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Negotiating sexual safety in the era of biomedical HIV prevention: relationship dynamics among male couples using pre-exposure prophylaxis

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Abstract

Up to two-thirds of new cases of HIV transmission between gay, bisexual and other men who have sex with men in the USA are attributed to primary relationships. Understanding the relationship dynamics and sexual agreements of male-male couples can provide insight into HIV transmission patterns and prevention needs in this population. The daily use of antiretroviral pre-exposure prophylaxis (PrEP) is highly effective in preventing HIV, but its negotiation and use within social and intimate relationship contexts remain understudied. We conducted semi-structured qualitative interviews with 20 male couples (n = 40 men) in which at least one partner was either using or in the process of initiating PrEP. Congruent with a theoretical focus on social theories of relationships and negotiated risk, couples were interviewed about relationship dynamics, trust,

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communication and sexual health practices, including their perception and use of PrEP. Overall, we found that couples showed heightened trust and communication when establishing open, sexual agreements and demonstrated high awareness of sexual risks and health practices in the context of PrEP use. This study demonstrates how understanding relationship dynamics can better inform HIV prevention and sexual health promotion efforts for male couples at risk of HIV.

Keywords

HIV prevention; pre-exposure prophylaxis; men who have sex with men; relationships; sexual health; USA

Introduction

As many as two-thirds of new HIV infections between gay, bisexual and other men who have sex with men in the USA have been attributed to primary relationships in which condomless anal sex is more common than it is within casual partnerships (Prejean et al. 2011; Sullivan et al. 2009). Condom use within steady relationships may signify mistrust or infidelity (Pivnick 1993), while condomless sex among male-male couples has been associated with increased intimacy, trust and feelings of commitment, and reduced perceived risk and greater interest in HIV testing (Chakravarty et al. 2012; Palmer and Bor 2001). In many couples, condomless sex may also be used as a strategy to preserve relationship stability (Cusick and Rhodes 2000; Rhodes and Cusick 2000, 2002). Given the role of these relationship dynamics in potentiating HIV transmission in diverse groups of men who have sex with men, increasing interest is being directed towards the identification of specific HIV prevention intervention needs among male couples (Campbell et al. 2016).

Risk mitigation practices among serodiscordant couples (i.e. couples in which one partner is HIV-infected and the other is uninfected) are increasingly recognised in efforts to address HIV transmission. Early qualitative research provided insight into the stressors and coping strategies utilised by serodiscordant couples as partners negotiated their intimacy practices in light of HIV-infected partners' diagnoses (Palmer and Bor 2001). For example, serodiscordant couples may use knowledge of HIV-infected partners' viral suppression as a tool for informing decisions on sexual positioning and condom use (Van Den Boom et al. 2013). An exploration of relationship dynamics among serodiscordant couples in Sydney, Australia, also revealed how the success of treatment as prevention in reducing HIV transmission can alleviate the stigma of increased risk that is usually associated with serodiscordant couples (Persson 2016b). Furthermore, a recent study among serodiscordant male couples found that HIV-infected partners experienced greater intimacy and sexual satisfaction through engagement in riskier sexual behaviours (e.g. condomless anal sex), while HIV-uninfected partners preferred safer behaviours (Starks, Gamarel, and Johnson 2014). Conversely, another study found that HIV-infected men who have sex with men who exhibited a greater sense of unity in their relationship with their partner found greater satisfaction in sexual activities that were protective in preventing HIV transmission compared to riskier activities (Gamarel et al. 2014).

Negotiating sexual risks among couples with concordant HIV-uninfected status was initially studied among Australian gay and other homosexually active men (Crawford et al. 2001; Kippax et al. 1997). Related literature has described the formation of sexual agreements, or sets of rules pertaining to sexual practices within and outside of male couples' primary relationships (Holt 2014; Jin et al. 2009; Kippax et al. 1993). Due to the common inclusion of rules regarding condom use with external partners, sexual agreements have been increasingly examined for their potential role in influencing HIV transmission (Gass et al. 2012; Mitchell 2014). Some sexual agreements are open, allowing sex with outside sex partners while containing specific stipulations about condom use with different types of partners. Couples have described how adhering to their agreements can help demonstrate trust, intimacy and respect for primary partners (Gomez et al. 2012). An improved understanding of sexual agreements and related relationship dynamics could help with the development of appropriate sexual health programming for male couples, particularly in the era of biomedical HIV prevention strategies.

Relationship dynamics in the age of PrEP

Antiretroviral pre-exposure prophylaxis (PrEP) is a highly efficacious HIV prevention when adhered to daily (Grant et al. 2010) or taken on-demand (Molina et al. 2015), and is likely to influence same-sex male couples' intimate relationships as it becomes more widely known and used. A nascent body of research has shown that serodiscordant and concordant HIV-seronegative male couples may view it as a means to increase intimacy through condomless sex (Gamarel and Golub 2015; Hoff et al. 2015). PrEP has thus stirred controversy and concern regarding the potential for risk compensation (e.g. increased incidence of condomless anal sex) and concomitant increases in STI transmission (Scott and Klausner 2016). Related to these concerns are implicit, problematic assumptions that gay, bisexual and other men who have sex with men who use PrEP are merely seeking an excuse to engage in riskier sex (Calabrese and Underhill 2015). However, within male couples, potential partner support may instead facilitate disclosure about PrEP use and improve adherence (Mimiaga et al. 2014). In the light of the high prevalence of open sexual agreements among male couples, more research is needed on how PrEP and other sexual health promotion strategies are discussed and negotiated among couples. Furthermore, the stigma surrounding PrEP use is a pertinent topic to explore within the context of male couples' relationships as they navigate sexual safety and relationship intimacy.

In this study, we qualitatively examine relationship dynamics and processes of sexual agreement formation and implementation among male couples using PrEP. We also explore how PrEP serves as a tool among serodiscordant and other sexually open couples to mitigate HIV risks while upholding sexual intimacy. Our study is grounded in a social and relational perspective that recognises how intimate couples negotiate competing risks of infectious diseases with desires to protect emotional and physical relationships (Cusick and Rhodes 2000; Rhodes and Cusick 2000, 2002). In the era of biomedical HIV prevention, we argue that understanding these relationship dynamics provides an important basis for informing sexual health promotion efforts for male couples.

Methods

Study design and population

We conducted a qualitative study with same-sex male couples in which at least one partner had been prescribed PrEP or was interested in using PrEP for HIV prevention. Couples were recruited through an urban health centre in Boston, Massachusetts that provides primary care to a large population of men who have sex with men, including more than 1,000 currently prescribed PrEP. We also recruited men through local community-based organisations that have missions of alleviating the burden of HIV and promoting sexual health among gay and other men who have sex with men. Eligibility included being born biologically male, identifying as male at the time of the study, being ≥ 18 years of age and being in a committed relationship with another man for ≥ 3 months. Within couples, eligibility also included having at least one partner currently using PrEP or in the process of obtaining a PrEP prescription through the health centre. Couples who reported any intimate partner violence during screening were ineligible for the study and referred to onsite services. We employed purposive sampling methods (Johnson 1990) to obtain a sample of men reporting recent condomless sex with multiple outside partners that also represented diverse relationship characteristics (e.g. relationship duration) and couple HIV status (e.g. serodiscordant or concordant HIV-uninfected). Recruitment occurred through doctors who prescribed PrEP with patients of known HIV-negative status as well as having participants referred to the study by doctors, research staff of other studies and other participants. Each partner provided written informed consent through a process that was conducted individually in private study rooms (i.e. with each partner separately). The Institutional Review Board of the Fenway Community Health Center approved all study protocols.

Data collection

Following enrolment, a trained interviewer conducted brief, individual quantitative assessments lasting approximately 15 min in private study rooms (i.e. with each partner separately) to protect privacy and allow disclosure of individual risk behaviours. Participants were assured that survey information would not be revealed during couple qualitative interviews or otherwise shared with partners. Surveys assessed socio-demographics and relationship characteristics, including relationship satisfaction, the presence of sexual agreements and attitudes towards and experience using PrEP. The interviewer then conducted audio-recorded couple qualitative interviews (i.e. with both partners together) lasting 45–60 min.

Congruent with our focus on risk negotiation within social and intimate relationships (Cusick and Rhodes 2000; Rhodes and Cusick 2000, 2002), semi-structured interview guides contained open-ended questions and detailed probes to explore couples' relationship formation and growth, current relationship dynamics, communication patterns, sexual risk and sexual health behaviours including PrEP uptake and continued use and formation and types of sexual agreements (e.g. completely open to outside partners, open with some rules or restrictions, closed to outside partners and other arrangements). Immediately following interviews, the interviewer recorded detailed observations on interview content, couple

dynamics and emergent findings to help initiate the analytic process (Emerson, Fretz, and Shaw 2011).

Data analysis

Interviews were transcribed and reviewed for accuracy and to identify emergent themes to explore in subsequent interviews (Kvale and Brinkmann 2009). Study staff met weekly to discuss progress and saturation of key themes (i.e. whether participants were reporting recurring themes without providing new insights) (Guest 2006). We employed a collaborative codebook development process (Decuir-Gunby, Marshall, and Mcculloch 2011; Macqueen et al. 1998) in which five research team members independently read selected transcript excerpts to generate potential codes based on key topics of interest (e.g. domains of the interview guide) and emergent themes (Ryan and Bernard 2003). This group then met to create a preliminary codebook to independently apply to another set of transcripts. We compared preliminary coding for consistency, discussed and resolved discrepancies within the group and revised the codebook and clarified code definitions as needed. Two analysts applied final codes to transcripts using Atlas.ti, qualitative research software that enables tracking prevalent codes and organising quotes for relevant themes (Paulus and Lester 2016). Study staff met weekly to discuss coding, connections between themes and preliminary findings (Corbin and Strauss 2008). Key findings are summarised below and include representative quotes using pseudonyms to protect confidentiality.

Findings

Couple characteristics

Among 20 couples (n = 40 men), median age and relationship duration were 33 and 5.5 years (interquartile range [IQR]: 29–45 and 2–11; Table 1) respectively. Seventeen couples had past or current PrEP experience, and 14 had at least one partner currently using PrEP at the time of the interview. Sixteen couples had concordant HIV-uninfected status. Among the four serodiscordant couples, all HIV-uninfected partners had PrEP experience, and two were currently using PrEP. In individual surveys (conducted with each partner separately), 75% of men reported being ‘happy’, ‘very happy’ or ‘perfect’ within their primary relationships, 75% had outside sex partners in the past three months (median number of outside partners: 3; IQR: 1–6) and 90% had a sexual agreement with their primary partner. Within couples (drawing on survey data provided by both partners), only eight couples were consistently using condoms with outside sex partners.

In joint qualitative interviews (conducted with both partners together), 15 couples described forming open sexual agreements in which both partners were allowed to have outside sex partners as long as condoms were used or if both primary partners were present for sex with outside partners. In the following sections, we first describe the context of the couples’ sexual agreement formation, communication skills and trust and intimacy in the context of emotional monogamy for sexually open couples. Subsequently, we illustrate how couples incorporated PrEP into their relationships as a strategy to promote both sexual and relationship intimacy and safety. In the final section, we comment on the small sub-set of

couples who did not have open sexual agreements and those whose serodiscordant HIV status presented additional biomedical challenges in their social relationships.

Foundational issues in couples' communication and sexual agreements

Establishing a foundation for an agreement—A key component of successfully discussing and agreeing to have an open relationship was ensuring that there was a solid foundation of love and trust before allowing sex with outside partners. For some couples like Drew, age 26, and Jimmy, 25, who were serodiscordant, focusing on each other monogamously at the beginning of their relationship made it easier to establish an open agreement later on. They had been together for a little over a year and a half. Drew was HIV-infected, and Jimmy, uninfected, was currently using PrEP. They described how their sexual agreement evolved over the course of their relationship:

> Drew: Our rules and agreements have changed over the past couple of years … First we were strictly monogamous, pretty much because we were still trying to learn each other and what the other person was comfortable with, and kind of be aware of that … Once we got to a point where we were comfortable enough to be with other people, we were open to possibly exploring that a little bit.
>
> Jimmy: Yeah, I completely agree. One of the important things at first was establishing our emotional connection with one another. I'm of the belief that you can have an emotional connection with someone and you can have a sexual connection, [but] you can separate the two. Emotion and sex go together with us, but sex with outside partners doesn't necessarily involve any sort of emotion or feelings towards that person.

Establishing and recognising the strong emotional connection within their relationship allowed for Jimmy and Drew's relationship to evolve and become stronger over time. Jimmy and Drew were able to develop greater feelings of trust towards one another once they were sure that their emotional bond was unique and held precedence over any other connections with outside partners. Taking the time to focus on their relationship through monogamy allowed them to evaluate their comfort levels with either being monogamous or sexually open. After discussing their individual sexual needs and desires, the lines of communication within their relationship were improved, resulting in them feeling even closer to each other.

Agreements and improving communication

Other couples also discussed how communicating openly had been difficult during various stages of their relationships, which prompted several couples to seek professional relationship therapy. Couples who reported issues with partner communication described how establishing an open sexual agreement in turn helped them to open up about their sexual needs and desires. This was the case for Tristan and Nicolas, both 51 years old, who said that having an open agreement helped them confide in each other. They were both HIV-negative and were currently using PrEP at the time of the study. They had been together for about 20 years, did not use condoms with one another and rarely used condoms with outside partners. They had decided to use PrEP to help mitigate their HIV risk both individually (from outside partners) and within their relationship:

> Tristan: We were not communicating with each other. We were not really talking to each other. We were not having sex with each other. I had a crush on somebody outside of the relationship and didn't really have an agreement at that time about how that was supposed to work … Previously, our policy was 'at home': no sex

> outside the relationship unless it was a three-way. And when we would go on vacation the rules would loosen up somewhat. And in the past year in counselling we've come to the decision that we want a more open sexual relationship, and that's where the tell/ask policy that we're currently adhering to came from.

They went on to explain that their tell/ask agreement, which required them to always discuss beforehand whether or not they would stay overnight with an outside partner, was a strategy to help ensure that they were spending enough time with each other. Before the development of this agreement, they had not been paying attention to how much time they were spending together or considering the quality of their interactions. After communicating about their own individual interests in opening up their relationship to outside sexual partners, they realised that they valued spending time together as well and needed to make an effort to prioritise their relationship while also allowing it to be more open.

Emotional monogamy—An important value in couples' open relationships was a uniquely shared emotional connection that still permitted having sex with outside partners. While these couples were sexually open, they considered themselves to be emotionally monogamous. For some couples, conversations about sex with outside partners were sparked by occasions of infidelity when relationships were still closed. For instance, Jason, 35, and Alan, 40, had been together for over eight years and initially had a closed relationship requiring mutual sexual monogamy. At the time of the interview, both men were HIV-negative and were interested in using PrEP within their now-open relationship. Jason discussed how a moment of infidelity on his part led to a conversation with Alan about opening up their relationship:

> Jason: When we first got together, there was a discrepancy. I was not faithful. We were solely with each other and I broke that contract, and we almost separated. But we ended up staying together and discussed allowing other people to be involved, but only if we were together. And, you know, he had always had that and I was intimidated by it, but I think it's actually healthier, you know, more realistic. I don't think we're monogamous creatures by nature. So, we sort of re-discussed our contract. There's grey areas, and every once in a while, some issues pop up, but I think for the most part it works.

Thus, due to Jason breaking their initial agreement to have a closed relationship, he and Alan revisited their agreement and adapted it to their sexual needs. Jason reflected on how this process, while difficult, ultimately strengthened their bond as intimate partners:

> Jason: I think we've both relaxed a little bit … I mean, I've gone through my bouts of jealousy, definitely, and Alan was understandably suspicious and not feeling very trusting toward me for quite a while. But I think that sort of relaxed us in different ways. I mean, we're now very comfortable with each other flirting with other guys and talking to other guys.

While staying emotionally monogamous, Jason and Alan re-evaluated their relationship and sexual agreement, together acknowledging that being sexually monogamous could be a long-term struggle involving anxiety and discord within their relationship.

Other couples chose to be open sexually as a means to be more realistic about their sexual needs and to pre-emptively accommodate future desires to have sex with outside partners. Partners discussed how they differentiated between their emotional attachment and loyalty towards primary partners and the sexual connections pursued with outside partners. Craig, 37, and Nathan, 49, who were both seronegative and using PrEP at the time of their

interview, provided insight into this concept while describing their 15-year relationship and what led them to discuss becoming sexually open:

> Craig: When we first got together we had a very blunt conversation about, you know, are we the only people? Nathan asked me, 'Am I the only one that you want to have sex with?' And vice versa. It's a conversation that takes courage to have, and moreover to be honest about it with each other … The honesty with that conversation, I think, ultimately brought us closer.
>
> Nathan: Yeah, because he wanted to have a committed, monogamous relationship, and you know, that doesn't work for me … I believe that there is an absolute psychological and physiological separation between making love to the person that you love – are in love with – and having sex and getting off … And if you're truly in love and in a relationship, I don't think that there's anything that can blur that line really.

Similar to other sexually open couples in the study, Craig and Nathan's comments highlight a distinction between the emotional value of their primary partnership and the physicality of any outside sexual partnerships. Having an open agreement required these couples to understand and communicate this distinction, a process that enabled them to reflect on the intrinsic value of their primary partnership.

Couples' sexual health practices in the context of PrEP

PrEP and sexual agreements—For many of the couples, PrEP use was a logical extension of their sexual agreements and played an important role in agreement discussion and formation. For couples with open agreements, the potential risk of HIV introduced by outside partners made PrEP appear to be necessary within their relationships. Also, in addition to HIV prevention, the use of PrEP served multiple roles within their relationships. For example, in the case of Gavin and Lucas, both 31 and HIV-uninfected, PrEP helped restore trust and comfort into their six-year relationship. In their interview, they explained that they decided that Lucas would use PrEP to help mitigate both of their risks of HIV acquisition after Lucas broke their agreement to always use condoms with outside sex partners:

> Lucas: When I came to have STD tests and said that I had bareback [condomless anal] sex in Florida, [the doctor] said, 'Well, you should consider PrEP', and then I looked into it and we talked about it.
>
> Gavin: And this was sort of the second time that you had impulsively –
>
> Lucas: Yeah, impulsively had –
>
> Gavin: Broken the agreement.
>
> Lucas: No-condom sex.
>
> Gavin: And so, I also felt like PrEP was something that you should do, so that –
>
> Lucas: If I didn't have that bareback sex, would you feel like I should still –
>
> Gavin: I'd still be in favour of it so I wouldn't have the anxiety of you impulsively doing something.
>
> Lucas: More for your own safety or just mine?
>
> Gavin: Both, like, I've lost family to AIDS and don't want to go through that again.

Since the incident, Lucas had been using PrEP as a preventive measure in case he broke their agreement again. Their open dialogue reveals how Lucas's PrEP use seemed necessary for Gavin to feel that they both were protected from HIV.

PrEP and risk mitigation—With PrEP becoming more popular among gay, bisexual and other men who have sex with men in the USA concerns have been raised that PrEP could lead to increased STI transmission through risk compensation or decreased condom use.

However, our interviews with couples in which one or both partners were using PrEP revealed high awareness of sexual health and risk reduction practices including using condoms with outside partners and engaging in regular HIV/STI testing. Jason and Alan, who were both in the process of starting to use PrEP, demonstrated this awareness as they discussed condom use and testing services:

> Alan: We don't use condoms with each other; only when we bring in a third party.
>
> Jason: And there have been a few drunken mistakes over the past couple of years … There were a few people where, you know, they were strictly tops [and] stupidly, a couple of times, I let them top me. They didn't finish necessarily inside of me, but still, you know, a stupid risk. And then we were drunk and a few other things happened … one time a condom broke.
>
> Alan: Yeah, that's why we were nervous and got tested.

Compared to couples with closed sexual agreements or who were not using PrEP, Jason and Alan were accustomed to discussing and mitigating their increased risk from condomless sex with outside partners through utilising regular HIV testing services and initiating PrEP.

Other couples using PrEP at the time of our study also gave considerable thought to their HIV/STI risk and described the precautions they had taken to mitigate such risks. For example, Joel and Marcus, both 32 and HIV-negative, had been together for over three years and were both using PrEP due to their shared risk perception and tolerance for certain STIs over HIV. Joel stated that they were both 'pretty intolerant' of the risk of HIV in the relationship and remarked that contracting other STIs was unfortunate but not 'that big of a deal'. For instance, they reported that they never used condoms during oral sex with outside partners, and although they were aware of the risk of other STIs, they accepted that risk over the potential of acquiring HIV.

The theme of accepting the consequences of partners' risk behaviours also arose in interviews with several other PrEP-using couples, including Eric, 42, and Miles, 47, who were both using PrEP and had been together for five years and were both HIV-negative. After initiating PrEP, they changed a rule in their sexual agreement: instead of always using condoms with outside partners, they decided to allow reliance on personal judgement. They felt that they could take these calculated risks because they were both adherent to the daily dosing of PrEP:

> Eric: Up until probably six weeks ago when we talked about it, it was condoms with anal sex with other people … As the PrEP study data came out, it became obvious that PrEP was very effective, and we're both very adherent, so Miles asked me, 'What do you think about non-condom use with other people?' We discussed it and said, basically, if we feel okay with it, it's okay, and we can deal with the other consequences. We've always had 'no blame' on any STDs, so if we're diagnosed, we don't blame. Now, granted, I've adjusted my [HIV/STI] testing schedule [and] he thinks it's funny and cute sometimes, you know, when that Chlamydia test comes in positive and I'm like beating myself up with, you know, good old-fashioned, slut-shaming, Catholic guilt. And he teases me! But I make sure I get tested –
>
> Miles: That's right, yes, you always came back positive before I even got tested –

Similar to Joel and Marcus, Eric and Miles described prioritising protecting themselves and each other against HIV over other STIs and were more tolerant and accepting (e.g. with 'no blame') when either one of them introduced a curable STI into their relationships.

PrEP among couples with closed agreements—Out of the five couples that had either closed or undetermined sexual agreements in our study, four had used PrEP at some

point within their relationships and three (including one serodiscordant couple) had at least one partner currently using PrEP. The most common motivation for using PrEP among couples with closed agreements was prior experience using PrEP by one or both partners. This was the case for Simon, 25, and Henry, 23, who were both HIV-negative and had been together for five months. Henry explained that he wanted to continue using PrEP so he could be 'realistic' about his relatively new relationship and the possibility that one of them could break their closed agreement:

> Henry: [PrEP] was having a positive effect on my sex life, and there's not really a downside of continuing it, but there might be if I stop. I also think it's good because when I take it, I'm more vocal about it, and I think it's important in our community. [To Simon:] And you know, I trust you completely, and I know you trust me completely, too. But like, if one of us was to slip up, I want to feel safe.

Using PrEP provided Henry with peace of mind that improved his sex life prior to his relationship with Simon, and he wanted that positive effect to continue into his current relationship. In this case, PrEP use in a monogamous agreement became a statement of understanding of the reality that, at least for one partner, agreements regarding sexual monogamy could be accidentally broken.

Serodiscordant couples—Although serodiscordant couples were a small portion of the sample (four couples), there were noteworthy trends among these couples that encourage further examination. Each of these couples had previous experience with PrEP, with one or both partners having used PrEP; for one of the couples, the seropositive partner had used PrEP in the past, but stopped taking it before contracting HIV. Only two of the couples had a seronegative partner using PrEP at the time of the study. Furthermore, these couples had fewer outside sexual partners compared to the other couples in the sample. Two of these couples had closed sexual agreements. The serodiscordant couples in the study (e.g. Drew and Jimmy mentioned earlier) expressed similar sentiments on how being sexually open was separate from being emotionally monogamous and (if using PrEP) discussed similar levels of communication and sexual health security when using PrEP.

Discussion

Our qualitative exploration of communication dynamics, sexual agreement formation and sexual health practices among male-male couples using PrEP lends insight into how couples balance competing needs for sexual pleasure, emotional security and sexual safety in the era of biomedical HIV prevention. Overall, we found that the process of establishing sexual agreements improved couples' emotional connections, had positive effects on their communication patterns and skills and improved men's awareness of both their own and their partners' sexual health needs, desires and risks.

These findings provide an important update to the broader literature on negotiated risk and emotional intimacy among socially marginalised and sexual minority couples. Similar to tensions surrounding the use of condoms for HIV prevention that have previously been described (Cusick and Rhodes 2000; Rhodes and Cusick 2000, 2002), male couples in our study described navigating sexual desires and health priorities while seeking to protect

intimacy and trust within their relationships. In the light of recent debates surrounding risk compensation and increased STI transmission among men who have sex with men using PrEP (Scott and Klausner 2016), our findings also provide important evidence that male couples' sexual health decision-making incorporates considerations of social risks (i.e. threats to relationship intimacy and strength) in addition to – but not instead of – the physical health risks (e.g. HIV, STIs) that are exclusively targeted by public health programming. Such results support previous findings by Persson (2013), who argues that one's perceived HIV risk within a couple, particularly a serodiscordant couple, depends on the social and cultural context of that couple and may not align with the standpoint of public health professionals (Persson 2013).

Interviews with couples in our sample revealed that PrEP enabled more open risk communication within couples, leading to sexual agreements designed with safety, and sexual and emotional desires in mind. Given the persistently high rates of HIV transmission among male couples in the USA, couples' joint decisions to have open relationships without consistent condom use may appear irrational from an HIV/STI transmission standpoint. However, for these couples PrEP provides a layer of additional physical security while enhancing risk communication and emotional closeness through discussions about sexual agreements. Thus, PrEP became a tool that allowed strengthened emotional monogamy and reduced potential for HIV acquisition from outside partners.

Another key finding with implications for improved sexual health is how many of the couples in our sample prioritised HIV prevention over the risk of acquiring other, curable STIs (i.e. gonorrhoea, Chlamydia or syphilis). This result mirrors prior qualitative work conducted among gay men in Sydney who reported similar perceptions of HIV's greater threat to health compared to other STIs (Holt, Bernard, and Race 2010). While, from a public health perspective, tolerance of STI acquisition may not be considered acceptable or logical, narratives from couples in our sample highlight how treatable STI risks are weighed against more irreparable damage to relationship strength and trust. Couples may deliberately forgo condom use, allowing potential STI acquisition with the exception of HIV, in order to signal trust and to privilege their emotional and sexual desires over potential health harms (Cusick and Rhodes 2000; Rhodes and Cusick 2000, 2002). Couples in our sample described continually negotiating multiple and competing social and biological risks that shape their behaviours. Couples were aware of the need for regular STI testing given their sexual behaviours. These findings promote the continued need for periodic STI screenings among PrEP-using couples.

More research is needed to connect our findings with samples of male couples that have closed or ambiguous sexual agreements in order to better understand how such agreements and surrounding discussions shape sexual health among US men who have sex with men. Follow-up work is needed among a larger sample of serodiscordant couples to explore how PrEP affects the importance of viral load of the HIV-positive partner for the couples' sexual health. Although there has been thoughtful research concerning how serodiscordant couples manage sexual risks and HIV-related stigma (Persson and Hughes 2016a), further research on how PrEP affects these relationship dynamics would be informative. For example, would using PrEP encourage someone who previously only considered undetectable HIV-infected

partners to now consider partners who were not virally suppressed? Additionally, although our sample provides insight concerning sexual agreement formation and relationship dynamics, further work is needed to examine the potential role of PrEP in shifting agreements or relationship dynamics. For instance, are there couples that have closed relationships for the sole purpose of preventing HIV risks but who would be open if they had access to PrEP? Furthermore, larger studies with more diverse populations of male couples are needed to adequately assess how PrEP and male-couple relationship dynamics affect the HIV epidemic in men who have sex with men.

Although our qualitative findings add important insights to the HIV-prevention literature on male couples, generalisability is limited for several reasons. Despite efforts to recruit a diverse sample of couples, our sample lacks diversity in race/ethnicity and age. This could reflect the geographic region of our study, the generally lower uptake of PrEP among Black and Latino men who have sex with men across the country or structural barriers including suboptimal PrEP information and service provision across the health care system (Mansergh, Koblin, and Sullivan 2012). This research should be repeated with racial/ethnic minority male couples of younger ages in which HIV incidence is persistently high. Research on these topics is also needed among transgender individuals who remain dramatically underrepresented in the research on PrEP use and sexual relationships to date. Although we assured participants of confidentiality, we cannot exclude the possibility of biased or socially desirable responses, particularly given the process of interviewing both partners together. Furthermore, although we screened participants to ensure the absence of intimate partner violence, there is still potential that emotional or mental abuse within the relationship could affect the validity of the results. Nevertheless, we believe that our findings regarding communication and relationship dynamics surrounding sexual agreements in the era of PrEP have important implications for sexual health promotion efforts.

Importantly, in ushering in a new era of biomedical HIV prevention, PrEP gives couples a new tool for communicating about ways to protect both the physical and emotional integrity of their relationships. Sexual health messaging should encourage the importance of broader communication about sexual risks, desires and relationship needs. For example, new interventions for male couples such as the couples' HIV testing and counselling model encourage partners who test together to more openly discuss their sexual agreements, whether established or not, and strategies about methods for improving sexual and emotional needs and safety (Stephenson et al. 2014; Stephenson et al. 2015; Sullivan et al. 2013). Also, counselling frameworks developed to improve both antiretroviral treatment and PrEP adherence among couples could be adapted to assist male couples in the USA (Morton et al. 2017).

In conclusion, by capturing the experiences and perspectives of men involved in relationships with other men, our study provides important evidence to challenge assumptions that PrEP is only appealing to, or needed by, single, sexually active men who have sex with men with multiple partners. Instead, we found that PrEP played a central role in the process of negotiating sexual agreements and resulted in improved protection of individual health, emotional well-being and relationship integrity. Efforts to promote HIV

prevention among men who have sex with men will increasingly require understanding sexual health practices in the context of PrEP among male couples.

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Table 1

Demographics, relationships and sexual health characteristics of 20 male couples ($n = 40$).

	Med (IQR) or *N* (%)
Age	33 (29–45)
Race	*N* (%)
White	32 (80)
Black or African American	5 (12.5)
Other	3 (7.5)
Median relationship duration in years (IQR)	5.5 (2–11)
Happiness with partner	
Perfect	3 (8)
Extremely happy	19 (48)
Very happy	8 (20)
Happy	4 (10)
A little unhappy	4 (10)
Fairly unhappy	2 (5)
Extremely unhappy	0 (0)
Self-reported couple HIV status	
Concordant HIV-uninfected status	16 couples (80)
Serodiscordant status	4 couples (20)
Currently has a sexual agreement within primary relationship	
Yes	36 (90)
No	4 (10)
Sex with an outside partner in the past three months?	
Yes	30 (75)
No	10 (25)
Median number of outside partners, past three months	3 (0.5–6)
Condom use frequency with main partner	
Always or almost always	4 (10.0)
Sometimes	3 (7.5)
Rarely	1 (2.5)
Never	32 (80.0)
Ever used PrEP to prevent HIV (by individual)	
Yes	27 (68)
No	13 (32)
Currently using PrEP to prevent HIV (by individual)	
Yes	21 (53)
No	19 (47)
Ever used PrEP to prevent HIV (by couple)	
Yes	17 couples (85)
No	3 couples (15)
Currently using PrEP to prevent HIV (by couple)	

	Med (IQR) or *N* (%)
Yes	14 couples (70)
No	6 couples (30)