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Using Virtual Spaces to Engage HIV-Positive Men Who Have Sex With Men Online: Considerations for Future Research and Interventions

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Men who have sex with men (MSM) account for most new infections in the United States (US) and are the only risk group among whom new infection rates continue to rise. The US Centers for Disease Control and Prevention estimate that from 2008 to 2011, the number of new HIV diagnoses among MSM increased by 9%, while decreasing by 11%, 13%, and 28% among heterosexual men, women, and injection drug users, respectively¹.

In this issue of *Sexually Transmitted Diseases*, Margolis et al.² report findings from an Internet-based study of 1319 HIV-positive MSM where they found that 32% of men engaged in anal intercourse without condoms (UAI) with partners at risk for HIV (men of unknown or HIV-negative serostatus). This study has both clinical and public health significance. The sample represents a population of men engaged in multiple high-risk behaviors (UAI, drug use). These behaviors can increase the likelihood for acquisition of other sexually transmitted infections (STIs) and secondary transmission of HIV.³ Importantly, Margolis et al.² demonstrate that these men are “reachable” via existing social media channels. Although subject to some of the limitations of Internet-based surveys,⁴ the anonymity provided by the study design coupled with no participant incentives decreases the likelihood of respondent bias and increases the validity of these study results. Below, we discuss three aspects of the study by Margolis et al.² that could inform HIV/STI intervention research, comment on the implications of these results for Internet-based research for HIV/STIs, and raise the issue of changing meaning of UAI in the context of biomedical advances in HIV treatment and prevention.

Although the sample included within the study by Margolis et al.² was diverse in some important ways (e.g., included men up to age 71 years, living in 49 different states), young MSM and African American MSM were notably underrepresented. In the US, the fastest rise of HIV infections is among MSM aged 13 to 24 years (26% increase from 2008 to 2011), and African American youth are particularly affected accounting for 58% of new

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diagnoses respectively.¹ The make-up of this sample is a reminder that, similar to physical venues, different mobile applications and social networking sites attract different users. Given the magnitude and popularity of Internet use to find sexual partners,⁵ its association with sexual health behavior,^{5,6} and the growing racial disparity in HIV infection among MSM,⁷ researchers and practitioners should be cognizant of the diversity inherent in online environments. Care should be taken to facilitate the development of appropriate online surveys and interventions that are tailored to differences in characteristics of Web sites as well as the populations that use these Web sites.

Similar to past studies,^{8–10} Margolis et al.² found a strong relationship between substance use and UAI. The persistent link between drug use and high-risk sex emphasizes a need for interventions that address substance use among MSM and help men develop strategies for reducing their exposure to contexts in which they are less likely to initiate or maintain safer sex behaviors.¹¹ Critically, substance use also creates challenges in health care provision and can lead to inaccurate perceptions of time, the inability to adhere to routines, and impaired decision making, all important barriers to consistent adherence to antiretroviral therapies (ART).^{12,13} Suboptimal adherence to ART has been associated with both alcohol and drug use in samples of HIV-positive MSM, including young MSM.^{14–17}

In the US, the continuum of engagement in HIV care (also referred to as the “HIV cascade”) is an important framework for understanding the work that remains to be done to adequately respond to the care and treatment needs of the epidemic.^{18,19} In this continuum, virologic suppression is the ultimate goal for both individual health and transmission prevention. Despite significant advances in biomedical prevention and treatment, in the US, three quarters of all HIV-infected persons are lost along the HIV continuum.¹⁸ Encouragingly, in the study by Margolis et al.,² most respondents (93%) had a health care provider and 74% were on ART. In this sense, they may represent a sample of MSM who are, on average, better linked to and engaged in care. Yet this difference is also a reminder that losses along the HIV care cascade are not distributed equally across all HIV-affected populations. In particular, African American MSM (who are underrepresented in the study by Margolis et al.)² are less likely to have health insurance and more likely to have past or current STI, lower ART adherence, and less durable viral suppression compared with other MSM.^{20,21} Thus, although interventions that are situated in clinical settings have been shown to be effective,²² tailored outreach to key populations and subpopulations—including via Internet-based platforms—is also needed to eliminate disparities along all stages of the HIV care cascade.

Sexual networking sites provide unprecedented access to key populations of MSM. As such, researchers must be mindful to eschew assigning blame or making broad generalizations about the role that mobile and social technology channels play in potentiating risk behaviors. These technologies can facilitate opportunities for any user to more efficiently find partners with whom to engage in the type(s) of sex they prefer—including condomless sex.^{23,24} At the same time, technology may also help people discuss HIV status, negotiate condom use before meeting face-to-face, and connect to HIV prevention, testing, and care services.^{25,26} Online social networks can also provide MSM—particularly those who live in more rural

areas or experience higher levels of stigma around their sexuality—a way to find like others and in turn reduce feelings of social isolation and alienation.²⁷

Access, however, cannot come without limits. Researchers and public health practitioners who are working on ehealth and mhealth research with MSM should be attentive to the insights and experiences of other stakeholders. To ensure the needs of all parties are meaningfully addressed this includes working to foster collaborations between technology developers, Web site/ “app” owners, the treatment community, and target populations. Recently, a national survey was conducted among 82 HIV public health experts, 18 social networking Web site owners, and 3050 MSM users of these Web sites to identify low-cost, online strategies to reduce HIV transmission that would be supported by all three stakeholders.²⁸ Most of each of the three stakeholder groups agreed on the following: (1) automated HIV/STI testing reminders, (2) local STI test site directories, (3) links to sex-positive safe sex videos, (4) access to sexual health experts, (5) profile options to include safer sex preference, (6) chat rooms for specific sexual interests, (7) filtering partners by their profile information, and (8) anonymous e-card partner notification for STI exposures. Although many current and ongoing mhealth interventions include one or more of these components,^{29–31} the field is still maturing and there is certainly no “one size fits all” approach. Social media campaigns that facilitate access to prevention and care information could reach large segments of at-risk MSM, but will only be possible if Web site owners are approached as true collaborative partners. For example, recently, one location-based dating and social networking site partnered with aids.gov to enable users to locate HIV testing and care services as well as access information about preexposure prophylaxis (PrEP) and ART³²

Within the study, Margolis et al.,² the authors found no differences in risk behaviors between men who were on ART and those who were not. This would seem to support the idea that men were not making decisions about engaging in UAI based on ART use. However, as the authors note, this study was conducted in 2008, before the results of several landmark studies of “treatment as prevention” both for HIV-infected and HIV-uninfected persons were released.^{33,34} The landscape of how researchers and providers think about HIV has shifted dramatically, and messages within and outside the most impacted communities are evolving to reflect these advances in science. For example, recent studies evaluating the use of ART as PrEP from iPREX OLE found 0.0 infections per 100 person-years among those who used four or more Truvada tablets per week ($P < 0.0001$).³⁵ PrEP and treatment-as-prevention studies raise provocative questions that are directly relevant as we interpret the findings from Margolis et al.²: At what point is it “safe” to have “unsafe” sex? How do clinical conversations with patients and policies need to change to reflect recent advances in science? It will be critical to continue to observe evolving trends in sexual behavior and to quantitatively and qualitatively examine how individuals and couples are making decisions about sex informed by factors such as ART use (as treatment and/or PrEP) and viral load.³⁶ The results provided by Margolis et al.² give us much to think about in this regard and emphasize the importance of virtual spaces for engaging key populations and exploring changing behaviors.

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