers reported never having had an anal exam ( $n = 681$ , 46%) or an anal swab ( $n = 639$ , 49%), and one-third reported no vaccination against hepatitis A and B ( $n = 414$ ). About 15% reported recent STI diagnosis ( $n = 195$ , 15%) and a notable minority reported thinking they had an STI but not seeking medical attention ( $n = 118$ , 9%).

### 5.1.2 *Materials and Procedure*

Recruitment continued procedures described in Study II, with additional advertisement on men-seeking-men geolocation apps (Grindr, Hornet, Scruff), including targeted blasts to men of color and MSM living in the Southern U.S., a website catering to Black and Latino MSM (BGCLive), and other social media platforms (e.g., Facebook, Twitter, Tumblr, Reddit, Instagram). We also sent electronic announcements to websites, blogs, organizations, and clubs in all 50 U.S. states, the District of Columbia and Puerto Rico, with at least one group in each state or territory dedicated specifically to the interests of MSM of color.

Eligibility criteria mirrored those in Studies I and II, with an additional criterion that participants be new to the research project. Respondents who completed the survey could voluntarily choose to enter a raffle to win one of twelve \$50 gift certificates to an online retailer.

### 5.1.3 *De-duplication Protocol*

With procedures similar to Study II, we excluded 65 potentially fraudulent respondents who completed or partially completed the survey, 3% of the sample.

### 5.1.4 *Analytic Plan*

Validation procedures included EFA with the addition of confirmatory factor analysis (CFA) (DeVellis, 2016). In Study II, EFA informed the reduction of the number of stigma items across three scales (30 total items with 11 each for internalized and anticipated, and 8 for experienced stigma). However, we retained an additional 10 items

with potential for empirical support in a larger sample and relevance to our conceptual model (see *4.2 Results*, Table 5 and Appendix H). In Study III, we then analyzed these 40 items comprising the three forms of stigma together in EFA, to explore potential distinctions between experienced, internalized and anticipated stigma as factors that might contribute uniquely in a conceptual model, and to gather information about factor structure that might support alternatives to these three temporal forms of stigma. We then followed this EFA with CFA. Respondents who completed through the stigma measure were randomly assigned to either an EFA ( $n = 817$ ) or CFA ( $n = 788$ ) sample. The two samples did not differ significantly on any demographic variables ( $p < .05$ ). Given our larger sample size, we used the more stringent EFA algorithm from Study II for item performance in the pattern matrix, adding examination of the structure matrix (Matsunaga, 2010). Although missing data were minimal, we used Missing Values Analysis in SPSS to produce an estimation maximization (EM) correlation matrix, to minimize the effects of bias in EFA (Weaver & Maxwell, 2014).

For CFA, analyses were performed in MPlus v. 8 (Muthén & Muthén, 2010), and relied on the comparative fit index (CFI), Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA), alternative fit indices given our large sample size and the likelihood of a significant  $\chi^2$  Goodness of Fit test statistic (Schumacker & Lomax, 2016). Missing data were less than 0.1% at the item-level across participants. We used the robust weighted least squares (WLSMV) estimator that produces mean- and variance-adjusted chi-square statistics, given the small range of ordinal Likert response categories (four) in our measure (Li, 2016; Muthén & Muthén, 2010). We

abided by accepted recommendations for model fit (CFI and TFI > .9; RMSEA < .06, relaxed to < .08 in most circumstances) (Matsunaga, 2010; Yu & Muthén, 2002).

Scale performance for the 45 items comprising the index of anal sex concerns were analyzed together, then items selected based on minimal skewness and maximum variance, to maximize variability for use in model testing.

To test of our conceptual model, we followed a common two-step procedure for SEM, first CFA then path analysis with model specification (Schumacker & Lomax, 2016). Given the number of ordinal variables in our model, we continued to use WLSMV, with the default Delta parameterization. We examined the ratio of the Chi-square to degrees of freedom ( $\chi^2/df$ ), as a guide toward increasing model fit, with a target between 2 to 3, as long as all other fit indices were favorable (Schreiber, Stage, King, Nora, & Barlow, 2006; Yu & Muthén, 2002). To select items for model testing, we examined bivariate statistics, using Spearman's rho ( $r_s$ ),  $\chi^2$ , and t-test analyses.

Compared to complete respondents, partial respondents reported significantly younger age, differed by source (e.g., less from Facebook, more from men-seeking-men apps), racial identification (more Black/African-American, less White), and relationship status (less likely to reported marriage/civil partnership/commitment ceremony); and were more likely to report lower income, lower education, less 'outness' about attraction to men, living in someone else's home, residing in a small town, living in the Southern region, being in an open relationship, never testing for HIV or never receiving a result, and to have skipped questions about sexual orientation and the gender of sexual partners over the past 3 years ( $p < .05$ ). Among completed surveys, the 124 MSM who reported no recent PAI were more likely to live in someone else's

home and less likely to rent their home; more likely to live in a small town and in the South; less likely to report a primary medical provider, dating or a boyfriend or girlfriend, or being in an “open” relationship; more likely to report *Not sure* in response to questions about their sexual orientation and sexual position preferences; more likely to report *Mostly men and some women* as sex partners in the past 3 years; and more likely to report never testing for HIV or never receiving a result ( $p < .05$ ).

#### 5.1.5 **Measures**

**Counterstereotypic information.** We measured ways MSM search for and surround themselves with positive information and role models related to anal sex with two measures. For *social support*, we adapted the emotional and informational subscale of the Medical Outcomes Study Social Support Scale (MOS-SSS) (Sherbourne & Stewart, 1991) to be specific to anal sexuality. Participants were asked to endorse the availability of support with Likert response categories ranging from 1 (*None of the time*) to 5 (*All of the time*). We also measured *sexual satisfaction* with a 2-item measure (“How much pleasure did you get from having anal sex?” and “How satisfied have you been with your anal sex life?”) adapted from the Changes in Sexual Functioning Questionnaire (Clayton & McGarvey, 2011) and the Sexual Satisfaction Scale (Štulhofer, Buško, & Brouillard, 2010). Our sample yielded strong and acceptable reliability (respectively,  $\alpha = .97$ , 95% CI: .97 - .98; and  $\alpha = .77$ , 95% CI: .74 - .79).

**Magnitude.** From Study I interviews, we developed a 4-item measure of *centrality*, the extent to which a person feels that anal sexuality defines who they are as a person. The measure asked respondents to endorse aspects of meaningfulness and

resourcefulness (“Without anal sex, life would be less meaningful to me”; “Anal sex is a really important part of my life”; “People seek my advice about anal sex”; and “I’m known as someone who knows a lot about anal sex”), on a 5-point Likert response scale ranging from *Disagree a lot* (0) to *Agree a lot* (4). Our sample yielded acceptable reliability ( $\alpha = .76$ , 95% CI: .74 - .78). To measure *saliency*, the frequency with which respondents think about or fantasize about anal sex, we adapted a single item (“How often do you think and fantasize about anal sex?”) on a 5-point Likert response scale ranging from *Never* (0) to *Every day* (4), from a validated questionnaire about sexual functioning (Clayton & McGarvey, 2011).

**Sexual self-consciousness** was assessed with the same 12-item scale used in Study II (SSCS) (van Lankveld et al., 2011) and likewise yielded strong reliability ( $\alpha = .86$ , 95% CI: .85 - .88).

**Perceived discrimination.** The abbreviated version of the *Everyday Discrimination Scale (EDS)*, a validated 5-item scale (Stucky et al., 2011), measured daily perceived experiences of discrimination. Items were administered with a 6-point Likert response scale, ranging from *Never* (0) to *Almost everyday* (5), and yielded strong reliability ( $\alpha = .87$ , 95% CI: .86 - .88).

**Sociodemographics.** MSM were asked to report their age, income, education, history of sexual abuse (Aalsma & Fortenberry, 2011), sexual orientation, gender of sexual partners over the last 3 years, racial and ethnic identification, urban/rural setting, medical coverage (i.e., primary care provider, insurance), sexual position preferences, and relationship status. For MSM reporting a primary care provider, one question

measured 'outness' about anal sex practices ("*Does your PCP know that you have anal sex with men?*"), with responses categorized dichotomously (Yes vs. No/Not sure).

**Comfort** with disclosure was measured with two questions about a respondent's comfort talking with medical providers, one about their *attraction to men* and another about their *specific anal sex practices*, on a 5-point Likert response scale ranging from *Not at all comfortable (0)* to *Extremely comfortable (4)*. A composite measure yielded strong reliability ( $\alpha = .88$ , 95% CI: .86 - .89).

**Engagement in HIV services and practices** was measured with three dichotomous variables: *behavioral intervention*, *biomedical intervention*, and *prevention strategy during recent PAI*. Those who reported ever engaging in a behavioral intervention (i.e. a one-to-one or small group conversation with a health worker about HIV prevention practices) were coded Yes/No (CDC, 2015). Engagement in *biomedical HIV services* was a composite variable. Seropositive respondents not engaged in HIV treatment (most recent medical visit more than 6 months ago, more than 2 missed ART doses in the past week, or detectable viral load); seronegative respondents whose most recent HIV test result was received more than 2 years ago or who reported current PrEP use but not having tested for HIV in the past 3 months; and respondents who reported thinking they had an STI in the past 3 months but not seeing a healthcare provider, or never testing for HIV or never receiving an HIV test result, were coded as not engaged in HIV services. MSM were considered to engage in a consistent *HIV prevention strategy during recent PAI* (Yes/No) if they reported: always using condoms; always themselves using chemoprophylaxis (undetectable viral load, if seropositive, and few missed doses of ART or PrEP in the past week regardless of serostatus); or

condomless intercourse with only one partner in the past year, whom the respondent had not recently met, who had no concurrent sexual partnerships in the past 3 months, and who was either seroconcordant or on TasP or PrEP protocols.

## 5.2 Results

Of the 4609 visits to the survey website, 124 (2.7%) were flagged as fraudulent responses. Of the remaining, 10% ( $n = 455$ ) did not respond to eligibility criteria, 19% ( $n = 861$ ) did not meet criteria, 12% ( $n = 533$ ) met criteria but did not respond after the information statement, and 15% ( $n = 700$  who identified as non-Latino White) were directed away from participation by our quota. Of the remaining 1936 respondents, 549 partially completed the survey (25 of whom were not amenable to analyses because they did not respond sufficiently to initial demographic variables), and 1387 (71.6%) completed the survey. EFA and CFA analyses of *stigma* relied on partial and complete respondents, as in Study II. For SEM, of the 1387 who completed, 124 reported no PAI in the past 3 months and therefore could not be included in analyses of our conceptual model. In our final analytic sample ( $n = 1263$ ), median completion time was 27 minutes. All responses were collected over 10 weeks, between July and September 2017.

### Dimensionality of Stigma and Concerns Measures

Initial EFA of the 40 stigma items suggested a 4-factor solution, with only two items loading on the fourth factor. These items (*“A lot of men have thought they knew what I wanted sexually, just because they saw my race or ethnicity”* and *“When a guy wants to have anal sex with me, I can’t tell if he’s attracted to me or fantasizing about my race or ethnicity”*) appeared to measure a distinct factor, the intersectional theme

identified in Study I (Appendix E), though with low internal reliability. These items conflate racial discrimination and anal sex stigma, thereby making distinctions between the two harder to detect, and may not generalize across subpopulations of MSM. We therefore removed these and conducted new EFA on the remaining 38 items, arriving at a 3-factor solution that appeared to measure distinct factors across 17 items (Table 7). These factors aligned more with themes from Study I than our hypothesized temporal (i.e., experienced, internalized, anticipated) forms of stigma. This stigma measure also included 3 of the 10 items excluded by EFA in Study II (I04, A09, E09 in Table 7) that we retained for examination in Study III for their relevance to our conceptual model and potential for empirical support in this larger sample.

The CFA of our 17-item scale (Table 8) demonstrated acceptable fit (CFI = .94, TLI = .93, RMSEA = .06, 95% CI: .06-.07) despite a significant chi-square test of difference ( $\chi^2(3) = 303.08, p < .0001$ ). Six items appeared to measure a latent factor of perceived omission and concealment, a combination of perceived/experienced omission of knowledge among sex partners (e.g., *“Most guys I’ve had sex with really didn’t know how to have anal sex properly”*) and anticipation of concealment in general (e.g. *“Even if someone brought it up, most guys would hide their true feelings about anal sex”*). Six items more clearly formed a latent factor of internalized devaluation (e.g., *“I hate myself for feeling the way I do about anal sex”*) that also contained internalization of omission of information (e.g., *“I feel like I don’t know how to have anal sex properly”*). The third factor contained 5 items, was specific to maltreatment by health workers, and combined elements of experienced (e.g., *“Health workers have ignored my concerns about anal*

health”) and anticipated stigma (e.g., “If they knew the ways I have anal sex, most health workers would shame or lecture me to stop”).

For the Anal Sex Questions Index (ASQx) in SEM analyses, we selected the 10 least skewed items with the highest variability (Table 11). These demonstrated strong internal reliability ( $\alpha = .89$ , 95% CI: .88 - .90). As in Study II, item scale-correlation and scale-variance indicated that removal of any single item from either the stigma or concerns measures would not increase either reliability or scale variance. Most items were significantly correlated at low magnitude, with few negatively correlated and none of these significantly. Correlations between the overall stigma scale, subscales, and the ASQx with other measures were consistent with Study II hypotheses (Table 12), as were bivariate analyses with *engagement* measures using Chi-square and t-tests.

## **Structural Equation Modeling**

### *Preliminary Analyses*

All variables differed significantly from the normal distribution (Shapiro-Wilk tests,  $W < .05$ ) but none had skewness  $> 2$  or kurtosis  $> 7$ , criteria recommended for use in SEM (West, Finch, & Curran, 1995). Bivariate analyses with sociodemographic variables indicated that lower income, lower education, no medical coverage, and Black/African-American racial group identification were associated with both *stigma* and *engagement*, and *age* with *stigma* and components of *engagement* ( $p < .05$ ).

### *Measurement Model*

Our measurement model comprised six latent factors. The *Anal Sex Stigma Scale (ASS-S)* was specified by each of the three stigma subscales in Table 10

(*omission, internalized, health care*); the *Anal Sex Questions Index (ASQx)* included our subset of the 10 least skewed, highest variability items; and *engagement* was indicated by its three dichotomously coded variables. This model converged normally with acceptable fit, though a significant Chi-square test statistic with a high  $X^2/df$  ratio:  $X^2(399) = 1474.23$ ,  $p < .0001$ ,  $X^2/df = 3.7$ , RMSEA = .05 (95% CI: .04 - .05), probability of RMSEA < .05 = .99, CFI = .95, TFI = .95, WRMR = 1.70 Standardized factor loadings for each indicator were .70 or higher, except for a single item on the internalized stigma subscale ("*In my mind, anal sex is always dangerous, no matter how safe you think you are*",  $\lambda = .67$ ).

#### *Anal Health Stigma Model*

We then tested the structural paths hypothesized in our conceptual model, specifying only the indirect effect of *stigma* on *engagement* as mediated through anal sex *concerns*. Model 1 produced similar though slightly worsened fit:  $X^2(400) = 1649.57$ ,  $p < .0001$ ,  $X^2/df = 4.1$ ; RMSEA = .05 (95% CI: .04 - .05), probability of RMSEA < .05 = .99, CFI = .94, TFI = .94, WRMR = 1.82. Modification indices did not produce clear areas of misfit, but did indicate some relationship between stigma and engagement. In Model 2, we tested the retention of the mediation path and added a direct effect of *stigma* on *engagement*. Fit indices improved,  $X^2(399) = 1474.23$ ,  $p < .0001$ ,  $X^2/df = 3.7$ , RMSEA = .05, 90% CI: .04 - .05, probability of RMSEA < .05 = 1, CFI = .95, TFI = .95, WRMR = 1.70. The relationship between *stigma* and *concerns* remained stable, from  $\beta = .51$  to  $\beta = .52$  (both  $p < .001$ ). However, the relationship between *concerns* and *engagement* was no longer significant (from  $\beta = -.30$ ,  $p < .001$  to  $\beta = .07$ ,  $p = .23$ ).

Given indications from literature, theory, and Study I that counterstereotypic information may moderate the effects of *stigma* on *engagement*, we introduced *social support* in Model 3, with paths to *stigma* and *engagement*. Model fit improved,  $X^2(657) = 1920.01$ ,  $p < .0001$ ,  $X^2/df = 2.9$ , RMSEA = .04, 90% CI: .04 - .04, probability RMSEA < .05 = 1, CFI = .99, TFI = .99, WRMR = 1.69, and the association between *stigma* and *engagement* declined though remained significant ( $\beta = -.52$  to  $\beta = -.38$ ,  $p < .001$ ). To account for the possible role of self-reported *comfort* talking about sexual orientation and specific anal sex practices with a health worker as a facilitator of *engagement*, indicated by Study I findings, in Model 4, we introduced *comfort* as a mediator between *stigma* and *engagement*. Fit indices worsened slightly,  $X^2(730) = 2432.67$ ,  $p < .0001$ ,  $X^2/df = 3.3$ , RMSEA = .04, 90% CI: .04 - .05, probability of RMSEA < .05 = 1, CFI = .99, TFI = .99, WRMR = 1.85, and the association between *stigma* and *engagement* declined and was no longer significant ( $\beta = -.38$ ,  $p < .001$  to  $\beta = .01$ ,  $p = .93$ ). Modification indices suggested a specification of a path from *social support* to *comfort*, which fit with both theory and our qualitative findings. Fit improved (Model 5),  $X^2(729) = 2139.09$ ,  $p < .0001$ ,  $X^2/df = 2.9$ , RMSEA = .04, 90% CI: .04 - .04, probability of RMSEA < .05 = 1, CFI = .99, TFI = .99, WRMR = 1.70. The magnitude of association between *stigma* and *engagement* increased moderately and significantly ( $\beta = -.15$ ,  $p = .04$ ), and the association between *social support* and *engagement* lessened, with a marginally significant p-value ( $\beta = .22$  to  $\beta = .10$ ,  $p = .048$ ).

In Model 6, we tested socio-demographic characteristics as potential socioeconomic (SES) covariates: *age*, *education*, *income*, *medical coverage*, and Black/African-American *racial identification*. The ratio of  $X^2/df$  improved slightly (3.0 to

2.7), the association between *stigma* and *engagement* was no longer significant ( $\beta = -.02, p = .81$ ), and all other pathways remained stable. Modification indices suggested a pathway from *social support* to *concern*, in line with theory and literature. We added this pathway in the next model and all pathways remained stable except for the direct effect of *social support* on *engagement*, which was no longer significant.

Model testing did not provide evidence of direct effects of *stigma*, *social support*, or *concerns* on *engagement*, after accounting for mediation by *comfort* and confounding by *SES*. We therefore simplified the model by removing these paths, allowing for more stable estimates (Kline, 2015). This model demonstrated acceptable fit and all paths were significant, with no notable differences from the previous model. Direct and indirect effects are presented in Table 13 and standardized beta coefficients are modeled in Figure 1. This final model accounts for 75% of the variance in *engagement*, 25% in anal sex *stigma*, 26% in anal sex *concerns*, and 32% in *social support*.

In summary, though we see evidence that stigma is positively associated with anal sex concerns, we do not see evidence of our hypothesis that concerns mediate the relationship between stigma and engagement. The model does, however, describe how lower anal sex stigma is indirectly associated with greater engagement when mediated through greater comfort talking about sexual orientation and specific anal sex practices, even after controlling for confounding by *social support*. We tested alternative hypotheses by allowing for direct effects between all factors. The model could not be identified due to a negative residual variance for internalized stigma. We retained our more parsimonious model.

### 5.3 Discussion

Anal intercourse is both a highly devalued behavior and the most proximate risk factor for HIV among MSM, yet few studies have examined men's perspectives on stigma toward anal sexuality, or quantified the effects of devaluation on men's anal sex concerns or their engagement in HIV services and HIV-related sexual practices. D To our knowledge, this is the first study to quantify these relationships.

Our hypothesized conceptual model demonstrated good fit, but subsequent models better matched our data and were consistent with evidence from Study I interviews and literature. We found no evidence that interest in answers to questions about anal sex, our *ASQx* measure, mediates the relationship between anal sex *stigma* and *engagement*. Instead, we found evidence that elevated *stigma* is associated with decreased *comfort* talking about sexual orientation and sexual behavior, and that this wholly mediates the relationship between *stigma* and *engagement*, and remains significant even after controlling for negative confounding by *social support*. Framed in a more strength-based fashion, in our sample, MSM who endorsed less anal sex stigma also reported greater comfort talking with health workers about their attraction to men and their specific anal sex practices, and reported greater engagement in HIV services and prevention strategies during anal sex. Greater informational and emotional support with regard to anal sex partially confounded this effect.

Our finding that discomfort with disclosure mediates the relationship between stigma and health is consistent with Study I and literature on sexual stigma. MSM may have strong reasons to conceal their sexual orientation and anal sex in particular. Prior to effective ART, rejection sensitive men living with HIV who were more "out," and

thereby more exposed to stigma, accelerated more quickly in their HIV infection as compared to men who concealed their sexual identity (Cole, Kemeny, & Taylor, 1997). Even after the advent of effective HIV medication, medical students have ascribed greater responsibility toward, and greater distancing from, fictionalized patients who contracted “AIDS” from “unprotected gay sex” compared to a “blood transfusion” (Pryor, Reeder, Yeadon, & Hesson-McLnnis, 2004). More recently, surveyed heterosexuals were less willing to attend a dinner event when a fictionalized gay man was characterized as “versatile” as compared to when his positional preferences toward anal sex were disclosed but not specified (Ayres & Luedman, 2013). The disclosure of specific sexual behavior, like anal sex, may add stigma that functions somewhat differently than devaluation attributed to HIV or to sexual orientation. As we heard in Study I, this may contribute to men’s aversion to discussing specific anal sex practices, whether with friends, family, or in healthcare settings.

Avoiding the subject of anal sex in healthcare may therefore be normative among MSM, as protection against the deleterious effects of stigma on health and social wellbeing. In our sample, of those with a primary medical provider, 75% reported being “out” about anal sex with men, which is somewhat consistent with other studies. Among 452 MSM in NYC, 39% did not disclose sexual behavior to their health care providers and, notably, no bisexual MSM disclosed (Bernstein et al., 2008). We know, however, that concealment is generally associated with delayed medical treatment, incomplete medical history, and reluctance to seek preventive care (Dean et al., 2000), the very gatekeeping behaviors required to access the evidence-based biomedical and behavioral interventions that could curb the HIV epidemic. In a more recent Chicago

sample of 871 MSM, poor healthcare access was associated with difficulty disclosing MSM status to providers (McKirnan, Bois, Alvy, & Jones, 2013), as it was in our study. Nationally, in the 2008 NHBS, while nearly all MSM reported at least one HIV test, syphilis test, or healthcare visit in the past year, only 61% reported same-sex attraction or behavior to their provider (Meites, Krishna, Markowitz, & Oster, 2013), suggesting that many MSM may be under-identified for continued intervention.

While we found evidence of a negative association of anal sex stigma with health-seeking behavior, multiple forms of devaluation likely operate on men's engagement. In our stigma measure, we intentionally eliminated items that captured elements of anal sex stigma that also involved devaluation by race and ethnicity. However, this theme of intersectional devaluation was clearly evident in Study I interviews, and literature suggests co-occurring effects of racial and sexual devaluation. For example, reports demonstrate that some Hispanic MSM are less likely than White MSM to disclose their sexual identity and behavior (Bernstein et al., 2008) and that, across studies, Black MSM are less likely to identify as gay or to disclose their homosexuality to others, including doctors or healthcare providers (Millett et al., 2012). One study at a community event found that 29% of Black MSM reported experiences of both racial and sexual orientation discrimination, and that global medical mistrust mediated the relationship between stigma and engagement in care (Eaton et al., 2015). In the computer-administered General Social Survey, compared to White MSM, Black MSM were twice as likely to report that homosexuality is always wrong and MSM who harbored these unfavorable attitudes were 50% less likely to report ever testing for HIV (Glick & Golden, 2010). High levels of sexual minority stigma have also been

significantly associated with less insertive anal sex and higher levels of HIV stigma were associated with more receptive anal sex among young Black MSM, the group of MSM most disproportionately burdened by the epidemic (Radcliffe et al., 2010). However, in one large cohort of HIV-negative Black MSM, experienced racial discrimination in healthcare was associated with *increased* odds of seeing a provider and testing for HIV within the past year, suggesting that factors other than racial discrimination may be driving healthcare disparities (Irvin et al., 2014). Simply put, any single form of stigma may not be sufficient to explain the complexity of how devaluation impedes MSM engagement, although attention to the potential involvement of anal sex stigma may introduce novel ideas about how to inoculate the effects of a multiplicity of stigmas.

Further refinement and testing of the temporal elements of these new measures may also help us understand specific effects on health. Research on concealable stigmatized identities has demonstrated distinct effects of internalized, anticipated and experienced stigma toward sexual orientation and HIV-positive serostatus (Earnshaw & Chaudoir, 2009). Among sexual minorities and people living with HIV, both internalized and experienced stigma have been associated with depression, anxiety, self-efficacy, self-esteem, suicidal ideation, and increased drug use and abuse (Quinn & Earnshaw, 2011). In a community HIV clinic sample, internalized HIV stigma had significant positive associations with both helplessness and medical care gaps and, marginally, with medication non-adherence. Anticipated HIV stigma was associated with greater likelihood of chronic illness comorbidity, and experienced HIV stigma was associated with greater likelihood of having a CD4 count lower than 200 (Earnshaw et al., 2013). Although our measure of anal sex stigma did not neatly form distinct temporal

subscales, they may be adapted in the future to test the contributions of specific forms of devaluation on health, and point to areas of mitigation.

The confounding effect of social support in our study is particularly compelling, in light of the prevalence of concealment across subpopulations of MSM and the need for novel interventions that encourage disclosure and promote engagement. Our social support measure is an adaptation of the emotional and informational support subscale of the MOS-SSS, specifying anal sex within each item (e.g., “*Someone to share my most private worries and fears with about anal sex*” and “*Someone who's advice about anal sex I really want*”). Although greater interest in answers to questions about anal sex (our ASQx measure) was not directly associated with poor engagement, responding to MSM-specific anal sex interests, whether in health care or other relationships, might function as emotional and informational support. This, in turn, could increase comfort with discussion about attraction to men and specific anal sex practices, and thereby improve engagement in HIV services and sexual prevention practices. Currently, use of strategies that rely on intrinsic motivation conducive to behavior change appears to be exceptionally rare in HIV care programs (Flickinger, Rose, et al., 2013b). One novel opportunity may be to respond to specific questions MSM harbor about anal sex.

Only a few published studies have explored stigma toward anal sex among MSM, but researchers and funding bodies recognize the general need to measure social components of health in order to find ways to more effectively engage MSM in HIV services and prevention practices (Stahlman et al., 2017). In 2009, the National Institutes of Health and the Centers for Disease Control and Prevention met with scientists, community representatives, advocates and federal partners, and concluded

that future HIV prevention efforts among MSM may gain greater traction if placed in the context of sexual health (Grossman et al., 2011). Given the challenges in the epidemic, a potential opportunity to innovate and improve health service access and retention among MSM in the U.S. could be culturally specific, de-stigmatized messaging on the topic of pleasure and health (Bourne et al., 2013; Robinson, Bockting, Rosser, Miner, & Coleman, 2002; Sullivan et al., 2012; Wolitski & Fenton, 2011). We think our study contributes to this effort. Notably, of the top quartile of questions that most interested MSM in our sample, nearly all involved the topic of pleasure (e.g., *“How do you stimulate anal orgasms that are whole body, hands-free, ejaculation-free, or multiple?”*, *“How can I make anal sex more fun?”*, *“What are the health benefits of anal sex?”*). This is consistent with findings in larger online samples. In a 2008 survey of 2,716 MSM, the top requests for a hypothetical online HIV intervention were “Physical sexual health” like testicular cancer and prostate health (86%), “How to have anal sex without pain” (74%), and “How to be a better lover” (86%) (Hooper et al., 2008). Interestingly, another study of MSM “hook-up” website users ( $N = 3,050$ ) found that 68% were interested in interventions that included “tips for having hot, healthy sex” but that only 41% of state HIV/STD directors ( $N = 81$ ) deemed such a topic effective, likely to be used, or acceptable (Wohlfeiler et al., 2013). This suggests that public health officials need to better understand anal sex concerns and stigma toward anal sex, as we have demonstrated that the absence of support for men’s concerns may elevate their HIV risk but these concerns may not be readily known or easy to disclose and address within healthcare settings. Our new measures may offer opportunities to design institutional and structural approaches to prevention (Collier et al., 2014), for example, screening

tools or checklists for clinicians to quickly de-stigmatize anal sex, provide opportunities for tailored intervention, and potentially increase engagement in HIV services and prevention practices.

Our study has several limitations. We should be cautious to advocate for specific interventions based on a single, cross-sectional observational survey. We found evidence of statistical mediation and moderation, but testing true causal pathways requires a longitudinal cohort study. Self-report measures are also prone to social desirability and recall bias, though the collection of data via phone, online chat, and Internet survey along with questions about current and recent experiences may lessen the distorting effects of these forms of bias. To that end, our final sample was also limited to MSM who reported penile-anal intercourse within the past 3 months, to lessen recall bias, and our findings may not be valid for MSM who are less frequently sexually active but who still are susceptible to transmission and acquisition when they do have penile-anal sex. We noted several sociodemographic differences between complete and partial survey responders in Study III, an indication of selection bias. This may be a function of greater reliance on recruitment through men-seeking-men online venues in our final survey, but regardless points to the difficulty of sustained engagement while conducting research online. Our findings also may not be representative of MSM in general, as it is limited to those who use the Internet, though almost all adults (S. Fox & Rainie, 2014) and the majority of MSM are engaged online (Groves, Breslow, Newcomb, Rosenberger, & Bauermeister, 2014), in particular to find sex partners (Liau et al., 2006). Additionally, while we took precautions to flag and exclude potentially fraudulent

and careless responders, we cannot truly detect and accurately excise these kinds of responses from analyses.

Even with these limitations, our findings have important implications for our collective response to the HIV epidemic. The topic itself is an under-researched area of behavioral science and the project paired qualitative and quantitative methods to develop new measures of anal sex stigma as well as a broad, culturally specific set of questions about anal sex that interest MSM. The project also contributes to behavioral science by testing a model based on how anal sex stigma impedes the two main approaches in preventing HIV: engagement in healthcare and in safer sex practices. Our model also acknowledges that HIV-relevant behaviors occur within a social and relational context (Ayala et al., 2013; Grov et al., 2013; Sullivan et al., 2012) and research informed by social processes holds the potential to reveal health factors at levels further upstream from individual behavior that may not yet be well understood but that, consistent with theory on the fundamental causes of disease (Phelan, Link, Diez-Roux, Kawachi, & Levin, 2004), could suggest additional points for intervention on a broader set of health outcomes than just HIV. Finally, diverse populations may benefit from the scientific knowledge produced, since the Anal Health Stigma Model is broad enough to apply to research conducted on stigma among non-MSM populations who engage in anal sex, with implications for health in much larger populations (Baggaley et al., 2010; Boily, Baggaley, & Mâsse, 2009; Brody & Potterat, 2003; CDC, 2011b; Collier et al., 2014; Herbenick et al., 2010; Heywood & Smith, 2012; Malunguza, Hove-Musekwa, & Mukandavire, 2018; Marston & Lewis, 2014; McBride & Fortenberry, 2010;

Mosher, Chandra, & Jones, 2005; Nemoto, Bödeker, Iwamoto, & Sakata, 2014; O'Leary et al., 2016).

In conclusion, our study found evidence of an association between anal sex stigma and engagement in HIV services and sexual prevention strategies, wholly mediated through comfort talking about sexual orientation and anal sex practices, even after controlling for social support and socioeconomic status. We did not find evidence of a direct effect of anal sex concerns on engagement, but responding to specific questions about anal sex that interest MSM may function as social support and thereby provide avenues for future intervention. This contributes to collective efforts to better understand social factors influencing the HIV epidemic and, ultimately, may help us focus on urgently needed structural and social interventions to end HIV disparities among MSM.

**Table 6. Characteristics for MSM reporting recent penile-anal intercourse in Study III (N = 1263)**

	n (%)
Age in years ( <i>M, SD</i> )	36.1 (11.0)
18-25	231 (18.3)
26-34	415 (32.9)
35-54	537 (42.5)
55-64	68 (5.4)
65 or over	12 (1)
Recruitment source	
Facebook	429 (34.0)
Grindr/Hornet/Scruff/BGC Live	512 (40.5)
Other social media (Reddit, Tumblr, Twitter, Instagram)	69 (5.5)
Additional source	8 (0.6)
More than 1 source	59 (4.7)
Annual income < \$30,000	376 (29.8)
2-year college degree or higher education	875 (69.3)
Own or rent domicile	1085 (85.9)
Urban residence (Large city)	586 (46.4)
Race and ethnicity	
Latino, Hispanic or Spanish ethnicity (of any race)	270 (21.4)
American Indian/Alaska Native (AIAN)	17 (1.3)
Asian or Asian American	78 (6.2)
Black or African American	204 (16.2)
White or Caucasian (non-Latino)	673 (53.3)
Native Hawaiian or Pacific Islander (NHPI)	4 (0.3)
Biracial	52 (4.1)
Multiracial	28 (2.2)
Single or casually dating several people	698 (55.3)
Open relationship or not sure if open	410 (32.5)
Gay sexual orientation	1022 (80.9)
Sexual position preference	
'Bottoming' (receptive)	391 (31.0)
'Topping' (insertive)	282 (22.3)
'Versatile' (both receptive and insertive)	550 (43.5)
No preference/Not sure	40 (3.2)
'Out' about sexual attraction to men to 'Almost everyone'	763 (60.4)
Ever sexually abused	397 (31.4)
Never tested/Never received HIV result	71 (5.6)
HIV seronegative	999 (79.1)
Tested within the last year	887 (88.8)
PrEP	350 (35.0)
Tested within the last 3 mos	333 (95.1)
2 or more missed doses in past 7 days	32 (9.1)
HIV seropositive	183 (14.5)
Diagnosed within past 2 years	23 (12.6)
Linked to care at time of diagnosis	170 (92.9)
Retained in care (most recent visit < 6mos ago)	175 (95.6)
Prescribed ART	178 (97.3)
2 or more missed doses in past 7 days	5 (2.8)
Undetectable viral load	167 (91.3)

\*\*\*"How many people have you had anal sex with in the past year? (Anal sex here includes any sexual contact with the ass, like touching, licking or penetration.)"

**Table 7. Exploratory factor analysis of anal sex stigma items from Study III (*n* = 817)**

	Factor		
	Health Worker	Internalized	Omission
% variance explained	21.1	9.9	5.4
Cronbach's $\alpha$	.79	.72	.73
Item	.79	.72	.73
Health workers will try to scare me about anal sex. (A04)	.78		
Health workers would treat me badly if they knew the ways I have anal sex. (A05)	.75		
If they knew the ways I have anal sex, most health workers would shame or lecture me to stop. (A13)	.66		
I've been shamed or lectured about anal sex by a health worker. (E03)	.64		
Health workers have ignored my concerns about anal health. (E02)	.46		
I hate myself for feeling the way I do about anal sex. (I13)		.75	
I may never let go of the shame I feel about anal sex. (I14)		.68	
When I have anal sex, I feel like I've done something unhealthy. (I05)		.58	
I feel like I don't know how to have anal sex properly. (I08)		.44	
I often feel like nobody else shares my same issues about anal sex. (I03)		.44	
In my mind, anal sex is always dangerous, no matter how safe you think you are. (I04)		.42	
Most guys don't understand how to ease into anal sex. (A09)			.67
Most guys don't know how to prepare themselves for bottoming. (A08)			.58
In my experience, people usually don't like to talk very openly about anal sex. (E01)			.55
Most guys I've had sex with really didn't know how to have anal sex properly. (E09)			.54
Even if someone brought it up, most guys would hide their true feelings about anal sex. (A03)			.52
Experience tells me most people think anal sex is disgusting, even if they've never said it aloud. (E13)			.41

Note: Number in parentheses indicates *a priori* hypothesized subscale (A=anticipated, I=internalized, E=experienced); total Cronbach's  $\alpha$  = .80.

**Table 8. Standardized factor loadings from 3-factor CFA of Anal Sex Stigma Scale (ASS-S) in Study III (N = 788)**

Item	Loading	Uniqueness
1. Maltreatment by Health Workers ( <i>Health Worker</i> )		
<i>Health workers would treat me badly if they knew the ways I have anal sex. (A5)</i>	0.81	0.35
<i>Health workers will try to scare me about anal sex. (A4)</i>	0.77	0.41
<i>If they knew the ways I have anal sex, most health workers would shame or lecture me to stop. (A13)</i>	0.79	0.37
<i>I've been shamed or lectured about anal sex by a health worker. (E3)</i>	0.61	0.63
<i>Health workers have ignored my concerns about anal health. (E2)</i>	0.68	0.54
2. Internalized Devaluation ( <i>Internalized</i> )		
<i>I hate myself for feeling the way I do about anal sex. (I13)</i>	0.79	0.37
<i>I may never let go of the shame I feel about anal sex. (I14)</i>	0.74	0.45
<i>When I have anal sex, I feel like I've done something unhealthy. (I5)</i>	0.78	0.39
<i>I feel like I don't know how to have anal sex properly. (I8)</i>	0.59	0.65
<i>I often feel like nobody else shares my same issues about anal sex. (I3)</i>	0.64	0.59
<i>In my mind, anal sex is always dangerous, no matter how safe you think you are. (I4)</i>	0.49	0.76
3. Perceived Omission/Concealment ( <i>Omission</i> )		
<i>Most guys don't understand how to ease into anal sex. (A9)</i>	0.65	0.57
<i>Most guys don't know how to prepare themselves for bottoming. (A8)</i>	0.58	0.66
<i>In my experience, people usually don't like to talk very openly about anal sex. (E1)</i>	0.55	0.70
<i>Most guys I've had sex with really didn't know how to have anal sex properly. (E9)</i>	0.55	0.69
<i>Even if someone brought it up, most guys would hide their true feelings about anal sex. (A3)</i>	0.65	0.57
<i>Experience tells me most people think anal sex is disgusting, even if they've never said it aloud. (E13)</i>	0.56	0.69

Note: Number in parentheses indicates a *priori* hypothesized subscale (A=anticipated, I=internalized, E=experienced)

All factor loadings are  $p < .001$ ; factor correlations between anticipated and internalized (.24), anticipated and experienced (.25), and internalized and experienced (.29) were all significant at  $p < .001$

**Table 9. Means and standard deviations for the 10 Anal Sex Questions Index (ASQx) items in Study III (N = 1263)**

Item	M (SD)
Why does anal sex feel different for me than it used to feel? (01)	1.65 (1.13)
How many other guys have problems with anal sex like the problems I have? (09)	1.74 (1.13)
How many other guys feel pain from anal sex like I do? (10)	1.59 (1.15)
Why do I desire anal sex? (17)	1.66 (1.20)
Why can't I mentally relax enough to enjoy anal sex? (18)	1.53 (1.20)
Can a health worker tell from a physical exam that someone has had anal sex? (35)	1.56 (1.18)
How much anal sex is too much? (42)	1.88 (1.12)
Will relaxing during anal sex cause more damage? (41)	1.89 (1.09)
Is bleeding normal? (39)	1.90 (1.06)
What is a good recipe for homemade lubrication for anal sex? (43)	1.75 (1.22)

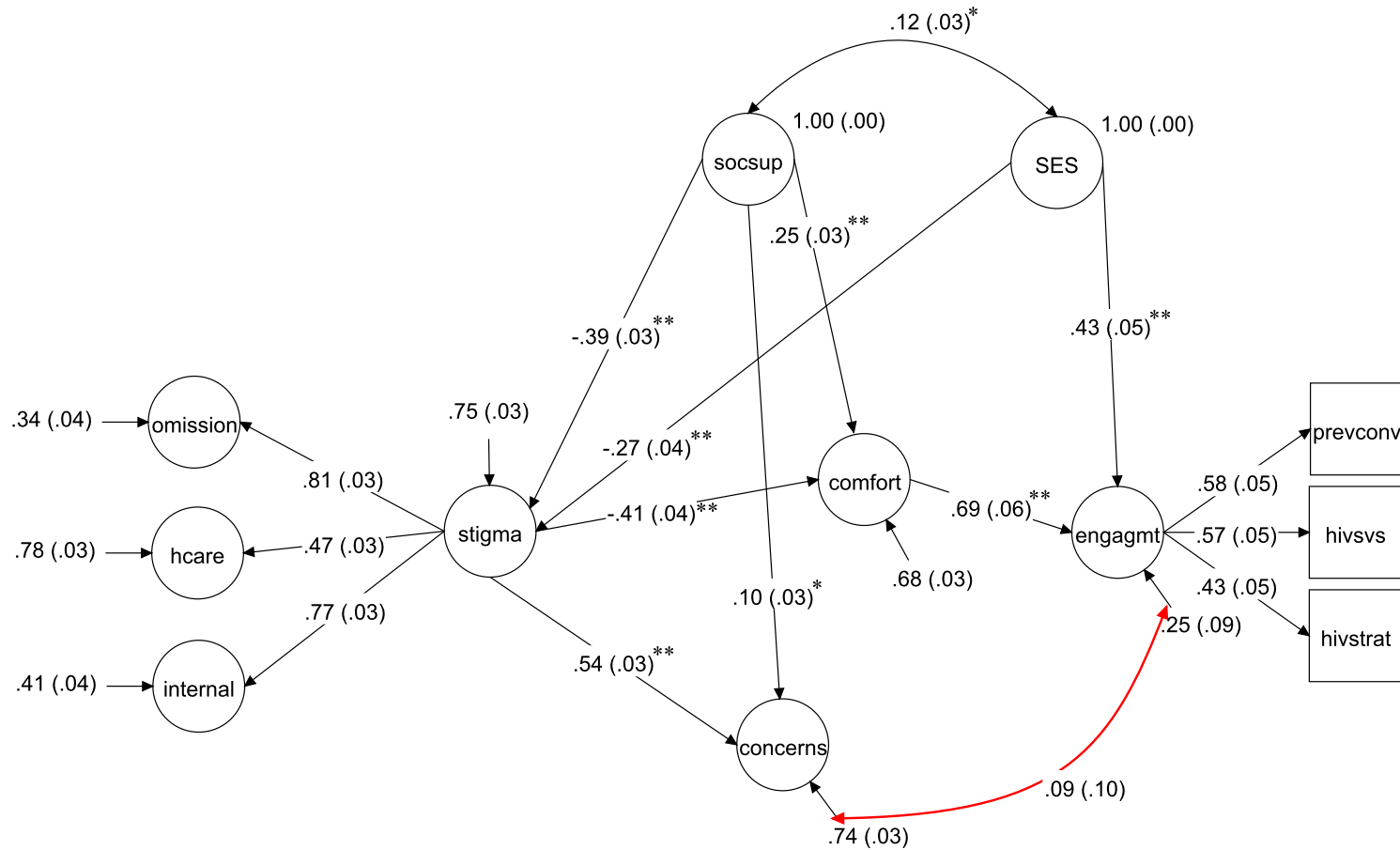
**Table 10. Means, standard deviations, reliability and correlations for finalized ASS-S and ASQx among MSM in Study III (N = 1263)**

Variable	Mean (SD)	Cronbach's $\alpha$ (95% CI)	Spearman's rho														
			1	2	3	4	5	6	7	8	9	10	11	12			
1 ASS-S	1.04 (.50)	.81 (.80-.83)	—														
2 Omission	1.60 (.28)	.73 (.70-.75)	.79**	—													
3 Internalized	.56 (.21)	.72 (.69-.74)	.68**	.40**	—												
4 Healthcare	.94 (.12)	.80 (.78-.81)	.72**	.35**	.22**	—											
5 ASQx	1.72 (.14)	.89 (.88-.90)	.34**	.32**	.31**	.16**	—										
6 EDS	1.61 (1.10)	.87 (.86-.88)	.34**	.24**	.24**	.28**	.19**	—									
7 SSCS-MA	1.95 (.65)	.86 (.85-.88)	.50**	.39**	.48**	.25**	.36**	.32**	—								
8 Sexual Satisfaction	2.76 (.58)	.77 (.74-.79)	-.30**	-.22**	-.40**	-.07*	-.16**	-.15**	-.40**	—							
9 MOS-SSS-A	2.00 (.13)	.97 (.97-.98)	-.32**	-.31**	-.28**	-.12**	-.12**	-.08**	-.17**	.27**	—						
10 Centrality	2.61 (.56)	.76 (.74-.78)	-.13**	-.15**	-.34**	.16**	-.07*	.05	-.14**	.39**	.31**	—					
11 Salience ( <i>mdn</i> )	3	—	-.07*	-.07**	-.17**	.07*	.02	.06*	-.04	.23**	.10**	.35**	—				
12 Disclosure comfort	2.42 (.45)	.88 (.86-.89)	-.41**	-.29**	-.37**	-.28**	-.13**	-.15**	-.25**	.29**	.36**	.30**	.11**	—			

**Table 11. Results of Structural Equation Modeling of the Anal Health Stigma Model predicting *engagement* in HIV treatment and prevention practices among gay, bisexual, and additional MSM who reported penile-anal intercourse in the past 3 months in Study III (N = 1263)**

Model Variables	$\beta$ (standardized)					B (unstandardized)					SE	R <sup>2</sup>
	Stigma (ASS-S)	Concerns (ASQx)	Comfort	Social Support	SES	Stigma (ASS-S)	Concerns (ASQx)	Comfort	Social Support	SES		
<i>Direct Effects on</i>												
Stigma	—			-.39**	-.27**	—			-.21**	-.27**	.03	.25**
Concerns	.54**	—		.10*		.71**	—		.07*		.03	.26**
Comfort	-.41**		—	.25**		-.73**		—	.25**		.03	.32**
Social Support				—					—		—	—
SES					—					—	—	—
Engagement			.69**		.43**			.43**		.48**	.09	.75**
<i>Indirect Effects on</i>												
Stigma	—					—						
Concerns		—		-.21**	-.15**		—		-.15**	-.19**		
Comfort			—	.16**	.11**			—	.16**	.20**		
Social Support				—					—			
SES					—					—		
Engagement	-.28**			.28**	.08**	-.31**			.17**	.09**		
<i>Total Effects on</i>												
Stigma	—			-.39**	-.27**	—			-.21**	-.27**		
Concerns	.54**	—		-.11**		.71**	—		-.08**	-.19**		
Comfort	-.41**		—	.41**		-.73**		—	.40**			
Social Support				—					—			
SES					—					—		
Engagement	-.28**		.69**	.28**	.51**	-.31**		.43**	.17**	.56**		

\* p < .005, \*\* p < .001.



**Figure 5.1. Structural equation model of the Anal Health Stigma Model**

Structural covariance with standardized beta coefficients of *engagement* in HIV services and safer sex predicted by anal sex *stigma* (ASS-S), mediated by *comfort* talking about sexual orientation and specific anal sex practices with a health worker, moderated by informational and emotional *social support* specific to anal sexuality, controlling for interest in answers to frequently asked questions about anal sexuality (ASQx) and *socioeconomic status* (age, income, education, medical coverage, and Black/African-American identification). \*  $p < .005$ ; \*\*  $p < .001$ . Model fit indices:  $X^2(932) = 2542.69$ ,  $p < .0001$ ,  $X^2/df = 2.7$ , RMSEA = .037, 90% CI: .035 - .039, probability of RMSEA < .05 = 1, CFI = .99, TFI = .99, WRMR = 1.63.

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## APPENDIX A: KEY INFORMANT INTERVIEW GUIDE (STUDY I)

Version 2.2 (12/14/2015)

*Time interview started:* \_\_\_\_ \_\_\_\_ : \_\_\_\_ \_\_\_\_ AM or PM

1. Introduction and Audio Consent	5 minutes
2. Opening (Rapport-building)	5 minutes
3. Anal Sex	20 minutes
4. Behavioral Responses	10 minutes
5. Preliminary Model	10 minutes
6. Closing	5 minutes
<b>Total</b>	<b>55 minutes</b>

### 1. Framing and Audio Consent (5 minutes)

Thanks for agreeing to an interview. This is pretty open-ended and there are no “right” answers to the questions. I’d really like to hear your thoughts about men you know and work with, what you think their experience is. Please be as open and detailed as you can be; I think other people will likely benefit from what you share. We’ll keep your responses strictly confidential.

Also feel free to use slang; if I don’t understand something, I’ll ask for a definition.

**1A. Would you prefer that I use formal language (e.g., insertive anal intercourse) or informal language (e.g., fucking, topping)? What language works best for you to refer to gay, bisexual and other MSM? (e.g, “gay,” MSM, “queer,” “two-spirit,” etc.)**

Okay, great. Before we start recording, let’s see if you have any questions for me.

**1B. What would you like to know about the study or about my interests as a researcher?**

**1C. Anything else before we begin?**

**1D. You gave consent earlier online. May I get your verbal consent to audio record?**  
[Start recording, speak the date and study ID code aloud] **One more time, for the record, do you consent to audio record this interview?** [Record assent or stop]

### 2. Opening (Rapport-building) (5 minutes)

**2A. How long have you been involved in research/healthcare/advocacy/etc. for MSM?**

Potential Probes:

2A1. How did you get started? What brought you to that work?

**2B. What populations (age, racial/ethnic group, etc.) of men have you worked with?**

## 2C. Where in the country have you worked?

### 3. Anal Sex (20 minutes)

*NOTE: Some key informants may identify as MSM or as people who engage in anal sex themselves. If key informants veer toward self-disclosure, refocus the interview on MSM more generally. For example, if a KI says, "Well, for me, with sex the main issue is..." then follow up with "Do you think that's typical? What do other guys say?"*

Okay, now I'd like to take a few minutes to hear your thoughts about a scenario.

#### 3A. If we had a group of men here and we asked them the first words to come to mind when they heard "anal sex," what would their first responses be?

Potential Probes:

- 3A1. Of those responses, what's on the positive side? What about on the negative side?
- 3A2. What do you think that says about how men relate to anal sex?
- 3A3. What do you think influences why some men might think of more pleasurable phrases, while others might think of more harmful/negative phrases?
- 3A4. What do men tell you they really enjoy about anal sex?
- 3A5. What do they say worries them about anal sex?

#### 3B. I'd like you to think about a time a man/client/participant shared a question or a concern with you about anal sex, one that's particularly memorable. [Pause] What did he say?

Potential Probes:

- 3B1. Did you sense he wanted to know more than what he asked? If so, what do you think he really wanted to know?
- 3B2. In general, what do men ask you about anal sex, if they do?

#### 3C. If you had to list all of the questions or concerns that men have about anal sex, what would be on that list?

Potential Probes:

- 3C1. What kinds of questions do you think they'd want to ask but hold back from asking?
- 3C2. Is it different for different men? (e.g., tops vs. bottoms vs. versatile men; younger or older, different generations; different racial/ethnic groups; men from different nations or cultures; educational histories; body types or gay subcultures; HIV-positive men, HIV-negative men, men who haven't tested yet; sexual orientations/identities; socioeconomic status; etc.)

#### 3D. If you could ask an all-knowing expert, someone who really knew *everything* there is to know about anal sex, what would you ask?

Potential Probes:

- 3D1. What's something you don't know – something that you still haven't gotten answered?
- 3D2. Where have you gotten reliable, accurate information about anal sex?
- 3D3. What would be the most convenient place for you to go? How about for MSM?

#### 4. Behavioral Responses (10 minutes)

##### 4A. Let's take an example from a concern you already mentioned. How do you think [say one concern] might affect a guy?

Potential Probes:

- 4A1. How might someone feel or react during sex, if that was on their mind?
- 4A2. Would this depend on what kind of position a guy likes to take during sex? (e.g., bottom, top, versatile)
- 4A3. How might other concerns or questions influence men during sex?
- 4A4. Is this at all related to HIV? If so, how?

##### 4B. Some men talk about anal sex very openly, and others have a harder time. What makes it easier to talk?

Potential Probes:

- 4B1. What do you think makes talking about anal sex difficult for some men?

#### 5. Preliminary Model (10 minutes)

Now I'd like to get your feedback about something specific. **We're trying to document guy's concerns about anal sex. The question is, how do men react to their concerns, both during sex and also in healthcare settings?** I'll explain a model we're using in our research, piece by piece. Jump in if something comes to mind, even before I finish explaining. I really want to hear your ideas.

Let's start with men's concerns about anal sex. These include what we've seen in the literature and online, and also now will include what you shared with me. How does a guy react to a concern? Does he go to a healthcare provider and ask directly, or does he hide that concern because he doesn't want people to know about that part of his sex life?

We think this has an effect on men's ability to prevent HIV.

- For example, men who conceal that they have anal sex from a doctor may not access PrEP.
- A guy worried about cleanliness may douche; a guy worried being seen as effeminate because he likes bottoming may get high. Both have been associated with elevated HIV risk.

But we really don't know how men react to their anal sex concerns; this hasn't been asked before.

Another question is, why do some guys talk really openly about their concerns and get their needs met, while others hide their concerns from other people? We think stigma toward

anal sex may affect men; stigma here means devaluation of people who have anal sex. We're thinking of three kinds of stigma.

- If a guy said, "My friends make fun of me for bottoming," we think of that as experienced stigma; someone is discriminating against that guy.
- If a guy said, "Anal sex is gross" or "Anal sex is dangerous" then we think of that as internalized stigma; he's accepted that devaluation as part of his own value system.
- If a guy said, "If I fart while getting fucked, he won't be attracted to me" or "I'd be embarrassed to talk with my doctor" then we think of that as anticipated stigma; he's expecting to be put down by others.

There's also room for positive forces to counteract stigma. Some men may feel supported by friends or loved ones, or find sex-positive information, or have really fun, pleasurable sex, and these experiences make them immune to devaluation, and then make it easier for them to voice their concerns and get their needs met. Some men may really think about anal sex a lot and other men think about it not very much at all; maybe that affects why some men feel the sting of stigma more than others.

This is just the start of trying to understand men's concerns about anal sex.

**5A. What do you is missing from the picture I just painted? What's not in there that should be?**

Potential Probes

5B1. If you could ask your own research question, what would you ask?

6. Closing (5 min)

It's time for us to wind down the interview. I really appreciate that you dedicated your time and attention over the last hour or so. It really is helpful to have heard your point of view.

**6A. Before we end, is there anything else you think I should have asked you?**

Potential Probes

6A1. Is there anything else you think I should ask other people?

6A2. What's one question you'd like me to ask MSM, when I start interviewing them?

This has been very helpful. I'm glad you decided to contribute. Thank you.

***Time interview ended:*** \_\_\_\_ \_\_\_\_ : \_\_\_\_ \_\_\_\_ **AM or PM**

## APPENDIX B: MSM PARTICIPANT INTERVIEW GUIDE (STUDY I)

Version 3 (3/4/2016)

### In-Depth Interview Guide

**Time interview started:** \_\_\_\_ \_\_\_\_ : \_\_\_\_ \_\_\_\_ AM or PM

- I. Introduction and Consent Procedures (5 minutes)
- II. Opening (Rapport-building) (5 minutes)
- III. Concerns about Anal Sex (15 minutes)
- IV. Behavioral Responses to Concerns during Anal Sex (10 minutes)
- V. Experiences of Stigma toward Anal Sex (10 minutes)
- VI. Behavioral Responses to Stigma during Anal Sex (10 minutes)
- VII. Behavioral Responses to Stigma in Healthcare (5 minutes)
- VIII. Closing (5 min)

#### 1. Framing and Consent (5 minutes)

Thanks for agreeing to this interview! My goal is for you to feel as comfortable and open as you'd like to be during our chat. You can be as detailed as you like and use any language you like. We're creating an online survey for men about their interests and concerns related to anal sex, including what men love about anal sex and what they'd like to be different about anal sex. I think people will benefit from what you share. We'll keep your responses strictly anonymous.

I've worked with gay men and bisexual men for a long time, and I identify as gay myself.

**1A. Do you prefer formal language like “insertive anal intercourse” or informal language like “fucking” or “topping”? What works best for you: gay, bisexual, MSM, queer, two-spirit, something else?**

**1B. Okay, great. What would you like to know about the study or about my involvement?**

**1C. Anything else before we begin?**

**1D. You gave consent earlier online. May I get your consent to record?** [Start recording, for audio speak the date and study ID code aloud, then ask again after audio recording begins] **One more time, for the record, do you consent to audio record this interview?** [Record assent or stop]

#### 2. Opening (Rapport-building) (5 minutes)

Just to warm up a bit to this topic, I'd like to hear little bit more about you.

**2A. Just to warm up a bit, what interested you in this study?**

### 3. Anal Sex (15 minutes)

*NOTE: Some participants may inquire about the interviewer's experiences with anal sex. If participants veer toward interest in interviewer self-disclosure, refocus on MSM more generally. For example, if a participant asks, "Has that ever happened to you?" then follow up with "It makes sense that you're wondering if other men feel this way too. What do you think other guys would say?" Or be more direct with, "Let's keep this to your experiences; I want to hear what you think about this, without influencing you with my own experience."*

Okay, now let's move into the topic of anal sex.

#### **3A. Tell me about one of your favorite times with anal sex.**

Potential Probes

- 3A1. How did you feel? What was the experience like?
- 3A2. What have you really enjoyed about anal sex, in general?
- 3A3. What kinds of anal sex would you like to try that you haven't tried yet?
- 3A4. What's "ideal" anal sex for you?**
- 3A5. What made that experience stand out to you? How does it compare to other experiences?**
- 3A5. What's the best sex you've ever had?

#### **3B. What was your first experience with anal sex like?**

Potential Probes:

- 3B1. What were you expecting it to be like?
- 3B2. What surprised you about the experience?
- 3B3. How did you feel? [Prompt for both somatic and emotional reactions before, during and after]?

#### **3C. Tell me about a more recent experience, say in the past year.**

Potential Probes:

- 3C1. How often do you have anal sex? [Prompt for position, penetration vs. oral. etc.]
- 3C2. How are your more recent experiences different from your first experience?
- 3C3. What do you like about anal sex now?
- 3C4. What, if anything, do you dislike about anal sex now?
- 3C5. If there were something you could change about anal sex now, what would it be?**
- 3C6. What's a somewhat recent example when you didn't have such a great experience with anal sex?**

#### **3D. Let's imagine an all-knowing expert, someone who really knew *everything* there is to know about anal sex. What would you ask?**

## Potential Probes

- 3D1. What do you think other men would ask?**
- 3D2. What specific questions, concerns or worries have you had about anal sex?**
- 3D3. What advice would you give a younger guy about anal sex, that you wish you'd known yourself?
- 3D4. How have your concerns changed over time?
- 3D5. What else do you think men worry about?
- 3D6. What do you think men worry about but don't talk about openly?
- 3D7. What's a question or concern you haven't asked but still wonder about?
- 3D8. If we had a wall in front of us and could list all the questions and concerns men have about anal sex, what would be on that wall?**
- 3D8. What's something you don't know – something that you still haven't gotten answered?

**3E. How have you learned to have anal sex?**

## Potential Probes

- 3E1. Where have you gotten reliable, accurate information about anal sex?
- 3E2. What would be the most convenient place for you to go? How about for other men?
- 3E3. What role does porn play in learning about anal sex, if it does?

**3F. What do you like about your ass?**

## Potential Probe

- 3F1. What do you like about how it looks and feels?
- 3F2. What would you like to be different?
- 3F3. What would you change if you could?

4. Behavioral Responses during Sex (10 minutes)**4A. What do you do to make anal sex more pleasurable for yourself?**

## Potential Prompts

- 4A1. Tell me about an experience you had.
- 4A2. What do you think other men do?
- 4A3. How do you prepare for anal sex?
- 4A4. [If substance use is mentioned] How does that help you?

**4B. What makes you feel uncomfortable during anal sex?**

## Potential Probes

- 4B1. Let's take an example from a concern you already mentioned. How do you think [refer to concern] influences you during anal sex?
- 4B2. How has that concern influenced your sex life in general?
- 4B3. How do you think it affects your sexual satisfaction?
- 4B4. How do you think it influences what you do during sex?

**4C. How do HIV and other STIs affect your concerns about anal sex?**

## Potential Probes

- 4C1. Let's take an example from a concern you already mentioned. How do you think [refer to concern] influences you during anal sex?
- 4C2. How has that concern influenced your sex life in general?
- 4C3. How do you think it affects your sexual satisfaction?

5. Stigma (10 minutes)

[If framing would be helpful] Some men have been or can imagine being treated badly just because they have anal sex. For example, they might be devalued, looked down upon, or made fun of.

**5A. Think of a time when you felt emotionally or physically uncomfortable revealing or discussing anal sex, if ever. What happened?**

## Potential Probes

- 5A1. Please describe the details as though you're describing a movie unfold. [Who, what, where, when]
- 5A2. How did you feel, emotionally and physically?
- 5A3. What have other men told you about their experiences?

**5B. Tell me about a time when someone treated you badly related to anal sex.**

## Potential Probes:

- 5B1. What specific words and actions did you notice?
- 5B2. What other kinds of things have you heard or experienced?
- 5B3. What was your relationship to this person or these people? [Prompt for lovers, friends, family, medical care, strangers, etc.]
- 5B4. How much do you care whether someone devalues you because you have anal sex?
- 5B5. How much do you think people who have anal sex are devalued generally?
- 5B6. People live with a lot. Do you also fear that people treat you differently because of their perception of your race or class or anything else?**

**5C. We talked about a lot of concerns earlier. Who else knows about your specific**

**concerns?**

Potential Probes

5C1. What keeps you from sharing with other people?

5C2. Where do you get support for your concerns?

5D. Men have anal sex in many different ways. What do you think about anal sex that isn't quite what you do?

Potential Probes

5D1. How do you feel about fisting?

5D2. What do your friends say about ?

6. Behavioral Responses to Stigma in Healthcare (5 minutes)

What effect do you think stigma has on your engagement in healthcare?

Potential Probes:

6A. How do you think this affects your relationship with your healthcare provider, if you have a provider?

6B. How do you think it affects their willingness to disclose that you have anal sex?

6C. How do you think this affects other MSM and their engagement in healthcare?

6D. What do you expect a healthcare provider might say to you if you asked about your anal sex concerns?

7. Closing (5 min)

It's time for us to wind down the interview. I really appreciate that you dedicated your time and attention over the last hour or so. It really is helpful to have heard your point of view.

**7A. Before we end, is there anything else you think I should have asked you?**

Potential Probes

7A1. Is there anything else you think I should ask other people?

7A2. What's one question you'd like me to ask other men?

This has been very helpful. I'm glad you decided to contribute. Thank you.

**Time interview ended: \_\_\_\_ \_\_\_\_ : \_\_\_\_ \_\_\_\_ AM or PM**

## APPENDIX C: MSM COGNITIVE INTERVIEW GUIDE (STUDY I)

Version 2 (08/15/2015)

*Time interview started:* \_\_\_\_ \_\_\_\_ : \_\_\_\_ \_\_\_\_

### I. Introduction and Consent Procedures (5 minutes)

Really happy to get to chat with you again. I've listened and coded all the interviews and what you offered was invaluable.

The goal up until now has been to gather men's experiences and find a way to put their experiences in words. The goal now is to refine these words. I want to show you one part of the survey, to get your feedback.

Ultimately, I'm trying to find a simple, easy way to help men share their experiences of stigma toward anal sex. By stigma, I mean devaluation. Right now, we have a lot of raw material and the goal is to whittle it down to help make it simpler and easier for men to respond.

What questions have you got for me?

May I record our call?

Thank you so much for coming back in to talk with me today. Before we begin let me remind you about what we are doing today. As you probably remember from our last interview, we are in the process of developing a questionnaire to better understand the impact of stigma toward anal sex on gay, bisexual and other men who have sex with other men. To do this I am going to ask you to fill out a questionnaire. After each question I may ask for more information about what you thought you were being asked, what you thought about the wording of the question, and if there are ways that you think the question could be improved. This is very personal information and you are free to not answer any questions you do not want to answer. I'm not here to judge you for anything you have or have not done; I am only interested in learning from your experiences. Additionally, as with the first interview, feel free to use slang or coarse language, if there is something that I am not familiar with I will ask you for a definition. Your answers will be kept strictly confidential.

### II. Potential Probes

- Can you tell me in your own words what you think the question is asking?
- What does the word \_\_\_\_\_ mean to you?
- What does the phrase \_\_\_\_\_ mean to you?
- How confident are you in the accuracy of the answer you just gave?
- Please walk me through how you remember that (insert answer they just gave).
- Why do you think that (answer you just gave)?
- How did you arrive at that answer?
- Was that easy or hard to answer?
- I noticed that you hesitated - tell me what you were thinking.

- How do you think this question could be improved?

### **III. Closing**

Let the respondent know that you will begin to wind down the interview.

Revisit anything that you feel was left hanging. Check-in with him about how he feels the process went for him. Ask him if there was anything that was not covered that he wished would have been covered.

Assure him of the value of his contribution and thank him. Ask him to sign the receipt when paying him for his time.

Shred contact information sheet

## APPENDIX D: ANAL SEX STIGMA ITEMS FOR COGNITIVE INTERVIEWS (STUDY I)

Q1. Participant Code

Q2. Date

Q3. Time

[All Likert-scale response categories were the same:  
0 Never, 1 Not often, 2 Somewhat often, 3 Often, 4 Very often]

[Internalized stigma]

Q4 How often do you think or feel the following?

- a. Anal sex is weird.
- b. My thoughts and feelings about anal sex are not very important.
- c. I feel uncomfortable with the idea of anal sex.
- d. Anal sex is dangerous.
- e. Anal sex is addictive.
- f. Thinking about talking about anal sex with close friends feels uncomfortable for me.
- g. I may never let go of the shame I feel about anal sex.
- h. I wish I could let go of stereotypes I have about anal sex.
- i. Anal sex is supposed to hurt before it becomes pleasurable.
- j. There's no such thing as a truly versatile guy.
- k. I wish my ass was better looking.
- l. Nobody else feels the way I do about anal sex.
- m. Extreme forms of anal sex disgust me.
- n. I wish I could stop having anal sex.
- o. I can tell if a guy is top or a bottom just by looking at him.
- p. A mess during anal sex is the bottom's fault.
- q. Masculine tops are more attractive than feminine tops.
- r. A mess during anal sex is gross.
- s. I hate myself for feeling the way I do about anal sex.
- t. I hate how I feel about anal sex.
- u. Ass play with dildos or vibrators feels weird.

[Anticipated Stigma]

Q2 How often do you expect the following to happen in the future?

- a. People will assume that I like to be penetrated.
- b. Brochures and educational materials will discuss only the dangers of anal sex.
- c. I will hear something like, "Anal sex is always painful before it feels good."

Q3 In the future, I will be ...

- a. ...looked down on for having anal sex.
- b. ...called names or slurs related to anal sex.
- c. ...unsafe to disclose that I have anal sex.
- d. ...threatened by someone's reaction to anal sex.

- e. ...pressured to label myself as either a bottom or a top.
- f. ...embarrassed for leaving a mess during anal sex.

Q4 In the future, people close to me will ...

- a. ...shame men who bottom.
- b. ...look disgusted by anal sex.
- c. ...spread rumors about me for having anal sex.
- d. ...assume that I like to be penetrated.
- e. ...pretend not to share similar thoughts and feelings about anal sex.

Q5 In the future, people close to me will say something like ...

- a. "Men who 'bottom' are like women."
- b. "Being gay is not as bad as taking it up the ass."
- c. "Anal sex is a sin."

Q6 In the future, sex partners will say ...

- a. "Bottoming is always painful at first."
- b. "You're too feminine to top."
- c. "You're too masculine to bottom."

Q7 In the future, sex partners will ...

- a. ... call me a hurtful slur during anal sex.
- b. ... make a negative comment about my ass.
- c. ... disregard my needs during anal sex.
- d. ... not listen to my thoughts and feelings about anal sex.
- e. ... look uncomfortable discussing anal sex.
- f. ... humiliate me either in person or behind my back about anal sex.

Q8 In the future, health workers will ...

- a. ... treat me very coldly if I talk about anal sex.
- b. ... look uncomfortable discussing anal sex.
- c. ... avoid examining my anus or rectum.
- d. ... tell me that anal sex is unnatural.
- e. ... shame or lecture me about anal sex.
- f. ... try to scare me about anal sex.
- g. ... ignore my concerns about pleasure during anal sex.
- h. ... humiliate me about anal sex either in person or behind my back.
- i. ... not listen to my concerns about anal sex.
- j. ... act disrespectfully toward men who have anal sex.
- k. ... know very little about anal pleasure and health.

[Experienced Stigma]

Q9 How often has the following happened to you in the past?

- a. Brochures and educational materials discussed only the dangers of anal sex.
- b. I heard something like, "Anal sex is supposed to hurt before it feels good."
- c. People will assume that I like to be penetrated.

Q10 In the past, I have been ...

- a. ... looked down on for having anal sex.
- b. ... called names or slurs related to anal sex.

- c. ... unsafe to disclose that I have anal sex.
- d. ... threatened by someone's reaction to anal sex.
- e. ... pressured to label myself as either a bottom or a top.
- f. ... embarrassed for leaving a mess during anal sex.

Q11 In the past, people close to me have said something like ...

- a. "Men who 'bottom' are like women."
- b. "Being gay is not as bad as taking it up the ass."
- c. "Anal sex is a sin."

Q12 In the past, people close to me have ...

- a. ... shamed men who bottom.
- b. ... looked disgusted by anal sex.
- c. ... spread rumors about me for having anal sex.
- d. ... assumed automatically that I like to be penetrated.
- e. ... pretended not to share similar thoughts and feelings about anal sex.

Q13 In the past, sex partners have said ...

- a. "Bottoming is always painful at first."
- b. "You're too feminine to top."
- c. "You're too masculine to bottom."

Q14 In the past, sex partners have ...

- a. ... said a hurtful slur during anal sex.
- b. ... made a negative comment about my ass.
- c. ... disregarded my needs during anal sex.
- d. ... looked uncomfortable discussing anal sex.
- e. ... humiliated me after anal sex either in person or behind my back.
- f. ... not listened to my thoughts and feelings about anal sex.

Q15 In the past, health workers ...

- a. ... treated me coldly after I talked about anal sex.
- b. ... looked uncomfortable discussing anal sex.
- c. ... avoided examining my anus or rectum.
- d. ... told me that anal sex is unnatural.
- e. ... shamed or lectured me about anal sex.
- f. ... tried to scare me about anal sex.
- g. ... ignored my concerns about pleasure during anal sex.
- h. ... humiliated me about anal sex either in person or behind my back.
- i. ... did not listen to my concerns about anal sex.
- j. ... acted disrespectfully toward men who have anal sex.
- k. ... knew very little about anal pleasure and health.

## APPENDIX E: ANAL SEX STIGMA ITEMS FROM STUDY I FOR TESTING IN STUDY II

(63 items)

### A priori Factors

- A. **Sexual Position:** Valuation or devaluation based on whether a man ‘tops’ or ‘bottoms’, including gendered stereotypes about men who bottom.
- B. **Intersectionality:** The combination of stigma toward anal sex with other forms of devaluation, like race-based bias or gender stereotypes.
- C. **Shame:** Internalized aversion to anal sex, including discomfort, shame and guilt.
- D. **Disclosure Threat:** Devaluation based on how much other people know about one’s engagement in anal sex; harm from disclosure to others; urges to conceal.
- E. **Harm/Disgust:** Devaluation of anal sex as unhealthy, harmful to one’s health, or potentially dangerous; prompts for aversion and avoidance.
- F. **Omission:** Devaluation of anal sex related to the absence of information and resources (for example, sex education) or research, including misinformation and unfounded myths or conclusions about anal sex.
- G. **Appearance:** Devaluation based on perceived appearance.
- H. **Cleanliness:** Devaluation based on feces or contact with feces.
- I. **Isolation:** The absence of engagement or public discussion about anal sex, devaluation of one’s concerns, loneliness or isolation of one’s thoughts and feelings about anal sex.

How much do you disagree or agree with each statement? There are no right or wrong answers!

Disagree STRONGLY (0)   Disagree a little (1)   Agree a little (2)   Agree STRONGLY (3)

### **[Internalized Stigma]**

1. I’d feel uncomfortable having my asshole looked at directly. (Appearance)
2. I wish I could improve a few things about my ass. (Aesthetics/Appearance)
3. Even with good friends, I’d feel uncomfortable talking about anal sex. (Isolation)
4. I often feel like nobody else shares my same issues about anal sex. (Isolation)
5. In my mind, anal sex is always dangerous, no matter how safe you think you are. (Harm/Disgust)
6. When I have anal sex, I feel like I’ve done something unhealthy. (Harm/Disgust)
7. It feels easier for me to talk about blowjobs than anal sex. (Disclosure Threat)
8. Anal sex is a very personal, private topic. (Disclosure Threat)
9. Farting during anal sex is unacceptable to me. (Cleanliness)
10. A ‘mess’ during anal sex is truly embarrassing. (Cleanliness)
11. I feel uneasy having anal sex with guys of a certain racial or ethnic background. (Intersectionality)
12. People have anal sex but that’s not the purpose of that part of the body, I think. (Omission)

13. I feel like I don't know how to have anal sex properly. (Omission)
14. Anal sex is always going to involve some amount of pain. (Omission)
15. I can tell whether a guy tops or bottoms just by looking at him. (Sexual Position)
16. Compared to feminine guys, masculine guys are much better at topping. (Sexual Position)
17. Bottoms shouldn't tell tops how to fuck them. (Sexual Position)
18. A 'mess' during anal sex is the bottom's fault. (Sexual Position)
19. Bottoms should be able to take anything during sex. (Sexual Position)
20. I think bottoms who look desperate for sex, or 'thirsty,' are a real disgrace. (Sexual Position)
21. I hate myself for feeling the way I do about anal sex. (Shame)
22. Sometimes the idea of putting something inside an asshole seems strange to me. (Shame)
23. I may never let go of the shame I feel about anal sex. (Shame)
24. Extreme forms of anal sex disgust me. (Shame)

### **[Experienced Stigma]**

1. People have made fun of my butt in a hurtful way. (Appearance)
2. In my experience, people don't talk very openly about anal sex. (Isolation)
3. Health workers have ignored my concerns about anal health. (Isolation)
4. In one way or another, people have told me anal sex is unhealthy. (Harm/Disgust)
5. I've been shamed or lectured about anal sex by a health worker. (Harm/Disgust)
6. Growing up, the main message I got about anal sex was "It's dangerous." (Harm/Disgust)
7. I've seen guys called hurtful names for having anal sex. (Disclosure Threat)
8. I've seen how hard life can be for guys who are really open about having anal sex. (Disclosure Threat)
9. My sex partners have looked disgusted at the sight or smell of shit, even when it was an accident. (Cleanliness)
10. A lot of men have thought they knew what I wanted sexually, just because they saw my race or ethnicity. (Intersectionality)
11. I had to learn about anal sex on my own – nobody taught me the basics. (Omission)
12. Most guys I've been with thought bottoming was supposed to be painful at first. (Omission)
13. Most guys I've had sex with really didn't know how to have anal sex properly. (Omission)
14. People have often assumed that I'm a 'top' or a 'bottom' just by looking at me. (Sexual Position)
15. Growing up, I heard things like, "All gay guys love to take it up the ass." (Sexual Position)
16. People have told me, "A guy who likes getting fucked must want to be a woman." (Sexual Position)
17. People I know have shamed guys who bottom. (Sexual Position)
18. Guys have expressed to me that they don't want to get with a bottom who gives his ass away to everybody. (Sexual Position)
19. People's attitudes about anal sex have made me feel worse about myself. (Shame)
20. I've seen people express their disgust toward anal sex, even if they never said anything aloud. (Shame)

### **[Anticipated Stigma]**

1. I expect a sex partner to make a negative comment about my ass. (Appearance)
2. Most health workers probably wouldn't want to give an anal exam. (Isolation)
3. There's no point in talking about anal sex with a health worker. (Isolation)
4. Even if someone brought it up, most guys would hide their true feelings about anal sex. (Isolation)
5. Health workers will try to scare me about anal sex. (Harm/Disgust)
6. Most people think anal sex is dangerous. (Harm/Disgust)
7. Health workers would treat me badly if they knew the ways I have anal sex. (Disclosure Threat)
8. Telling someone how I have anal sex is risky. (Disclosure Threat)
9. A 'mess' during anal sex would ruin the mood for my sex partners. (Cleanliness)
10. When a guy wants to have anal sex with me, I can't tell if he's attracted to me or fantasizing about my race or ethnicity. (Intersectionality)
11. Most guys don't know how to prepare themselves for bottoming. (Omission)
12. Most guys don't understand how to ease into anal sex. (Omission)
13. People's assumptions about whether I'm a 'top' or 'bottom' are really annoying. (Sexual Position)
14. I feel like I have to prove to guys that I'm masculine enough to top them. (Sexual Position)
15. If there's a 'mess' during anal sex, most guys would blame the bottom. (Sexual Position)
16. Tops can sleep around, but people will look down on a bottom for doing that same thing. (Sexual Position)
17. If they knew the ways I have anal sex, most health workers would shame or lecture me to stop. (Shame)
18. When it comes to anal sex, I expect a lot of guys would think I'm damaged goods. (Shame)
19. Talking about anal sex with a health worker is almost always going to be awkward. (Shame)

## APPENDIX F: ANAL SEX CONCERNS FOR COGNITIVE INTERVIEWS (STUDY I)

(114 items)

Phase 1 Cognitive Testing: Concerns - v 1.0

Q1 Participant Code

Q2 Date

Q3 Time

Q4 What are your personal concerns and interests about anal sex, anal pleasure, and anal health? Choose one or more of the below topics. At the bottom, you can add your own!

- Mental relaxation (1)
- Physical relaxation (2)
- Inhibitions about anal play (3)
- Increasing the intensity of orgasms (4)
- Strengthening orgasm (5)
- Ways to pleasure sex partners (6)
- Positions for anal sex (7)
- Whole body orgasm (8)
- Hands-free orgasm (9)
- Orgasm without ejaculation (10)
- Multiple orgasms (11)
- Double-penetration (12)
- Exercises to enhance sexual pleasure (13)
- Prostate massage (14)
- Preparing to bottom (15)
- Foods to prevent 'painting' (leaving shit on someone's dick) (16)
- Timing bowel movements (17)
- Fiber (18)
- Douches and enemas (19)
- Suppositories (20)
- Tips on how to top (21)
- Tips on how to bottom (22)
- Tightness (23)
- Exercises to strengthen tightness (24)
- Staying hard (25)
- Ways to keep "walls" tight (26)
- Fisting (27)
- Shit play (28)
- Leather or BDSM (bondage and domination/sadism and machism) (29)
- Anal stretching or looseness (30)
- Performance anxiety (31)
- Unwanted farting during sex (32)
- Premature ejaculation (33)
- Loss of sensation or sensitivity (34)
- Penis size (35)
- Foreplay (36)
- Rimming (37)
- Sex toys (38)
- Sexual techniques and tips (499)
- Dealing with my partner(s)' psychological 'baggage' about anal sex (39)
- Dealing with my own emotional 'baggage' about anal sex (40)
- Racial prejudice from partners (41)
- Finding partners who like what I like (42)
- Being seen as too feminine (43)
- Being seen as too masculine (44)
- Trusting sex partners (45)
- How to talk openly and honestly about anal sex (46)
- Partner communication (47)
- Spirituality (48)
- Pain while being anally stimulated (49)
- Pain while stimulating someone else anally (50)
- Pain after sex (51)
- Pain during sex (52)

- A comprehensive how-to guide about anal pleasure and health (53)
- Hearing other people's experiences with anal sex (54)
- Norms about other guys' anal sex practices (55)
- Anal anatomy and physiology (56)
- How other guys prepare to bottom (57)
- Gels and lubricants (58)
- Health benefits of anal play (59)
- Health problems I may not notice on my own without a medical checkup (60)
- Exams a doctor should perform for anal health (61)
- Dealing with anal cancer, rectal cancer, or prostate cancer (62)
- Screening for anal cancer, rectal cancer, or prostate cancer (63)
- Difficulty finding a doctor who knows about anal health (64)
- Discoloration of the anus (65)
- Stretch marks (66)
- Hair removal or trimming (67)
- Plastic surgery (68)
- How my ass looks (69)
- How my ass feels (70)
- Effects of alcohol and other drugs on anal sex (71)
- Alcohol (72)
- Cocaine (powder or crack) (73)
- Ecstasy (Molly) (74)
- Heroin and other opiates (75)
- Methamphetamine (76)
- Marijuana (77)
- Poppers (amyl nitrite) (78)
- Normal sensations to expect (79)
- 'Creaming' (ejaculation from the ass) (80)
- Natural responses of the human body during anal sex (81)
- Changes to expect with age (82)
- Why I desire anal sex (83)
- Sources of pleasure in the human body (84)
- Whether my experiences are different than experiences of other men (85)
- The prostate gland (86)
- The sexual response cycle during anal sex (87)
- Anorectal muscles (sphincter muscles and pelvic floor muscles) (88)
- Sensations to get checked medically (89)
- Longterm effects on the human body (90)
- Maintaining sensation and pleasure over a lifetime (91)
- Chlamydia (92)
- Gonorrhea (93)
- Enteric disease (oral-anal infections, like shigella and giardia) (94)
- Herpes (95)
- HIV (human immunodeficiency virus) (96)
- Warts (HPV or human papilloma virus) (97)
- Other sexually transmitted infections (98)
- PrEP (pre-exposure prophylaxis; HIV-negative men taking medication before sex to prevent acquiring HIV) (99)
- PEP (post-exposure prophylaxis; HIV-negative men taking medication after sex to prevent acquiring HIV) (100)
- TasP (treatment as prevention; HIV-positive men taking medication to prevent transmitting HIV) (101)
- Effects of HIV medication on bowel movements (102)
- Effects of HIV medication on anal pleasure (103)
- Bleeding (104)

- Fissures (tearing of the rectum or anal) (105)
- Prolapse (flesh poking outside of the asshole) (106)
- How to deal medically with anal cancer, rectal cancer, or prostate cancer (107)
- Hemorrhoids (swollen blood vessels that may cause discomfort or bleed) (108)
- Anal cancer, rectal cancer, and prostate cancer (109)
- Anal dysplasia (abnormal cell growth in the anal lining) (110)
- Hard bowel movements (constipation) (111)
- Loose bowel movements (diarrhea) (112)

- Bloating (113)
- Physical symptoms that require a doctor's attention (114)
- Add your own topic! (115)  
\_\_\_\_\_
- Add your own topic! (116)  
\_\_\_\_\_
- Add your own topic! (117)  
\_\_\_\_\_

Q5 What concerns do you have about anal pleasure and health? What would you like to know?

- I have no concerns about anal pleasure and health (1)

## APPENDIX G: ANAL SEX CONCERNS FROM STUDY I FOR TESTING IN STUDY II

(59 items)

### A priori Factors

- A. **Sexual Dysfunction:** Sexual performance, sexual function, and sexual impairment.
  - B. **Cleanliness:** Contact with feces, including the use of products and practices to 'clean' the rectum.
  - C. **Social Norms:** How other men think, feel, experience, and act during anal sex.
  - D. **Drug Use:** The effects and safety of substances on the human body during anal sex.
  - E. **Appearance:** How one looks, including grooming and body alterations.
  - F. **Relational and Psychological:** Respondent or sex partners' thoughts or experiences about anal sex, including communication with sex partners and emotional responses.
  - G. **Physiology:** Parts of the body involved in anal sex and how the human body typically responds during anal sex.
  - H. **Pleasure:** Enjoyment, including reasons for enjoyment and enhancement of pleasure.
  - I. **Health Knowledge:** Health benefits and health conditions, like fissures, that might relate to anal sex.
  - J. **Healthcare:** Resources and treatment options for the care of medical conditions.
  - K. **Harm:** Consequences of anal sex; in particular, questions about harm or damage.
  - L. **Practical Knowledge:** Factual information about anal sex, including sources for reliable information and dispelling myth from fact.
- 

How interested would you be in knowing the answer to each question?

Not at all interested (0)   A little interested (1)   Somewhat interested (2)   Very interested (3)

1. How can I stop uncomfortable anal tightness or spasms? (Sexual Dysfunction)
2. Why does anal sex feel different for me than it used to feel? (Sexual Dysfunction)
3. How can a guy keep his internal anal muscles (his 'grippers') tight? (Sexual Dysfunction)
4. What can be done about diarrhea, gas, and constipation that get in the way of anal sex? (Sexual Dysfunction)
5. How can I make anal sex less painful? (Sexual Dysfunction)
6. Why might the smell or taste of an ass change? (Sexual Dysfunction)
7. Which foods are 'bottom friendly'? (Cleanliness)
8. What is the proper way to use a douche? (Cleanliness)
9. What's the best way to 'clean out' before anal sex? (Cleanliness)
10. How can I have anal sex without 'painting' (contact with shit)? (Cleanliness)
11. How can digestive problems (like irritable bowel syndrome) be managed to still enjoy anal sex? (Cleanliness)
12. What do most guys do to prepare for anal penetration? (Cleanliness)

13. How many other guys have anal sex like I do? (Social Norms)
14. How many other guys have problems with anal sex like the problems I have? (Social Norms)
15. How many other guys feel pain from anal sex like I do? (Social Norms)
16. How do certain drugs affect the body during anal sex? (Drug Use)
17. What are the short and long-term effects of poppers (amyl nitrite) on the body? (Drug Use)
18. What are some alternatives to poppers (amyl nitrite) for relaxing during anal sex? (Drug Use)
19. What should I know about using muscle relaxers, numbing agents, and painkillers for anal sex? (Drug Use)
20. What are safe anal bleaching practices? (Appearance)
21. What's the recommended advice for 'man grooming' ass hair? (Appearance)
22. Which specific exercises can improve the look and feel of someone's ass? (Appearance)
23. How can I find sex partners who like what I like? (Relational and Psychological)
24. Why is anal sex so much more pleasurable when I feel an emotional connection? (Relational and Psychological)
25. How can I get myself or a sex partner in the mood to bottom? (Relational and Psychological)
26. Why do I desire anal sex? (Relational and Psychological)
27. Why can't I mentally relax enough to enjoy anal sex? (Relational and Psychological)
28. What do I need to know about the anal sphincter muscles? (Physiology)
29. How do the pelvic floor muscles work? (Physiology)
30. What is the puborectal sling muscle and why is it important? (Physiology)
31. What are 'normal' sensations to expect during anal sex? (Physiology)
32. What's important to know about the prostate? (Physiology)
33. What kind of natural lubrication does the ass make, if any at all? (Physiology)
34. Why does anal sex hurt? (Physiology)
35. What makes anal sex feel so good? (Pleasure)
36. How can I make anal sex more fun? (Pleasure)
37. What are the best positions for anal pleasure? (Pleasure)
38. How do you stimulate a whole body, hands-free, multiple, or ejaculation-free orgasm? (Pleasure)
39. How can I become better at anal sex? (Pleasure)
40. What do ancient spiritual guides like Tantra, Kama sutra, and Taoism advise about anal sex? (Pleasure)
41. How do different emotions affect pleasure during anal sex? (Pleasure)
42. What are the health benefits of anal sex? (Health Knowledge)
43. How do anal, rectal, and prostate cancer affect anal pleasure? (Health Knowledge)
44. What are the causes and treatments for hemorrhoids (bleeding/itching), fissures (tears), and prolapse (tissue poking out)? (Health Knowledge)
45. Which infections can pass from person to person during specific anal sex acts? (Health Knowledge)
46. What folk remedies work for common anal health problems, like hemorrhoids? (Health Knowledge)
47. Where can I find a non-judgmental medical provider who really knows about anal health? (ASC\_47)

48. Can a health worker tell from a physical exam that someone has had anal sex? (Healthcare)
49. Is it possible to do an anal self-exam, instead of having to go to the doctor? (Healthcare)
50. What physical anal sensations or experiences require medical attention? (Healthcare)
51. What anal health problems might I not notice on my own, without a doctor's help? (Healthcare)
52. Is bleeding normal? (Harm)
53. Are there long-term harmful effects of anal sex on the human body? (Harm)
54. Will relaxing during anal sex cause more damage? (Harm)
55. If a guy has too much anal sex, will he lose sensation and pleasure? (Harm)
56. How much anal sex is too much? (Harm)
57. What is a good recipe for homemade lubrication for anal sex? (Practical Knowledge)
58. What are some common myths and facts about anal sex? (Practical Knowledge)
59. Where can I find a reliable, accurate guide with everything I need to know about anal pleasure and health? (Practical Knowledge)

## APPENDIX H: ANAL SEX STIGMA ITEMS FROM STUDY II FOR TESTING IN STUDY III

(40 items)

### Experienced Stigma

1. It's a hard life for guys who are really out and open about having anal sex. (E08)
2. In my experience, people usually don't like to talk very openly about anal sex. (E02)
3. Experience tells me most people think anal sex is disgusting, even if they've never said it aloud. (E20)
4. People think that a guy who enjoys getting fucked must want to be a woman. (E16)
5. People have often assumed that I'm a 'top' or a 'bottom' just by looking at me. (E14)
6. A lot of men have thought they knew what I wanted sexually, just because they saw my race or ethnicity. (E10)
7. Health workers have ignored my concerns about anal health. (E03)
8. I've been shamed or lectured about anal sex by a health worker. (E05)
9. Most guys I've been with think bottoming is supposed to be painful at first. (E12)\*
10. Most guys I've had sex with really didn't know how to have anal sex properly. (E13)\*
11. Growing up, I heard things like, "All gay guys love to take it up the ass." (E15)\*
12. Growing up, the main message I got about anal sex was "It's dangerous." (E06)\*
13. I had to learn about anal sex on my own – nobody taught me the basics. (E11)\*

### Internalized Stigma

14. I hate myself for feeling the way I do about anal sex. (I21)
15. When I have anal sex, I feel like I've done something unhealthy. (I06)
16. I may never let go of the shame I feel about anal sex. (I23)
17. I often feel like nobody else shares my same issues about anal sex. (I04)
18. I feel like I don't know how to have anal sex properly. (I13)
19. Even with good friends, I'd feel uncomfortable talking about anal sex. (I03)
20. Anal sex is a very personal, private topic. (I08)
21. Farting during anal sex is unacceptable to me. (I09)
22. A 'mess' during anal sex is the bottom's fault. (I18)
23. I can tell whether a guy tops or bottoms just by looking at him. (I15)
24. Compared to feminine guys, masculine guys are much better at topping. (I16)
25. Anal sex is always going to involve some amount of pain. (I14)\*
26. I'd feel uncomfortable having my asshole looked at directly. (I01)\*
27. In my mind, anal sex is always dangerous, no matter how safe you think you are. (I05)\*

### Anticipated Stigma

28. Health workers would treat me badly if they knew the ways I have anal sex. (A07)
29. Health workers will try to scare me about anal sex. (A05)
30. If they knew the ways I have anal sex, most health workers would shame or lecture me to stop. (A17)
31. Most health workers probably wouldn't want to give an anal exam. (A02)
32. There's no point in talking about anal sex with a health worker. (A03)
33. Telling someone how I have anal sex is risky. (A08)
34. People's assumptions about whether I'm a 'top' or 'bottom' are really annoying. (A13)
35. I feel like I have to prove to guys that I'm masculine enough to top them. (A14)
36. Even if someone brought it up, most guys would hide their true feelings about anal sex. (A04)
37. When a guy wants to have anal sex with me, I can't tell if he's attracted to me or fantasizing about my race or ethnicity. (A10)
38. Most guys don't know how to prepare themselves for bottoming. (A11)
39. Most guys don't understand how to ease into anal sex. (A12)\*
40. Tops can sleep around, but people will look down on a bottom for doing that same thing. (A16)\*

\*Item retention informed by relevance to conceptual model, not EFA

## **APPENDIX I: ANAL SEX CONCERNS FROM STUDY II FOR TESTING IN STUDY III**

(45 items)

1. Why does anal sex feel different for me than it used to feel?
2. How can a guy keep his anal muscles (his 'grippers') tight?
3. How do I maintain a firm erection during anal sex?\*
4. How can I make anal sex less painful?
5. What's the best way to 'clean out' before anal sex?
6. How can I have anal sex without 'painting' (contact with shit)?
7. How can digestive problems (like diarrhea, gas, constipation) be managed to still enjoy anal sex?
8. What do most guys do to prepare for anal penetration?
9. How many other guys have problems with anal sex like the problems I have?
10. How many other guys feel pain from anal sex like I do?
11. How do certain drugs, like poppers, affect the body during sex?\*
12. What do guys need to know about waxing, sugaring, shaving, bleaching, or otherwise grooming near the anus?\*
13. What exercises can I do to make anal sex better for me and my partners?\*
14. How can I find sex partners who like what I like?
15. Why is anal sex so much more pleasurable when I feel an emotional connection?
16. How can I get myself or a sex partner in the mood to bottom?
17. Why do I desire anal sex?
18. Why can't I mentally relax enough to enjoy anal sex?
19. How do specific anal muscles (like sphincters, the pelvic floor, and the puborectalis) affect pleasure during anal sex?\*
20. What are 'normal' sensations to expect during anal sex?
21. What's important to know about the prostate?
22. What is the 'cream' or mucus that is sometimes produced during anal sex?\*
23. What makes anal sex feel so good?
24. How can I make anal sex more fun?
25. What are the best positions for anal pleasure?
26. Why do certain positions hurt some bottoms and not other bottoms?\*
27. How do you stimulate anal orgasms that are whole body, hands-free, ejaculation-free, or multiple?
28. How can I become better at anal sex?
29. What do ancient spiritual guides like Tantra, Kama sutra, and Taoism advise about anal
30. What are the health benefits of anal sex?
31. How might anal, rectal, and prostate cancer affect anal pleasure?
32. What are the causes and treatments for hemorrhoids (bleeding/itching), fissures (tears), and prolapse (tissue poking out)?
33. Which infections can pass between people during specific anal sex acts?

34. Where can I find a non-judgmental medical provider who really knows about anal health?
35. Can a health worker tell from a physical exam that someone has had anal sex?
36. Is it possible to do an anal self-exam, instead of having to go to the doctor?
37. What physical anal sensations or experiences require medical attention?
38. What anal health problems might I not notice on my own, without a doctor's help?
39. Is bleeding normal?
40. Are there long-term harmful effects of anal sex on the human body?
41. Will relaxing during anal sex cause more damage?
42. How much anal sex is too much?
43. What is a good recipe for homemade lubrication for anal sex?
44. What are some common myths and facts about anal sex?
45. Where can I find a reliable, accurate guide with everything I need to know about anal pleasure and health?

\*Items revised or added from Survey II text responses

## **APPENDIX J: LITERATURE REVIEW FROM GENERALS**

### **ABSTRACT**

Men who have sex with men (MSM) continue to have the highest rates of HIV infection in the United States. A combination of biomedical and behavioral approaches could reduce the burden of HIV among MSM, but their engagement in HIV prevention has not occurred at the pace necessary to curb the epidemic. Innovative methods to engage MSM are urgently needed. Social factors like stigma toward sexual behavior have been identified as likely barriers. However, MSM have rarely been surveyed about stigma toward anal sex or concerns about anal sex that might be associated with their safer sex practices and use of healthcare, the two primary approaches to HIV prevention. How MSM cope with stigma toward anal sex and their concerns about anal sex may not be readily known or easy to disclose and address within healthcare settings. However, MSM appear to mitigate their anal sex concerns with behavioral responses, like substance use and rectal douching, which actually increase HIV risk. This paper overviews the empirical and theoretical literature relevant to this topic and presents a preliminary model of stigma toward anal sex and associations with engagement of MSM in HIV prevention. Research in this area has tremendous potential to capitalize on MSM interests in sexual health to improve their engagement in HIV prevention.

### **1. INTRODUCTION**

The HIV epidemic among gay, bisexual, and other men who have sex with men (MSM) in the United States (U.S.) continues to expand at an alarming rate, primarily spread during anal sex. Efficacious HIV interventions include biomedical and behavioral

approaches that focus on reductions in virulence of HIV, encouragement of safer sex practices, and promotion of the health of people living with the virus. However, engaging MSM in the uptake of HIV prevention technologies and practices has not occurred at the pace necessary to curb the epidemic. Social factors like stigma toward sexual behavior have been identified as likely barriers to engagement in both healthcare and HIV prevention more generally. An important social factor may be stigma toward anal sex. Still, more than three decades into an epidemic spread primarily through anal sex, we know very little about the specific concerns MSM harbor about anal sex, their perception of stigma toward anal sex, and the influence of concerns and stigma on their engagement in HIV prevention.

This review focuses on how stigma toward anal sex might relate to two primary evidence-based approaches in HIV prevention: safer sex practices and healthcare utilization. The review first describes trends in the epidemic among MSM, including engagement in behavioral and biomedical interventions that might decrease HIV incidence, and then introduces social factors that potentially impede engagement of MSM in HIV prevention. The review then proceeds to what is known about stigma in relation to HIV and MSM, including evidence that *concerns about anal sex* might mediate a relation between *stigma that is specific to anal sex* and *MSM engagement in safer sex and healthcare*.

The review ends with a preliminary Anal Health Stigma Model (AHSM). The model posits that three distinct forms of stigma toward anal sex contribute to concerns about anal sex. These concerns in turn contribute to behavioral health responses

among MSM that impede both their safer sex practices and healthcare utilization thereby elevating HIV risk during anal sex.

## **2. EPIDEMIOLOGY OF HIV AMONG MEN WHO HAVE SEX WITH MEN**

The HIV epidemic continues as a major public health problem across the globe. Even though HIV incidence overall has declined since 2001 (UNAIDS, 2010), an estimated 40 million people are living with the virus and an estimated 2.5 million persons were newly diagnosed in 2011 (WHO, 2012). In the U.S., HIV also continues as an epidemic, with an estimated 1 to 1.2 million people living with the virus by the end of 2012 (CDC, 2014b; 2015a) and an estimated 45,000 to 50,000 people contracting the virus each year (CDC, 2012b; Prejean et al., 2011).

Since the 1990s, HIV incidence in the U.S. has remained stable or decreased among most populations, but the epidemic has disproportionately burdened MSM from its beginning and incidence among this group has increased in recent years (CDC, 2012b; Prejean et al., 2011). In 1981, epidemiologists first documented cases of immune suppression among gay-identified patients in Los Angeles, California. A behavioral risk population was clear before a known causal agent, so officials named the condition Gay-Related Immune Deficiency (GRID) (Shilts, 1987). The virus is most commonly transmitted through semen, vaginal secretions, breast milk and blood, and infections initially occurred among specific populations, including sex workers, hemophiliacs, and injection drug users. However, MSM constituted the largest behavioral risk population, a trend that has continued to this day (CDC, 2012b; Prejean et al., 2011).

The most recent surveillance research describes a disproportionate and expanding epidemic among MSM. MSM account for only 2 to 4% of the U.S. population (CDC, 2014d; Glick & Golden, 2010; Purcell et al., 2012) but a disproportionate 54% of domestic HIV cases (CDC, 2014b; Prejean et al., 2011; Purcell et al., 2012) and 68% of new infections (Centers for Disease Control and Prevention, 2015). Over the past several years, the epidemic has also been expanding among MSM (CDC, 2011; 2013; 2014c). Beginning in 2001, HIV incidence among MSM rose 8% per year (CDC, 2010) and then 12% between 2008 to 2010 (CDC, 2012c), with a disproportionate burden among young MSM and racial/ethnic minority MSM (CDC, 2014d). One estimation indicates a potential for a cohort of young MSM to reach an HIV prevalence of 40% by age 40 (Stall et al., 2009).

The HIV/AIDS epidemic among racial and ethnic minority group MSM is particularly dire. HIV infections are documented among all racial and ethnic groups, but Black MSM are the most affected. Among MSM, Black MSM account for 44% of new infections and are 3.8 times more likely to be living with HIV than White MSM (CDC, 2012a), despite constituting only 13% of the MSM population (Sanchez, Smith, Denson, Dinunno, & Lansky, 2012a; U.S. Census Bureau, 2014). Between 2008 and 2010, incidence among young Black MSM increased 20% (CDC, 2015b). Similarly, Latino MSM accounted for 22% of new infections among MSM, but 18% of MSM (Sanchez, Smith, Denson, Dinunno, & Lansky, 2012a; U.S. Census Bureau, 2014).

Understanding factors that contribute to the disproportionate burden of HIV among MSM populations is essential to the prevention of the epidemic among both MSM and heterosexuals. Data from the last decade in the U.S. suggest that most

heterosexually acquired HIV cases are directly linked to sexual relationships with either injection drug users or MSM (CDC, 2010).

### **3. HIV INTERVENTIONS AMONG MEN WHO HAVE SEX WITH MEN**

The alarming pattern in incidence among MSM occurs despite the existence of behavioral and biomedical interventions that can prevent HIV acquisition and transmission (Buchbinder et al., 2014; Crepaz et al., 2006; Donnell et al., 2010; R. M. Grant et al., 2010; Rodger et al., 2014); increase the use of protective behaviors among both people living with HIV (Crepaz et al., 2006) and people at high risk of HIV acquisition (Johnson et al., 2008); and promote health for people living with the virus (Crepaz et al., 2008).

In an effort to disseminate best practices, the Centers for Disease Control and Prevention (CDC) maintains a compendium of evidence-based HIV interventions (CDC, 2015c). Approaches typically include several targets, and include both behavioral and biomedical interventions. HIV counseling and testing identifies new cases of HIV and promotes prevention practices among people who test HIV negative. Linkage to HIV care for people newly diagnosed with HIV encourages access to treatment and psychosocial support. Adherence to antiretroviral (ARV) medications prevents disease progression and reduces virulence, thereby lowering the probability of transmission by as much as 96% among heterosexual couples (also called Treatment as Prevention) (Cohen et al., 2013). Navigation services aim to increase retention in HIV care. Use of specific ARV medications as pre- or post-exposure prophylaxis (PrEP and PEP, respectively) can prevent infection before or after exposure to bodily fluids. Condom distribution intends to promote safer sex practices. Interventions may additionally target

HIV risk factors such as substance use, skills deficits, and experiences of cultural oppression (Johnson et al., 2008; Sullivan et al., 2012). Promising interventions under current study include rectal microbicides (gels or suppositories containing anti-HIV agents delivered during or prior to anal sex), vaccines, and new formulations of long acting and injectable PrEP (McGowan, 2014). Of the 93 interventions listed in the CDC Compendium, 15 specifically target MSM (CDC, 2015c).

Meta-analyses suggest that behavioral HIV interventions demonstrate promising results with regard to lowering sexual risk behavior among HIV-negative MSM. The most recent meta-analysis evaluated randomized clinical trials and quasi-experimental studies published through 2007 (Johnson et al., 2008). Across 40 studies ( $N = 11,864$ ), behavioral interventions reduced self-reported condomless anal intercourse by 27% compared to no or minimal HIV intervention (RR = .77, 95% CI: .63, .85); the number of episodes in the previous 6 months decreased from an average of 10.1 to 7.4 (95% CI: 6.4, 8.6). Across 18 additional studies ( $N = 6,721$ ), behavioral interventions reduced risk behavior by 17% compared to standard interventions like testing and counseling (RR = .83, 95% CI: .73, .95) (Johnson et al., 2008).

Evidence that behavioral interventions produce a relative reduction in self-reported risk behavior is promising but no evidence exists that behavioral interventions focused on reducing sexual risk behavior produce significant reductions in HIV incidence (Sullivan et al., 2012). At face value, reduced risk behavior is a strategy to prevent the probability of infection. Relative decreases in risk behavior, however, may not be protective enough against HIV among MSM when at least some condomless events still occur. The CDC recently pooled data from two multisite, prospective cohort

studies of MSM ( $N = 3,233$ ). Over the course of nearly 19,000 visits, condom use among MSM was found to be only 71% protective against HIV acquisition, with MSM who reported using condoms “sometimes” no more significantly protected from acquisition than MSM who reported using condoms “never.” Only 16% of MSM reported using condoms 100% of the time (Smith, Herbst, Zhang, & Rose, 2015). Additionally, a Canadian modeling study recently supported the possibility that reductions in condomless sex may not be enough to curb incidence among MSM, positing that a conservative estimate that 51% of HIV transmissions among MSM occur despite condom use (Remis, Alary, Liu, Kaul, & Palmer, 2014).

Taken together, the meta-analysis on behavioral interventions, the CDC analysis on condom effectiveness, and the Canadian study suggest that impressive relative reductions in self-reported risk behavior after involvement in behavioral interventions may be misleading. MSM who self-report inconsistent use of condoms during anal sex may not be any more protected from HIV than those who report no use of condoms, and condoms themselves may simply not offer enough protection against the virus if used non-optimally (e.g., without lubrication, after penetration; Remis et al., 2014). Condom effectiveness may be compromised by iThese conclusions are additionally complicated by social response bias, which may overestimate self-reported reductions in risk behavior within the context of a study measuring the effects of behavioral interventions (Gallo et al., 2013). Biological markers of condomless anal intercourse would provide a more stringent test of efficacy (McDaid & Hart, 2010), but comparisons of self-report against a gold standard are difficult because no biological marker for anal sex exists (Gallo et al., 2013). In addition, relying on behavioral interventions that only target

reduction of condom use likely will not curb HIV incidence among Black MSM (Maulsby et al., 2013), who report less sexual risk behavior than White MSM yet are disproportionately living with HIV, likely due to social and structural factors that elevate the likelihood of their contact with the virus (Millett, Flores, Peterson, & Bakeman, 2007).

Although behavioral interventions alone have yet to demonstrate reductions in HIV incidence, biomedical interventions may; however, they require behavioral components in order to be effective (Beyrer et al., 2012; McDaid & Hart, 2010; Sullivan et al., 2012). For example, the iPrEX study demonstrated that daily prescription of pre-exposure prophylaxis (PrEP), an ARV pill, reduced the likelihood of infection among MSM and transgender women by 99% among those participants who showed biomarkers of daily adherence (R. M. Grant et al., 2010). In addition, among MSM living with HIV, adherence to ARV medications may reduce the likelihood of HIV transmission, as it has by 96% among heterosexuals (Cohen et al., 2013). Both biomedical interventions, however, rely on optimal adherence, a behavioral target relatively difficult to maintain (Simoni, Pearson, Pantalone, Marks, & Crepaz, 2006). A recent review study modeled how behavioral interventions like condom promotion in concert with biomedical interventions could avert a significant number of new infections among MSM (Sullivan et al., 2012). Combination HIV prevention that is comprehensive may be particularly important in addressing racial disparities, as substantial drivers of HIV racial disparities among MSM appear to be structural, including limited sexual networks, delayed diagnosis of HIV and other STIs (Nelson et al., 2010), and other factors further upstream from the individual level of behavior (CDC, 2010; Doherty, Schoenbach, &

Adimora, 2009; Lisa Bond, 2009; Millett et al., 2007; Millett, Peterson, Wolitski, & Stall, 2006; Oster et al., 2011).

In sum, in the face of a daunting domestic HIV epidemic, biomedical and behavioral interventions have shown some efficacy. However, a stubbornly increasing level of incident HIV infections occurs each year among MSM, suggesting that novel targets to optimize engagement in HIV prevention, especially among at-risk MSM, are urgently needed.

#### **4. ENGAGEMENT OF MEN WHO HAVE SEX WITH MEN IN HIV PREVENTION**

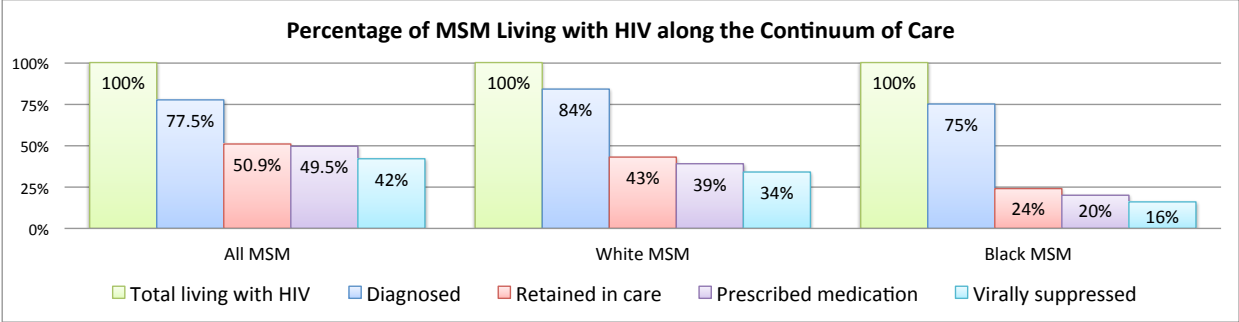
Engagement of MSM in HIV interventions has not occurred at the necessary pace to curb incidence (Beyrer et al., 2012; CDC, 2014e; Coates, Richter, & Caceres, 2008; Khanna, Goodreau, Gorbach, Daar, & Little, 2014; McDaid & Hart, 2010; Sullivan et al., 2012). Across all three cycles of the National HIV Behavioral Surveillance System (NHBS) in 2005, 2008 and 2011, few HIV-negative or HIV status unknown MSM reported participation in behavioral interventions in the previous 12 months. In 2005, only 15% and 8% of MSM reported participation in individual- and group-level HIV prevention programs; in 2008 and 2011, the percentages were likewise low with minimal fluctuation (14% and 7%; 19% and 9%) (Finlayson et al., 2011; 2014; Sanchez et al., 2006). Receipt of condoms, on the other hand, has been proportionally much higher but has declined from 80% in 2005 to 69% in 2011 (Finlayson et al., 2014; Sanchez et al., 2006), just as the number of MSM reporting not using a condom at least once in the past year has increased (45%, 54%, 57% across each cycle,  $p < .001$ ) (Paz-Bailey et al., 2013). The NHBS relies on public venues for recruitment and considers one-on-one or small-group conversations as a proxy for CDC-endorsed evidence based interventions

(CDC, 2015c). As such, even the low proportion estimated by the NHBS may overestimate participation and underestimate HIV risk behavior because the survey does not sample MSM online (Sanchez, Smith, Denson, Dinunno, & Lansky, 2012b).

Use of PrEP and PEP, which could significantly lessen HIV incidence among uninfected MSM (R. M. Grant et al., 2010), also remains low. In 2011, only 2% of MSM surveyed in the NHBS reported taking PrEP or PEP in the past 12 months (Finlayson et al., 2014) and in a nationally representative sample of ( $N = 431$ ), only 25% of MSM surveyed in 2014 knew that ART significantly reduced the risk of passing HIV to sexual partners and only 26% knew about PrEP (KFF, 2014). In addition, the increase in condomless anal sex may reflect the adoption of other behavioral strategies intended to lower HIV risk, like having anal sex with someone of the same HIV serostatus (serosorting) or positioning as the receptive or insertive partner based on the serostatus of partners during anal sex (seropositioning). These harm reduction strategies hold the promise of risk reduction, but accurate discernment of serostatus is difficult (Paz-Bailey et al., 2013).

Among MSM living with HIV, surveillance data also suggest a significant problem with engagement and retention in HIV care. As many as 20% of MSM living with HIV in the U.S. are undiagnosed (CDC, 2014a). Of those diagnosed, only 77.5% are linked to medical care, only half 50.9% are retained in care, and only 42% are virally suppressed (Singh et al., 2014). This “treatment cascade” declines even more dramatically among Black MSM, as seen below in Figure 1 (Rosenberg, Millett, Sullivan, del Rio, & Curran, 2014). Coupled with findings about the limited efficacy of condoms, difficulties with retention in HIV care may pose a significant risk to community-level viral suppression

Figure 1. The HIV Care Cascade among all MSM and among White and Black MSM



Data for "All MSM" is based on venue-based sampling (Singh et al., 2014); data for "White MSM" and "Black MSM" is based on mathematical modeling (Rosenberg et al., 2014).

(Miller, Powers, Smith, & Cohen, 2013). According to a meta-analysis of MSM living with HIV (N = 18,121), most do change their behavior immediately after receiving an HIV diagnosis. Modeling of post diagnosis behavior change appears to show a significant preventive effect on population level incidence (Khanna et al., 2014). Still, the prevalence of serodiscordant condomless anal sex is estimated to be 26% (Crepaz et al., 2009). This leaves sexually active MSM unnecessarily more at risk of HIV given that both undiagnosed and diagnosed MSM not in HIV care are living with unsuppressed virus and therefore unnecessarily more infectious to their sexual partners (Donnell et al., 2010; Rodger et al., 2014).

Even though HIV infects men primarily through anal sex (Baggaley, White, & Boily, 2010; Dosekun & Fox, 2010) and post-diagnosis behavior change may decrease HIV incidence among MSM (Khanna et al., 2014), health workers rarely discuss sex with PLHIV. Several quantitative and qualitative studies suggest limited engagement in discussions about prevention options, with significant barriers to engaging MSM. In general, discussion of sex occurs in less than 50% of clinical encounters in HIV care (Flickinger, Berry, et al., 2013a) with discussion of specific sexual practices in only 6%

of encounters (S. F. Morin et al., 2004). Use of motivational strategies and language that would be conducive to behavior change also appears to be exceptionally rare (Flickinger, Rose, et al., 2013b). One study involved video recordings of clinical interactions and concluded that in 73% of encounters clinicians did not elicit enough information to be able to assess their client's HIV risk (Epstein et al., 1998). When prevention counseling does occur, it is more often during initial than ongoing visits (Metsch et al., 2004) despite that sexual behavior changes over time. Providers also report difficulty broaching the subject of sexual behavior, particularly sex between men (Drainoni, Dekker, Lee-Hood, Boehmer, & Relf, 2009), which may explain why MSM historically have been less likely than heterosexuals to receive prevention counseling in HIV clinics (Marks et al., 2002). Additionally, a recent qualitative study of HIV healthcare providers ( $N = 40$ ) in 6 U.S. cities observed variability in comfort obtaining a sexual history with MSM, an essential component to identify and tailor opportunities for intervention (Carter, Hart-Cooper, Butler, Workowski, & Hoover, 2014).

Interestingly, MSM appear to be more likely than heterosexual patients to discuss anal health, at least with regard to symptoms associated with HPV infection (e.g., pain, discomfort, and bleeding). At the same time, however, patients who reported serodiscordant sex were 47% less likely to discuss anal health (OR = 0.53, 95% CI: 0.30, 0.93), opening the possibility that anticipation of stigma might inhibit disclosure of health needs and therefore impede access to preventive care. Notably, patients who described their provider as "always responsive" were 69% more likely to discuss anal health (OR = 1.69, 95% CI: 1.13, 2.51), suggesting that provider-level factors might

mediate willingness to discuss a sensitive topic (Rosa-Cunha, Cardenas, Dickinson, & Metsch, 2010).

## **5. STIGMA MAY IMPEDE ENGAGEMENT OF MSM IN HIV PREVENTION**

Social barriers, including stigma toward sexual identity and behavior, likely interfere with MSM engagement in healthcare and HIV prevention more generally (Calabrese, Earnshaw, Underhill, Hansen, & Dovidio, 2013a; Institute of Medicine, 2011; Krakower & Mayer, 2012; Mantell et al., 2009; Wolitski & Fenton, 2011). In 2011, the Institute of Medicine called for large-scale surveys examining social characteristics of sexual minorities and the impact of barriers to engaging in healthcare – particularly discrimination (Institute of Medicine, 2011). For MSM, research shows that health worker discomfort and stereotyping as well as men’s general discomfort and difficulty disclosing sexual identity and activity interfere with access to HIV interventions, including condoms, lubricants and medications (Ayala et al., 2014; 2013; Calabrese et al., 2013a; Kinsler, Wong, & Sayles, 2007; Krakower & Mayer, 2012; Mantell et al., 2009). However, the relation between social barriers like stigma and healthcare engagement among MSM also remains understudied. From 1989 to 2012, only 0.4% of NIH-funded studies focused on MSM; of these studies, only 2.8% involved the topic of health services (Coulter, Kenst, Bowen, Scout, 2014).

Across review studies, *stigma toward HIV* is consistently associated with poor engagement in the very healthcare interventions and safer sex practices necessary to curb the epidemic among MSM. Although the construct has not been consistently defined in the literature (Mahajan et al., 2008), HIV stigma refers to a process of devaluation of people either living with or associated with HIV and AIDS that results in

prejudice and discrimination (Smit et al., 2012). A systematic review of studies among MSM published between 1991 and 2010 concluded that HIV-related stigma and discrimination impede successful HIV testing and treatment and also have been associated with increased sexual risk among both HIV-positive and HIV-negative men (Smit et al., 2012). A different systematic review across populations, including MSM, also found that HIV stigma acts as a barrier to HIV testing and treatment in several settings (Mahajan et al., 2008), but that little is known about how HIV stigma might impede use of novel prevention technologies like microbicides and PrEP, as has also been suggested by others (Sugarman & Mayer, 2013). The review authors also note a dearth of measures to specify distinct forms of stigma at structural and institutional levels and that many stigma measures have not been validated (Mahajan et al., 2008). In addition, measures of stigma directed toward those living with HIV and those at risk of acquiring HIV do not specifically capture stigma toward sexual behavior, which may have differential effects on the health care practices of MSM.

Several hypothesized models, some with recent empirical support among MSM, suggest that *stigma toward same-sex behavior* plays a complicated role in the health of sexual minorities. The sexual stigma model (SSM) describes the process by which MSM experience discrimination and downstream behavioral health responses that may elevate HIV risk (Herek, Chopp, & Strohl, 2007). According to the model, sexual stigma refers to the inferior regard, status, and power accorded to any non-heterosexual behavior, identity, relationship, or community. Sexual stigma can be embodied in three distinct forms. *Experienced* stigma involves negative actions, including acts of neglect and discrimination, which are then *internalized* as part of one's personal value system

and self-concept, then eventually *anticipated* as enacted by others in the future (Herek et al., 2007).

The SSM aligns well with public health literature on “fundamental causes” of disease, which posits that social conditions may produce multiple risk factors and health effects that cannot be eliminated by simply addressing the link between risk factors and disease (Link & Phelan, 1995). For example, stigma toward homosexual acts in the American colonies preceded the more modern phenomenon of stigma toward sexual identities that arose in the 19<sup>th</sup> and 20<sup>th</sup> centuries (Herek et al., 2007). If both laws against sodomy and laws against same-sex unions originated from sexual stigma as a fundamental cause, then even as one set of laws change attitudes related to the other laws can remain. This is partially reflected in increasing public endorsement for civil liberties on behalf of sexual minorities even as the public generally perceives homosexual behavior to be immoral (Loftus, 2001).

As a fundamental cause, sexual stigma begets structural inequalities that privilege heterosexuality (Herek et al., 2007), such as sex education that focuses solely on reproduction or delayed research on the safety and effects of lubricants on rectal cells during anal intercourse (Begay et al., 2011). These structural inequalities that privilege heterosexuality in turn engender acts of discrimination, which have been posited as barriers to healthcare engagement for sexual minorities (Herek, 2009; Institute of Medicine, 2011). like those directed toward anal sex. Likewise, if sexual stigma and racism are both “fundamental causes,” then all MSM and MSM of color in particular are not just vulnerable to a specific disease, like HIV, but to a whole set of diseases and health outcomes that flow from those causes (Link & Phelan, 1995). This

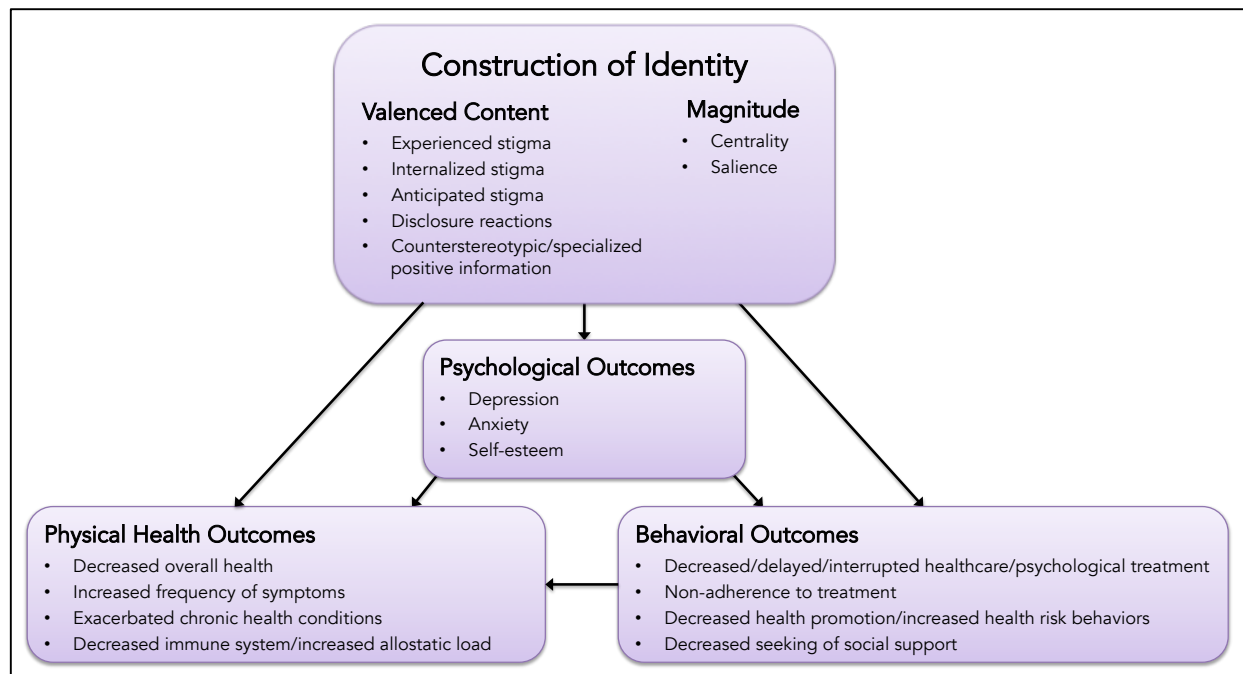
is supported by meta-analyses documenting that racial disparities in HIV among MSM cannot be explained by individual risk factors alone, since Black MSM report the same or less risk behavior than other MSM (Millett et al., 2007). Instead, variability in HIV incidence appears to be explained by structural barriers further upstream from the individual level that are associated with not engaging in care, such as limited access to healthcare (Millett et al., 2012).

If downstream health consequences, like HIV disparities, flow from fundamental causes, it is likewise conceivable that stemming the most proximate risk factors for HIV, for example by increasing condom use during anal sex, will be insufficient to prevent rising incidence, since the fundamental cause, sexual stigma with attendant heterosexism, continues to flow downstream to create health disparities through other tributaries. Contextualizing risk factors for HIV in light of fundamental causes like sexual stigma and racism may help explain why some MSM are at significantly higher risk for HIV infection and also suggest opportunities to stem sexual stigma at higher structural and institutional levels rather than leave the responsibility for reducing risk on the shoulders of individuals (Link & Phelan, 1995).

If MSM are susceptible to sexual stigma as one fundamental cause of HIV disparities, differentiating between stigma mechanisms is important to the extent that they predict different outcomes and help identify critical components for intervention on particular health targets (Earnshaw & Chaudoir, 2009; Earnshaw, Smith, Chaudoir, Amico, & Copenhaver, 2013). As one downstream consequence of sexual stigma, stigma toward anal sex may be essential to assess in order to locate additional sites for structural and institutional intervention.

Recent models of “concealable stigmatized identities” may offer a novel way to measure and specify outcomes of sexual stigma as it manifests toward anal sex. Concealable stigmatized identities (CSIs) are devalued social identities or attributes that can be kept concealed from others (Quinn & Earnshaw, 2011). Like the SSM, CSI models include experienced, internalized and anticipated forms of stigma. CSI studies generally combine identities to gain power for statistical tests, given the low base rate of disclosure. In a study of combined CSIs, participants who internalized and experienced

Figure 2. Concealable Stigmatized Identities: Outcomes Model (Quinn & Earnshaw, 2011)



stigma from healthcare workers anticipated greater stigma and in turn accessed healthcare less, as well as experienced a decreased quality of life (Earnshaw & Quinn, 2012). In addition to specifying psychological, physical, and behavioral health outcomes, the CSI model below adds measures of valence and magnitude (see Figure 2). Valence refers to the range of both negative and positive beliefs about the CSI,

including each form of stigma as well as disclosure reactions and counterstereotypic or positive information (for example, experiences of pleasure during anal sex despite exposure to stigma toward anal sex). Magnitude refers to the relative importance of the CSI for the self via measures of centrality and salience (Quinn & Earnshaw, 2011).

Research on concealable stigmatized identities has demonstrated distinct effects of internalized, anticipated and experienced stigma toward sexual orientation and HIV-positive serostatus (Earnshaw & Chaudoir, 2009). Among sexual minorities and PLHIV, both internalized and experienced stigma have been associated with depression, anxiety, self-efficacy, self-esteem, suicidal ideation, and increased drug use and abuse (Quinn & Earnshaw, 2011). In a community HIV clinic sample ( $N = 95$ ), internalized HIV stigma had significant positive associations with both helplessness and medical care gaps and, marginally, with medication non-adherence. Anticipated HIV stigma was associated with greater likelihood of chronic illness comorbidity, and enacted HIV stigma was associated with greater likelihood of having a CD4 count lower than 200 (Earnshaw et al., 2013).

CSI models are relevant for MSM, because MSM may conceal their sexual behaviors to shield against exposure to discrimination and other effects of sexual stigma (Cole, Kemeny, & Taylor, 1997; Pryor, Reeder, Yeadon, & Hesson-McLnnis, 2004). For example, a study of 72 gay men living with HIV found that rejection sensitive men who were more “out,” and thereby more exposed to stigma, accelerated more quickly in their HIV infection over a nine-year period as compared to men who concealed their sexual identity (Cole et al., 1997). In a similar vein, medical students appear to ascribe greater responsibility toward and greater distancing from fictionalized patients who contract

“AIDS” from “unprotected gay sex” ( $M = 5.21$ ,  $SD = 1.11$ ) compared to a “blood transfusion” ( $M = 1.42$ ,  $SD = .96$ ) (Pryor et al., 2004). In another study, heterosexuals ( $N = 828$ ) harbored differential prejudice based on a fictionalized gay man’s penetrative preferences during anal sex. Respondents underestimated the number of MSM who are exclusively receptive or versatile during anal sex but overestimated the number of MSM who are exclusively insertive, which heterosexuals comparatively favored. In addition, respondents were less likely to report wanting to go to a dinner event when the fictionalized character was versatile vs. when his positional preferences toward anal sex were not specified ( $p = .003$ ). The study authors conclude that greater visibility about the sexual practices of MSM might cause some heterosexuals to harbor less favorable attitudes toward gay men who are out about their sexual orientation (Ayres & Luedman, 2013). These findings support the notion that disclosing specific sexual behavior may add stigma above and beyond that attributed to HIV and to sexual orientation.

Avoiding the subject of anal sex in healthcare may therefore be normative among MSM as protection against exposure to stigma and its effects on health. Concealment, however, is associated with delayed medical treatment, incomplete medical history, and reluctance to seek preventive care (Dean et al., 2000), the very gatekeeping behaviors required to access the evidence-based biomedical and behavioral interventions that are necessary to curb the HIV epidemic. At first glance, a modicum of healthcare engagement appears normative among MSM, with 89% of the 2008 NHBS respondents reporting at least one HIV test, syphilis test, or healthcare visit in the past year. However, only 61% of respondents reported same-sex attraction or behavior to their provider (Meites, Krishna, Markowitz, & Oster, 2013), suggesting that many MSM may

be under-identified for continued intervention. In a Chicago sample of MSM ( $N = 871$ ), 27% reported zero or only one indicator of healthcare access, and this was associated with difficulty disclosing MSM status to providers (“Health care access and health behaviors among men who have sex with men: the cost of health disparities.” 2013). Among 452 MSM in NYC, 39% did not disclose sexual behavior to their health care providers and, notably, no bisexual MSM disclosed (Bernstein et al., 2008). In a community sample of Black MSM, among HIV-positive respondents racial and sexual orientation stigma from providers was associated with longer gaps in HIV care (Eaton et al., 2015).

Concealment may also be moderated by racial group distinctions, since racial minority group MSM are more likely to experience HIV stigma, given racial disparities in prevalence and incidence, as well as sexual stigma and racial discrimination. Studies have found that Hispanic MSM are less likely than White MSM to disclose their sexual identity and behavior (Bernstein et al., 2008) and that, across studies, Black MSM are less likely to identify as gay or to disclose their homosexuality to others, including doctors or healthcare providers (Millett et al., 2012). A CSI study at a community event also found that 29% of Black MSM reported experiences of both racial and sexual orientation discrimination, and that global medical mistrust mediated the relationship between stigma and engagement in care (Eaton et al., 2015). In addition, in the computer-administered General Social Survey, compared to White MSM, Black MSM were twice as likely to report that homosexuality is always wrong (57.1% vs. 26.8%,  $p=0.003$ ) and MSM with unfavorable attitudes toward homosexuality were less likely to report ever testing for HIV (RR = 0.50, 95% CI: 0.31, 0.78; Glick & Golden, 2010). In a

study of young Black MSM ( $N = 40$ ), 90% reported experiences of sexual minority stigma, 88% HIV stigma, and 78% dual stigma and higher levels of sexual minority stigma were significantly associated with less insertive anal sex and higher levels of HIV stigma were associated with more receptive anal sex (Radcliffe et al., 2010).

This suggests that sexual stigma, racial stigma, and HIV stigma might create differential outcomes. For example, among a cohort of HIV-negative Black MSM ( $N = 1167$ ), 19% reported having experienced racial discrimination in healthcare in their lifetimes, but this was associated with increased odds of seeing a provider and testing for HIV within the past year, suggesting that factors other than racial discrimination may be driving healthcare disparities (Irvin et al., 2014).

## **6. STIGMA TOWARD ANAL SEX**

Anal intercourse has consistently been the most proximate risk factor for HIV transmission and acquisition among MSM (Baggaley et al., 2010; Beyrer et al., 2012; Dosekun & Fox, 2010). However, until the Supreme Court ruled that anti-sodomy statutes were unconstitutional, research may have been hindered because the behavior itself was illegal in many jurisdictions (Kelvin, Smith, Mantell, & Stein, 2009).

Only a few published studies have assessed the effects of stigma toward anal sex among MSM, but researchers and funding bodies recognize the general need to measure sexual health among MSM in order to find ways to more effectively engage them in HIV prevention. In 2009, the National Institutes of Health and the Centers for Disease Control and Prevention met with scientists, community representatives, advocates and federal partners, and concluded that future HIV prevention efforts among MSM may gain greater traction if placed in the context of sexual health (Grossman et

al., 2011). Given the challenges in the epidemic, a potential opportunity to innovate and improve health service access and retention among MSM in the U.S. could be culturally specific, de-stigmatized messaging on the topic of sexual pleasure and health (Bourne et al., 2013; Robinson, Bockting, Rosser, Miner, & Coleman, 2002; Wolitski & Fenton, 2011). De-stigmatizing sex between men in this way would likely increase engagement in HIV prevention and healthcare (Sullivan et al., 2012; Wolitski & Fenton, 2011). However, this first requires measuring sites of possible intervention, specifically actual concerns MSM harbor about stigma and anal sex that might impede their engagement in prevention.

Few studies have explored anal sex more broadly than in relation to HIV (Heywood & Smith, 2012; Sandfort & de Keizer, 2001), despite that stigma toward anal sex likely influences the manifestation of specific sexual concerns among MSM, even concerns that ostensibly have little relation to preventing HIV. However, non-HIV specific concerns about anal sex likely inform both HIV-relevant decisions during sex as well as concealment of sexual health needs during clinical encounters.

In a study of college students ( $N = 172$ ) asked about their relationship to fecal matters (i.e., bowel movements, gas), embarrassment and shame was moderated by the nature and duration of the social relationship. For example, discomfort over a bowel movement being heard by someone else was highest in relation to a “new date” but lower in relation to a long-term romantic partner, and discomfort was most salient among women and sexual minority men (Weinberg & Williams, 2005). This suggests that MSM may be susceptible to different levels of internalized stigma during or while

discussing anal sex, depending on the context of a relationship (e.g., a casual sexual relationship, a new healthcare provider).

A longitudinal qualitative study of young MSM in Norway ( $N = 20$ ) suggests possible consequences of experienced stigma, in particular the absence of accessible knowledge about anal physiology and sexual functioning. For example, one young MSM attributed the “involuntary” closure of his anal sphincters during penetration to the manifestation of unconscious fears about contracting HIV, rather than to a physiological response to a sexual position (Middelthon, 2002). Likewise, in the absence of a physiological explanation of prostate stimulation as a source of pleasure and orgasm during receptive sex, respondents felt ashamed of their pleasure and some attributed pleasure during penetration to femininity (Middelthon, 2002). This attribution may be particularly important, since MSM who are relatively more feminine than their sexual partners are less likely to assert use of condoms during anal sex (Fields et al., 2012). In general, the young MSM in the study expressed doubts, anxieties, fears and conflicts relating to being anally penetrated, despite continuing to practice receptive anal sex (Middelthon, 2002). This might indicate how valence moderates one’s relationship to stigma, as a common narrative in the interviews included counterstereotypic or positive experiences of pleasure despite at times experiencing preventable pain simultaneously (Middelthon, 2002; J. Morin, 2010).

Most other research among MSM either has examined sexual health as it pertains narrowly to infection, namely HIV/AIDS (Coulter et al., 2014), or has lingered on the topic of pain and dysfunction (Institute of Medicine, 2011). Several studies have established that discomfort and pain during anal intercourse are common among MSM

(Damon & Rosser, 2005; Hirshfield et al., 2010; Hooper, Rosser, Horvath, Oakes, & Danilenko, 2008; Rosenberger et al., 2011; Rosser, Short, Thurmes, & Coleman, 1998; Rosser, Metz, Bockting, & Buroker, 1997). Rosser and colleagues were the first to examine the topic and concluded that 63% of MSM experienced mild-to-moderately severe pain occasionally or fairly frequently, that 13% met criteria for *anodyspareunia* (severe and frequent pain), and that some MSM experienced no pain at all (1997; 1998). However, the sampling in these studies could bias prevalence estimates, since respondents were recruited via workshops; they might have been more comfortable being “out” as gay or bisexual than the general MSM population. A larger, online survey of gay and bisexually identified men ( $N = 24,787$ ) recruited from a men-seeking-men website found that 49% reported at least a little pain during their most recent receptive anal intercourse and 14% reported moderate to extreme pain (Rosenberger et al., 2011). Responses, however, were only elicited from participants about their most recent sexual encounter; reporting about recent behavior might underestimate lifetime experiences of discomfort or more subtle aspects of concern (like hygiene or sexual function) that may influence whether and how anal sex was recently practiced.

Only one study, a cross-sectional anonymous online survey of MSM in the U.S. ( $N = 7,001$ ) from gay-oriented websites between 2004 and 2005, found an association between pain and infectious disease. The study analyzed four latent classes of concern about sexual dysfunction: “no/low sexual dysfunction,” “erection problems/performance anxiety,” “low desire/pleasure,” and “high sexual dysfunction/sexual pain.” Pain was not specified as relating to anal sex, but the authors found a significant association between high dysfunction/pain and recently acquired infectious diseases other than HIV

(Hirshfield et al., 2010). Taken together, these studies indicate that a significant proportion of MSM may experience pain and discomfort during anal sex, and that this might be associated with HIV risk.

The documentation of pain and other concerns among MSM suggests that additional undocumented facets of anal sex are important to measure, as how MSM respond to concerns may mediate the relation between stigma and HIV risk. In general, MSM appear to mitigate their anal sex concerns with behavioral responses, like substance use and rectal douching, which actually increase HIV risk. Use of alcohol, amyl nitrite (i.e., “poppers”), or methamphetamine may minimize concern about receptive role or pain during anal sex (Collier, Sandfort, Reddy, & Lane, 2014; Damon & Rosser, 2005; J. Morin, 2010; Myers et al., 2004; Romanelli, Smith, & Thornton, 2004; Semple, Patterson, & Grant, 2002), but each substance is strongly associated with HIV transmission (Buchbinder et al., 2005; Menza, Hughes, & Celum, 2009). Likewise, douching may mitigate concern about contact with feces (Calabrese, Rosenberger, Schick, Novak, & Reece, 2013b; Carballo-Diequez et al., 2007; Carballo-Diequez, Bauermeister, Ventuneac, Dolezal, & Mayer, 2010; Hensel, Rosenberger, Novak, & Reece, 2012; Noor & Rosser, 2014), but douching renders mucosa more susceptible to HIV acquisition (Noor & Rosser, 2014) and the odds of a sexually transmitted infection (STI) are elevated among those who douche (Javanbakht, Stahlman, Pickett, LeBlanc, & Gorbach, 2014). Additionally, some MSM report douching after sex to prevent HIV, despite a likely opposite effect than the one intended (Carballo-Diequez et al., 2010; Noor & Rosser, 2014). More protectively, MSM may use condoms both to mitigate contact with feces as well as to protect against infectious disease (Hensel et al., 2012).

Likewise, MSM may use lubricants to prevent painful intercourse (Collier et al., 2014). Lubricants are necessary for effective rectal use of condoms, but paradoxically are also associated with increased rectal susceptibility to HIV and STIs (Begay et al., 2011).

The aforementioned studies suggest some anal sex concerns and behavioral responses among MSM. However, more comprehensive and theory-based research is needed. For some MSM, anal sex concerns may, at face value, have little to do with HIV (for example, be designed to increase pleasure or reduce pain). Nonetheless, these concerns suggest the influence of sexual stigma as well as opportunities to inform culturally-specific HIV interventions and ways to design institutional and structural approaches to prevention (Collier et al., 2014). Indeed, a 2008 study asked MSM ( $N = 2,716$ ) what they most wanted in a hypothetical online HIV intervention. Among the top requests were “Physical sexual health” like testicular cancer and prostate health (86%), “How to have anal sex without pain” (74%), and “How to be a better lover” (86%) (Hooper et al., 2008). Interestingly, another study of MSM “hook-up” website users ( $N = 3,050$ ) found that 68% were interested in interventions that included “tips for having hot, healthy sex” but that only 41% of state HIV/STD directors ( $N = 81$ ) deemed such a topic effective, likely to be used, or acceptable (Wohlfeiler et al., 2013). This suggests that public health officials need to better understand anal sex concerns and stigma toward anal sex, as how MSM cope with their concerns may elevate their HIV risk but may not be readily known or easy to disclose and address within healthcare settings.

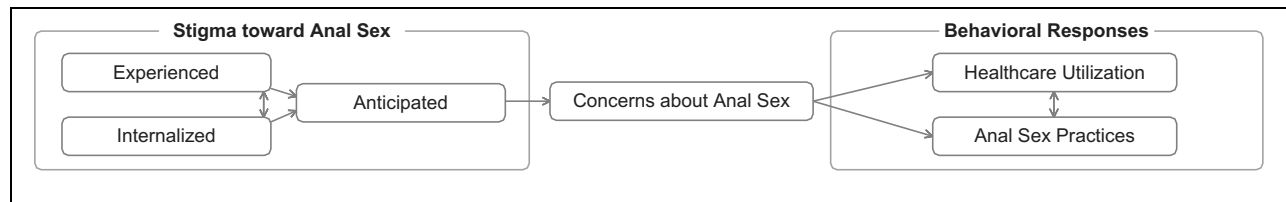
A novel concern to assess would be the consistent use of antiretroviral therapy, which reduces HIV risk (Rodger et al., 2014) but may also produce diarrhea (Goldstone & Welton, 2004; Hill & Balkin, 2009). Diarrhea also may simply be more prevalent

among HIV-positive people (MacArthur & DuPont, 2012), pitting adherence to HIV treatment against protection from embarrassment during anal sex. Other anal sex concerns may include ‘normal’ sexual functioning, like orgasm, sphincter control, prostate health, and bleeding. Assessing whether and how these concerns and behavioral responses vary among MSM may be essential when considering intervention for subpopulations of MSM. For example, HIV-positive MSM appear to be more likely to douche (Carballo-Diequez et al., 2007) and less interested in the topic of how to reduce painful intercourse (Hooper et al., 2008); younger MSM are both more likely to douche and to experience pain (Hirshfield et al., 2010); and racial groups differ in their interests regarding learning to reduce pain (Calabrese et al., 2013a; Hooper et al., 2008).

## 7. A PRELIMINARY ANAL HEALTH STIGMA MODEL

The preliminary Anal Health Stigma Model (AHSM) draws from theory on sexual stigma, HIV stigma, and concealable stigmatized identities (Earnshaw & Quinn, 2012; Herek, 2009; Herek et al., 2007; Mahajan et al., 2008; Quinn & Chaudoir, 2009). The AHSM describes how **stigma toward anal sex** leads to two behavioral responses that elevate HIV risk: risky **anal sex practices** (e.g., douching after sex, reliance on substance use to ease discomfort or pain, unprotected serodiscordant penetration) and poor **healthcare utilization** (e.g., concealment of sexual behavior and prevention needs, less retention in HIV care). These two outcomes interact with one another (Figure 3); for example, condomless serodiscordant anal sex while using ARV medication as prescribed would not be an equivalent risk to the same anal sex practice in the absence of healthcare utilization (Cohen et al., 2013; R. M. Grant et al., 2010). The relations between anal sex stigma and these two outcomes is mediated by **anal**

Figure 3. A preliminary Anal Health Stigma Model (AHSM)



**sex concerns**, which include HIV but also broader interests like mitigation of pain and discomfort, management of personal hygiene, and maximization of sexual functioning and pleasure. We conceptualize stigma toward anal sex as **experienced** negative actions, including acts of omission (e.g., public health messages to avoid anal sex, derogation of MSM who enjoy receptive anal sex, or the absence of sex education or knowledge about normal physiological functioning during sex). These experiences may be **internalized** or accepted as part of one's personal value system and self-concept, as in thoughts of disgust even while enjoying anal sex or resignation that preventable pain is punishment for pleasure or a an unconscious sign of fear about HIV. Eventually, an individual who experiences and internalizes stigma develops **anticipated stigma** or the expectation that other people, including partners and healthcare providers, will enact stigma in their responses toward the individual. This in turn provokes the need to hide concerns during anal sex and in healthcare settings (Quinn & Chaudoir, 2009) via the *behavioral responses* described above.

The behavioral responses subsequent to experienced, internalized and anticipated stigma may be mediated by additional valenced content, such as *counterstereotypic/positive experiences*. For example, pleasure during anal sex (Middelthon, 2002), social support (Ayala, Bingham, Kim, Wheeler, & Millett, 2012; Rao et al., 2012), informative and nonjudgmental discussions about physiology (Middelthon,

2002), and simple empathy from a clinician (Gu, Lau, Wang, Wu, & Tan, 2015) have all shown mediation effects between stigma and behavioral responses. These counterstereotypic experiences may inoculate some MSM against anticipated stigma, emboldening future positive behavioral responses like engagement in anal sex practices and healthcare utilization that lessen HIV risk during sex.

Likewise, the centrality and salience by which MSM identify with anal sex (e.g., frequency, desire) may also magnify the extent to which stigma produces behavioral responses. Stigma may be more negatively or positively valenced among MSM who frequently engage in or desire anal sex. In addition, about 40% of MSM will develop depression in their lifetimes (Bostwick, Boyd, Hughes, & McCabe, 2010). Rates of mood and anxiety disorders among MSM are twice that seen among other men (Bostwick et al., 2010) and mental health has been demonstrated as a mediator between stigma and sexual risk behavior (Preston, D'Augelli, Kassab, & Starks, 2007). This suggests that stigma-related sequelae like anxiety and depression may differentially influence the internalization of and cognitions about experienced stigma and, subsequently, behavioral responses. Finally, stigma toward anal sex may be amplified by experiences of HIV stigma (Logie & Gadalla, 2009; Mahajan et al., 2008) and racial stigma, as has been suggested by medical student reluctance to prescribe PrEP to Black MSM in comparison to White MSM (Calabrese et al., 2013a) and research on multiple stigmas (Ayala et al., 2012; Mizuno et al., 2011).

## **8. SUMMARY AND CONCLUSION**

While there have been many medical advances in the fight against HIV/AIDS, there is still no cure. The combination of behavioral and biomedical interventions in the

hopes of decreasing the burden of HIV among MSM is promising, but relies on engagement in safer sex practices in concert with healthcare utilization. Given that MSM continue to be at highest risk for HIV acquisition and transmission and are susceptible to multiple forms of stigma, there is a need for measurement of anal sex stigma and ways to use that information to develop strategies to mitigate concerns at the same time as reduce behavioral responses that elevate HIV risk. Research in this area has tremendous potential to capitalize on MSM interests in sexual health to improve their engagement in HIV prevention.

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## VITA

My long-term research commitment is to find new ways for HIV services to reach people who are otherwise unlikely to access or sustain their engagement in healthcare. Prior to graduate school, I worked in public health interventions among key populations disproportionately affected by HIV/AIDS, particularly injection drug users, sex workers, marginally housed people, and sexual, racial and ethnic minorities. These years were an amalgamation of direct service, training healthcare workers, and organizational development within non-governmental organizations. Eventually, I migrated to research focused on implementation science. In 2010, I sought further education and graduated in 2012 with a Master in Public Health (MPH) degree in Epidemiology from Columbia University's Mailman School of Public Health. During this period, I developed deeper interests in behavioral interventions, like motivational interviewing, which lead me to doctoral training with Dr. Jane Simoni in Clinical Psychology at the University of Washington. I entered training intent to equip myself with independent research skills. I wanted answers to questions about access to healthcare and novel opportunities for intervention. I aim to continue this focus on the development and implementation of approaches that lessen health disparities among marginalized populations, particularly in the HIV epidemic, through postdoctoral training at the HIV Center for Clinical and Behavioral Studies at the New York State Psychiatric Institute and Columbia University.

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