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PROMOTING VACCINATION DURING RAPID HIV TESTING: RECOMMENDATIONS FROM MEN WHO HAVE SEX WITH MEN IN CALIFORNIA

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Abstract

Community-based rapid HIV testing is effective for reaching racial-ethnically diverse men who have sex with men (MSM), offering an opportunity for bundled health promotion interventions. Given MSM experience a heightened prevalence of human papillomavirus (HPV) and meningitis, we examined their preferences for bundling rapid HIV testing with an intervention to promote vaccination against these infections. In 2020, we conducted five virtual focus groups (N=25 participants) in English and Spanish with MSM in Southern California's Inland Empire. Participants discussed their knowledge about HPV and meningitis vaccination and attitudes toward receiving vaccination information and referrals during rapid HIV tests. We used the rigorous and accelerated data reduction technique to systematically analyse the data. Participants had a mean age of 30, were socioeconomically diverse, and predominantly (68%) Hispanic. 96% had ever been tested for HIV, while only 28% were vaccinated against HPV and/or meningitis. Most participants were unaware of MSM's elevated risk for HPV and meningitis and were eager to

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receive vaccination information from LGBTQ+-friendly providers. However, many participants emphasized rapid HIV testing was stressful and anticipated feeling overwhelmed if presented with vaccination information in this setting. Preferred formats for vaccine promotion included pamphlets and resources that could be discretely accessed online, supported by broader advertising featuring diverse MSM on social media, dating apps, and posters in the community. Overall, our findings suggest that bundling health promotion messages with rapid HIV testing may be ineffective, as the anxiety associated with taking an HIV test may interfere with such messages and their impact.

Keywords

community-based participatory research; focus groups; HIV testing; HPV vaccination; meningitis vaccination; men who have sex with men; United States

INTRODUCTION

In the United States, men who have sex with men (MSM) account for approximately 70% of new HIV infections and have an elevated prevalence of human papillomavirus (HPV) and meningitis (Centers for Disease Control and Prevention [CDC] 2019; Kamiya et al. 2015; Walsh et al. 2015). HPV is a sexually transmitted infection (STI) that can cause anogenital and oropharyngeal cancers and anogenital warts and is a risk factor for acquiring HIV (Brown et al. 2012). About 60% of HIV-negative and 95% of HIV-positive MSM acquire anal HPV, putting them at high risk for anal cancer (Chin-Hong et al. 2009). Over the past decade, outbreaks of invasive meningococcal disease due to serogroup C in the United States (e.g., in Chicago, Los Angeles, New York City) and Europe (e.g., in Belgium, France, Germany, Italy) have highlighted MSM's—and especially HIV-positive MSM's—vulnerability to meningitis (Blackwell 2017; Kamiya et al. 2015; Kupferschmidt 2013; Miglietta et al. 2018). Transmitted primarily through saliva and close contact with contagious persons, meningitis can cause hearing loss, kidney and nervous system damage, loss of limbs and digits, and death (California Department of Public Health [CDPH] 2016). Preventing comorbidity of HIV, HPV, and meningitis among MSM is a public health challenge (Grulich et al. 2012; Vigil et al. 2018; Walsh et al. 2015).

Effective HPV and meningitis vaccines exist, yet uptake among MSM in the United States is low (Holloway et al. 2018; Meites et al. 2019; Oliver et al. 2014; Phillips et al. 2018; Reiter et al. 2015). The U.S. CDC and Advisory Committee on Immunization Practices (ACIP) recommend routine vaccination with the nine-valent HPV vaccine for everyone ages 9 to 26, while this vaccine is approved for and remains available to adults up to age 45 (Meites et al. 2019). For MSM (and other individuals) aged 15 to 45, a three-dose HPV vaccine series is advised at 0, 1–2, and 6 months (CDC, 2020). The CDC and ACIP also recommend vaccination with the quadrivalent meningococcal conjugate vaccine for all persons living with HIV, and persons of all ages (including MSM) at increased risk of meningitis due to proximity to an outbreak or infected person (Blackwell 2014; Holloway et al. 2017). People living with HIV are advised to receive two doses of this vaccine, eight weeks apart; other

MSM, regardless of HIV status, who have either never been vaccinated or were vaccinated more than five years ago, are advised to receive a single dose (Holloway et al., 2017).

While population-level surveillance data on MSM are not available, cross-sectional studies have found less than 20% of U.S. MSM report being vaccinated against HPV (Oliver et al. 2014; Reiter et al. 2015) and less than 40% of MSM living in Los Angeles County during the 2016–2017 meningitis outbreak received a meningitis vaccine (Holloway et al. 2018). Key barriers to HPV and meningitis vaccination for MSM include a lack of knowledge, low perceived disease risk and severity, fear of disclosing sexual orientation to health providers, lack of health provider recommendation, medical distrust, lack of insurance, and cost (Apaydin et al. 2018; Holloway et al. 2017; Johnson et al. 2019; Reiter et al. 2015; Phillips et al. 2018; Wheldon et al. 2018).

Rapid HIV Testing as an Opportunity to Promote Vaccination

The U.S. CDC and U.S. Preventive Services Task Force recommend annual HIV screening for MSM, while some providers offer more frequent testing (DiNenno et al. 2017). Rapid HIV testing in non-clinical, community-based settings, allows individuals to be tested for and know their HIV status in a single encounter—usually within minutes. This approach has been successful for reaching diverse MSM—including (a) young MSM for whom HIV is on the rise in the United States and (b) Black and Hispanic MSM who face disproportionately high barriers to accessing health care in traditional medical settings (CDC 2019; Mdodo et al. 2014). In a recent U.S. qualitative study, MSM recommended bundling HPV vaccination with HIV testing to improve vaccine uptake (Fontenot et al. 2018). While this “bundling” approach provides an opportunity to target multiple preventative behaviours for synergistic gain and has been used to integrate HIV-testing with STI screenings, it has seldom been used to promote vaccination (Cowan et al. 2018; Gliddon et al 2017; Ickovics 2008; van den Berg et al. 2014).

Recognizing that community-based rapid HIV testing may offer a promising venue for promoting vaccination, we conducted a community-based participatory research (CBPR) project to identify MSM’s recommendations for implementing a bundled rapid HIV testing and HPV and meningitis vaccine promotion intervention. CBPR has long been used to facilitate power equalization between academics and community members, and produce knowledge that is responsive to the needs, priorities, and assets of the community (Rhodes et al. 2010).

METHODS

Study Partnership and Site

The University of California, Riverside Institutional Review Board approved this study. This study was conducted in partnership with TruEvolution, a community-based non-profit organization that fights for health equity and racial justice to advance the quality of life and human dignity of lesbian gay, bisexual, transgender, queer, and other (LGBTQ+) people. Representatives from TruEvolution worked with the researchers to co-develop the study aims and procedures, facilitate data collection, and verify and report study results.

TruEvolution provides hundreds of rapid HIV tests annually throughout Southern California's Inland Empire region. Located between Los Angeles and Palm Springs, the Inland Empire consists of Riverside and San Bernardino counties, spans more than 70,000 square kilometres, and has a population of 4.6 million (Mordechay 2020). The region is highly racial-ethnically diverse; more than 51% of residents identify as Hispanic/Latinx and more than 16% identify as part of another minoritized racial-ethnic group (California Health Care Foundation 2020). Inland Empire residents face a severe shortage of health care providers and experience poorer health outcomes compared to those living in other areas of California (California Health Care Foundation 2020).

Participants and Recruitment

In fall 2020, we recruited participants through TruEvolution's existing social support groups, listserv announcements to local community health and LGBTQ+ organizations, and social media posts on Facebook, Instagram, and Twitter. Eligible participants identified as MSM, spoke English or Spanish, were aged 18+, lived in Riverside or San Bernardino counties, and had access to an internet-connected device (i.e., phone, tablet, computer) with audio and video.

Interested participants completed a Qualtrics survey in English or Spanish to provide informed consent to participate in the study, verify their eligibility, provide demographic information (i.e., age, race/ethnicity, income, education, health insurance status, marital status), and detail their history of HIV testing and HPV and meningitis vaccination (i.e., date of last HIV test, whether a health provider recommended vaccines to them, whether they could recall ever being vaccinated). Given online data collection is vulnerable to fraud—including deliberate attempts by non-eligible individuals to qualify for studies to receive compensation (Kramer et al. 2014)—we used GeoIP data to filter out foreign (i.e., non-California) registrants ($n = 23$). Eligible registrants ($n = 32$) were invited to virtual focus groups; 25 participated and received \$30 gift cards.

Focus Groups

Focus groups were ideal for this study as we aimed to identify community-level norms (Campbell et al. 2001). We conducted five 90-minute focus groups (three in English, two in Spanish) in October and November 2020, with approximately five participants in each group. Due to COVID-19 pandemic restrictions, all focus groups were conducted virtually using Zoom web conferencing. Focus groups were led by experienced moderators that identified as MSM and were co-facilitated by a member of the research team. Moderators used a semi-structured interview guide (see Table 1) to ask participants about their (1) knowledge and beliefs about HPV, meningitis, and associated vaccines, (2) attitudes toward HPV and meningitis vaccination, and (3) recommendations for bundling information about vaccines and referrals for vaccination with rapid HIV testing. Participants used pseudonyms to protect their identities, were asked not to disclose personal identifiers, and were encouraged to discuss questions as a group. Probing questions were used to encourage the clarification of responses. The moderators remained neutral and relayed basic information from the CDC about HPV, meningitis, and vaccinations against these diseases as questions arose that participants could not answer among themselves (CDC 2021). For example, some

participants asked about the age limits for the vaccines and costs associated with vaccination if one were to pay out-of-pocket. Focus groups were video recorded, transcribed verbatim, and (if conducted in Spanish) translated to English by a bilingual research assistant.

Data Analysis

We calculated descriptive statistics for the demographic survey data using Stata SE version 16. Focus group transcripts were imported into Microsoft Excel and analysed using the “rigorous and accelerated data reduction” technique (Watkins 2017). This entailed reviewing the data with the following question in mind: “What do MSM think about bundling HPV and meningitis vaccination information and referrals with rapid-HIV testing?” Data that did not address the question were removed. The lead investigator and a research assistant then independently open-coded the remaining data, combined codes into broader categories, and identified emergent themes that encompassed recurrent patterns in the data (Corbin & Strauss 2014), resolving any disagreement about codes through discussion. Themes and quotes were then linked to the demographic data for interpretation (Watkins 2017). A third researcher and two representatives from the community partner reviewed the themes and representative quotes to verify they maintained internal validity. Upon the analysis of the fifth focus group no new themes had emerged, suggesting we had reached data saturation.

FINDINGS

Table 2 details descriptive statistics for the sample ($N = 25$). Sixty-eight percent ($n = 17$) identified as Hispanic, annual household incomes ranged from \$0 USD to \$120,000 USD (mean = \$43,282 USD; median = \$45,000 USD), 36% ($n = 9$) had less than a college degree, and 88% ($n = 22$) had health insurance. All but one (96%) had been tested for HIV, and 24% ($n = 6$) reported testing positive. Forty percent ($n = 10$) recalled having ever received a provider recommendation to get an HPV vaccine and 32% ($n = 8$) reported receiving a provider recommendation for meningitis vaccination. Twenty-eight percent ($n = 7$) reported being vaccinated against HPV and/or meningitis.

Qualitative analyses revealed four key themes: (1) risk and vulnerability, (2) HIV testing as overwhelming, (3) LGBTQ+ cultural competency, and (4) the need for multimodal distribution of information. We discuss each theme in depth below.

Risk and Vulnerability

Awareness that HPV and meningitis vaccines were recommended for MSM was low. Most had not heard about meningitis outbreaks in Southern California that had resulted in vaccination recommendations for MSM in the Inland Empire (Riverside University Health System – Public Health 2016). Except for participants who had been required to be vaccinated against meningitis to attend college, most were also unaware meningitis vaccination was available to them. For example, one participant shared:

“I didn’t know about no vaccine for meningitis and if there is one I would get it... From what I knew there wasn’t a vaccine, it [meningitis] was rare and it applied to people who were unsanitary. And none of that applied to me.” (John, age 44, English-speaking group)

Most participants also did not perceive themselves as candidates for HPV vaccination, either because they had seen advertisements targeting only women for vaccination or had been told by health providers that HPV vaccines would primarily protect their female sexual partners. As one participant recalled:

“How my provider explained it to me was: ‘Oh you want to get it because if you’re going to be sexually active you want to protect the woman that you’re going to be sexually active with’... it kind of assumed heteronormativity... But that is how the providers explained it to me in the past, was men generally aren’t as affected, but you have a chance of passing it onto the woman that you have sex with.” (Kaviyon, age 24, English-speaking group)

Overwhelmingly, participants emphasized that improving vaccination rates required raising awareness of the risks that meningitis and HPV pose to MSM. As one participant explained:

“if [HPV vaccination] was described as relevant to relationships between men with men, or with people with a penis with another person with a penis, then I would feel that it [vaccination] will be more urgent for me” (Quin, age 24, Spanish-speaking group)

Despite low initial awareness, upon learning HPV and meningitis vaccines were recommended for MSM, most participants reported they were eager to learn more. As one participant shared:

“I think more education is needed, a little more effort is needed for the community to understand the value of this vaccine, the protection that it offers, what it can prevent.” (Boots, age 30, Spanish-speaking group)

Several participants also emphasized they would be willing to be vaccinated against HPV and/or meningitis, provided the vaccines were recommended to them by a health care provider. For example, one participant emphasized:

“The most important thing for me is for a health care provider to tell me that you need to get one [a vaccine], you’re at risk. So, if somebody said that to me, I’d take my happy ass to the doctor as quick as I could to get it done. That’s it, that’s all I need to hear... If a health care provider says you’re at risk, you should get the vaccination, I’d go get the vaccination. And that’s pretty much the end of it.” (John, age 44, English-speaking group)

Several English-speaking participants also noted they conceptualized vaccination as a form of self-care, stating they would be receptive to messaging that framed vaccination as taking care of oneself and other community members. As one participant emphasized:

“I love the idea of self-care... getting vaccines obviously help you, but then they also help other people you love, so I feel that’s a good way to look at it... it’s self-care, because self-care also helps people who care for you.” (Scott, age 30, English-speaking group)

HIV Testing as Overwhelming

Several participants described HIV testing encounters as “stressful,” “nerve wracking,” “scary,” or “overwhelming” and cautioned against bundling rapid HIV testing with a vaccination intervention. Some emphasized they would not be able to absorb vaccination information immediately before, during, or after HIV testing and felt that discussing vaccines would increase their anxieties. As one participant stated:

“HIV tests always have a lot of stress... I believe that especially in the Latinx gay community HIV takes up a lot of emotional and psychological energy... if they want to educate me about other diseases, I do not know how much I would learn, how much I would remember because I will remember how nervous I felt, of the doubts that I have, the fears that I have. So, if someone wanted to tell me more information, well the truth is I do not know how much I would learn.” (Boots, age 30, Spanish-speaking group)

Some participants also cautioned against promoting vaccination during rapid HIV testing outreach events, such as outside bars or nightclubs, emphasizing these settings are “chaotic” and that MSM would likely be preoccupied or under the influence of drugs or alcohol and not in the mindset to absorb information about other diseases or vaccines. As one participant shared:

“Say, I’d go to like a mobile rapid HIV test, you know, on the streets of like West Hollywood... first thing on my mind is, I’m already drunk if I took this test... I want to get back to my friends, you know, and continue having fun and partying, whatever. So, it’s kind of like a, in that mindset, a waste of time.” (Ava, age 26, English-speaking group)

Despite these concerns, a minority of predominantly Spanish-speaking participants reported rapid HIV testing encounters were a prime opportunity to promote other healthy behaviours among MSM who are otherwise disengaged from health care services. As one participant shared:

“It is an opportunity to educate someone... explain a little about how meningitis and HPV are transmitted and why our community is more vulnerable... I think that right there it puts in your mind how it is something that I should not worry so much about, but it is something that I can protect myself from.” (Diego, age 23, Spanish-speaking group)

Among those receptive to bundling vaccine promotion with rapid HIV testing, the majority reported a preference for informational pamphlets that they could take home and review at their own pace, before deciding whether to be vaccinated. A minority of participants also indicated they would welcome verbal vaccination information during rapid HIV tests, underscoring the importance of a provider recommendation. For example, one participant shared:

“I would like someone to explain it [vaccination] to me, while I have the pamphlet right there. So, I could take the pamphlet home while also having like, the thought of talking to them to help me make my decision. Like, it would really be helpful for me.” (Red, age 28, English-speaking group)

LGBTQ+ Cultural Competency

Although most participants felt rapid-HIV testing encounters were not an ideal time to promote vaccination, overwhelmingly participants expressed a desire to receive HPV and meningitis vaccine information from LGBTQ+-culturally competent providers and organizations. Several participants emphasized they were more inclined to trust providers designated as LGBTQ+-friendly. As one participant emphasized:

“[LGBTQ+-friendly providers] generally are respectful and usually a part of the queer community. So, you already have that connection with them. I feel like it’s easier to trust someone with regards to your sexual health, especially if the whole institution is devoted to being able to be a safe space for your sexual health as part of the queer community.” (Kaviyon, age 24, English-speaking group)

Participants from the Hispanic/Latinx community additionally noted they would prefer to receive vaccine-related information from groups that were both LGBTQ+ culturally competent and devoted to serving the Hispanic/Latinx community. As one participant shared:

“Bienestar was a Latino LGBT support group where we learned about safe sex practices, testing and coping skills. I think reaching out to these groups would be a really good vector to disseminate HPV and meningitis vaccination information.” (Tony, age 32, English-speaking group)

Underscoring the importance of receiving vaccine information from LGBTQ+-culturally competent providers, several participants also recounted negative experiences with mainstream health providers, noting, for example that treatment providers were still “weirdly hostile toward LGBTQ+ individuals.” Some mentioned they would avoid discussing vaccines with mainstream providers fearing discussions could “out” them as LGBTQ+ and lead to stigma, harassment, or discrimination. As one participant shared:

“...even doctors have the stigma... when I go to Planned Parenthood, I kind of see the treatment of heterosexual people as being more open and talking to them more like that... I don’t know, like if they have something against talking to me. I don’t know, that’s how I feel. But maybe it’s my imagination but that’s what I feel when I go to those places.” (Xochipili, age 26, Spanish-speaking group)

Additionally, participants commonly expressed a desire to see LGBTQ+ people represented in vaccine promotion materials, noting they had seen advertisements targeting MSM for PrEP (pre-exposure prophylaxis) but not vaccination. Some expressed concern that existing heteronormative advertising campaigns for HPV vaccines perpetuated the assumption that MSM are not candidates for vaccination. As one participant, who identified as both MSM and transgender, shared:

“I feel like a lot of how the HPV vaccine is marketed and framed in the media, it’s showing that this is a vaccine primarily for cis[gender] women and cis[gender] girls... I rarely see anything like this kind of stuff marketed to me. I do find that stuff kind of off putting... If there were marketing to show that this vaccine is important for people who are not just cis[gender] women, that would be important.” (Wario, age 29, English-speaking group)

Overall, participants concluded that including MSM and other LGBTQ+ people in vaccine promotion materials would capture their attention and make them consider vaccination for themselves.

Multimodal Distribution of Information

Although many MSM expressed a preference for informational materials they could take home and review, some feared such materials could be discovered by others. As one participant cautioned:

“My worst fear will be that I offer a ride to my brother, or my cousin, or my aunt, or my mother, and they find a brochure about genital warts in my car, and I have to explain things, answer things I don’t want to answer.” (Boots, age 30, Spanish-speaking group)

Hence, participants highlighted a need for information about vaccines to be delivered in a variety of formats to engage a diverse audience.

In addition to pamphlets, participants expressed a preference for posters displayed in community health and LGBTQ+ organizations and advertisements on social media sites (e.g., Snapchat, Instagram, TikTok) and dating or hookup apps (e.g., Grindr, Growlr, Scruff). Highlighting the importance of multimodal distribution of information, one participant emphasized:

“Social media is really something a lot of people still use even though there’s still a demographic that would prefer like having that information at a doctor’s office, like during an exam, or having that brochure, seeing that poster, like physical in presence with them. But an online presence is important too” (Atlas, age 29, English-speaking group)

The use of bright colours and local LGBTQ+ celebrities endorsing vaccinations were suggested as additional strategies to capture the attention of MSM. Including QR codes on posters and advertisements was recommended by several participants as a way to facilitate discreet access to vaccine information. As one participant shared:

“[A QR code] allows me some privacy because I can look at it on my phone and bring it up on my phone, whenever I want, wherever I want... I don’t have to stand there and just read so much. I can take it home with me.” (Alex, age 57, English-speaking group)

Some participants also noted they would feel comfortable receiving vaccine information at pride festival booths, where LGBTQ+-friendly staff were on hand to answer questions. Ultimately, participants agreed the goal of such information should be to encourage MSM to speak to their health providers about vaccination.

DISCUSSION

To our knowledge, this is one of the first U.S. studies to directly assess MSM’s preferences for and concerns about promoting HPV and/or meningitis vaccination during community-based rapid HIV testing. Although many participants expressed concern about broaching

the topic of vaccination during rapid-HIV testing encounters, they were keen to have LGBTQ+-friendly organizations and providers use multiple communication channels to share information about vaccines with them.

Echoing previous studies (Cummings et al. 2015; Wheldon et al. 2018), few participants in our study were aware MSM were at risk of HPV or meningitis—or that they were eligible for vaccination against these infections. Nonetheless, many emphasized that just knowing they were at risk for HPV or meningitis was enough to encourage them to be vaccinated. Emphasizing vaccination as a way to take care of oneself and others in the community was also proposed as a strategy for encouraging vaccine uptake. Similar messaging strategies—focused on the benefits of vaccination for both the community and self—have been found to motivate vaccination among adults and racial-ethnically diverse adolescent males in the United States (Polonijo et al. 2016; Vietri et al. 2012).

Although previous studies propose bundling rapid-HIV testing with other health services to target multiple health promoting behaviours (Fontenot et al. 2016; Ickovics 2008) and many MSM in our study recognized rapid-HIV testing as a critical opportunity to provide additional health care resources to community members, our findings suggest providers looking to implement this approach to promote vaccination should proceed with caution. The majority of MSM in our sample indicated they would not be in the mindset to absorb information about vaccines or vaccine-preventable diseases during rapid-HIV testing encounters. While rapid-HIV testing encounters may not be an ideal time to promote vaccination, our findings indicate MSM may be receptive to receiving such information as a follow-up to HIV testing, via a pamphlet or web resource that can be reviewed on their own time. Targeting MSM for vaccination on social media and dating or hookup apps, may be a promising alternate means of promoting HPV and meningitis vaccine uptake among MSM, including those who are disengaged from the health care system.

Providers' lack of LGBTQ+ cultural competency presents a barrier to health care (Olivares et al. 2021), while our findings emphasize providers designated as LGBTQ+ friendly may be trusted sources of vaccine information. Despite rapid-HIV testing encounters likely being a non-ideal time to promote vaccination, previous research indicates routine points of contact with health care providers are important for promoting vaccination among MSM (Cummings et al. 2015) and health provider recommendations remain critical for encouraging vaccine uptake (Reiter et al. 2015). Health providers and organizations serving MSM may thus consider alternative points of contact for sharing verbal recommendations to vaccinate, for example, in social support groups, during routine health check-ups or follow-up care, or at booths at pride festivals and other community events.

Overall, our results suggest a critical need for HPV and meningitis vaccine interventions targeting MSM, delivered by designated LGBTQ+-friendly health providers and organizations in a variety of formats to reach diverse community members. Given previous research finds interventions focused solely on educating populations about vaccination may promote vaccine-related knowledge and acceptability but fall short of influencing vaccine uptake (Dube et al. 2015, Olson et al. 2020), in addition to targeted messaging and referrals, interventions aiming to improve vaccine uptake among MSM should also aim to address

salient interpersonal and structural barriers to vaccination (e.g., heteronormativity and homophobia among health providers, varying levels of patient English language proficiency, costs associated with vaccination).

Strengths and Limitations

This CBPR project engaged a diverse sample of English- and Spanish-speaking MSM to generate regionally specific data to inform local health care services, however our findings cannot be generalized to the entire Inland Empire or beyond. Our sample included MSM recruited online and from LGBTQ+-specific support groups but may have excluded MSM disengaged from the LGBTQ+ community or lacking internet access. In filtering registrants using GeoIP addresses, we may have inadvertently excluded a few legitimate participants (Kramer et al. 2014). However, filtering was necessary given we uncovered several registrations with foreign GeoIP addresses (the vast majority originating from Kenya)—presumably made by individuals seeking the \$30 USD incentive for participation. In addition, it is possible that some participants may have recognized one another and been reluctant to respond openly about potentially sensitive topics during the virtual focus groups.

Conclusion

Our study demonstrates that bundling messaging about vaccination—or other health promoting behaviours—with rapid HIV testing may not be very effective as the anxiety associated with taking an HIV test may interfere with such messages and their impact. Given rapid HIV testing encounters have been found to be successful settings for providing other targeted health promotion interventions, future studies should seek to understand how we might successfully leverage these encounters to disseminate health promotion messages about vaccines and other disease prevention tools. Our study also highlights that MSM may be receptive to targeted HPV and meningitis vaccine promotion messages in a variety of formats from LGBTQ+-friendly organizations and providers. Accordingly, future research should seek to evaluate the impact of targeted print and web-based messaging campaigns on vaccine uptake among MSM and the feasibility of bundling vaccination with other services offered by LGBTQ+-friendly organizations and providers.

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What is known on this topic:

- MSM in the United States have a heightened prevalence of HIV, HPV, and meningitis
- Community-based rapid HIV testing has been successful for reaching racial-ethnically diverse MSM and may offer an opportunity to promote HPV and meningitis vaccination
- Little is known about MSM's attitudes toward promoting vaccination during rapid-HIV testing encounters

What this paper adds:

- MSM had low perceived susceptibility to HPV and meningitis, and low awareness of vaccines that prevent these diseases
- MSM were eager to receive targeted HPV and meningitis vaccine information in a variety of formats from LGBTQ+-friendly providers
- MSM emphasized rapid-HIV testing was stressful and did not anticipate being receptive to interventions promoting vaccination in this context

Table 1.

Semi-structured Focus Group Interview Guide

Section	Questions
Knowledge and beliefs about HPV, Meningitis, and Vaccines to Prevent these Diseases	<p>1. What do you think of when you hear HPV? <i>Probes:</i> What kind of health issues does HPV cause? How serious is HPV? Who can catch HPV?</p> <p>2. What have you heard about HPV vaccines? <i>Probe:</i> Who should get vaccinated?</p> <p>3. What do you think of when you hear meningitis? <i>Probes:</i> What kind of health issues does meningitis cause? How serious is meningitis? Who can catch meningitis?</p> <p>4. What have you heard about meningitis vaccines? <i>Probe:</i> Who should get vaccinated?</p>
Attitudes toward HPV and Meningitis Vaccination	<p>5. What do you think about being vaccinated against HPV? <i>Probes:</i> What reasons would you have for being vaccinated? What reasons would you have for not being vaccinated? What information could help you make a decision about being vaccinated?</p> <p>6. What do you think about being vaccinated against meningitis? <i>Probes:</i> What reasons would you have for being vaccinated? What reasons would you have for not being vaccinated? What information could help you make a decision about being vaccinated?</p>
Preferred Messaging and Intervention Strategy	<p>7. What kind of information would be useful for encouraging you and others in your community to be vaccinated against HPV/meningitis? <i>Probes:</i> Who should deliver this information? What format should it take?</p> <p>8. How would you feel about getting information about HPV and meningitis or referrals for HPV and meningitis vaccines while getting a rapid HIV test? <i>Probes:</i> Do you have any concerns about receiving vaccination information during a rapid HIV test? What else should we know?</p> <p>9. What might encourage/discourage you to from being vaccinated after receiving vaccine information during a rapid HIV test? <i>Probes.</i> What might make it easy for you to access HPV or meningitis vaccines? What might make it difficult for you to access HPV or meningitis vaccines? Where would you like to access HPV or meningitis vaccines?</p>

Table 2.Demographic Characteristics of Focus Group Participants ($N = 25$)

	N or Mean	Percent or Range
Age	30	22 – 57
Household Income in 2019 (US Dollars)	43,282	0 – 120,000
<i>Ethnicity</i>		
Hispanic	17	68%
Non-Hispanic	8	32%
<i>Education</i>		
High school	4	16%
Some college	5	20%
Bachelor's degree	9	36%
Graduate or professional Degree	7	28%
<i>Health Insurance</i>		
Has health insurance	22	88%
Has no known health insurance	3	12%
<i>Marital Status</i>		
Married/domestic partnership	6	24%
Single, never married	19	76%
<i>HPV Vaccine Recommendation</i>		
Received provider recommendation	10	40%
Didn't receive provider recommendation	15	60%
<i>HPV Vaccination</i>		
Received HPV shot	7	28%
Did not recall receiving HPV Shot	18	72%
<i>Meningitis Vaccine Recommendation</i>		
Received provider recommendation	8	32%
Did not recall receiving provider recommendation	17	68%
<i>Meningitis Vaccination</i>		
Received meningitis shot	7	28%
Did not recall receiving meningitis shot	18	72%
<i>HIV Test Recommendation</i>		
Received provider recommendation	13	52%
Did not recall receiving provider recommendation	12	48%
<i>Previous HIV Testing</i>		
Had an HIV test	24	96%
Did not recall ever having HIV test	1	4%
<i>HIV Status</i>		
Positive	6	24%
Negative or Unknown	19	76%

Note: All participants identified as “men who have sex with men”. To protect the confidentiality of participants, we do not report transgender status or more refined racial-ethnic categories.