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# Social media interventions to prevent HIV: a review of interventions and methodological considerations

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Persistent new HIV infections and risky behaviors underscore the need for enhanced HIV prevention. Social media interventions may promote safe sexual behaviors, increase HIV testing uptake, and promote safe injection behaviors. This review discusses how social media interventions tap into the wisdom of crowds through crowdsourcing, build peer-mentored communities, and deliver interventions through social networks. Social media HIV prevention interventions are constrained by ethical issues, low social media usage among some key populations, and implementation issues. Comprehensive measurement of social media interventions to prevent HIV is necessary, but requires further development of metrics.

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#### Introduction

Social media may powerfully shape the HIV risk environment. Social media is 'web sites and applications which enable users to create and share content or to participate in social networking' [1]. As social media becomes more widespread [2], it can be designed to provide psychosocial support, build community engagement, and increase awareness of HIV testing and services [3,4°,5,6°]. We review recent research using social media behavioral interventions to prevent HIV. These interventions promote safe sex, HIV

testing and safe injection use. We then highlight key considerations for designing and implementing social media interventions. Given that other reviews show how social media may increase risk behaviors [7,8], we focus instead on using social media for HIV risk reduction.

# Social media interventions to promote safe sex behaviors

Social media may help improve interventions focused on reducing sexual risk behaviors. Condom promotion is key within the World Health Organization's comprehensive HIV prevention programming [9] and condom distribution is a key structural level factor for HIV prevention according to the US Centers for Disease Control (CDC) [10]. Social media interventions may be particularly effective in condom promotion because close social contacts actively demonstrate desire for behavioral change within a social group, thereby shifting social norms and actively reinforcing positive new interactions and behavioral patterns. Several interventions are noteworthy. One cluster randomized control trial (RCT) delivered sexual health messages to youth using friendship networks on Facebook [11,12\*\*]. This study used a modified respondent-driven sampling to recruit participants, with seed individuals first located via online, newspaper advertisements, and face-to-face meetings. A seed and three waves of friends formed a friendship network. Each friendship network was then randomly assigned into either a Facebook page focusing on sexual health topics developed in collaboration with experts and youth facilitators or a control page presenting current events specifically avoiding sexual heath content. At the two-month follow-up, participants demonstrated increased condom use and proportion of safe sex acts [11,12\*\*].

Another two US projects reported promising feasibility studies to inform social media interventions. The first targeted young black men who have sex with men (MSM) and transgender women using the Institute of Medicine's Integrated Model of Behavior theory to implement a mobile phone-optimized, online intervention [13°]. The goal of the HealthMpowerment.org (HMP) intervention was to build community and facilitate supportive relationships among participants. A one-month pilot study successfully retained all fifteen participants, improving social support, and reducing social isolation and depressive symptoms [13°]. An RCT to evaluate efficacy is currently underway. The second study assesses SiHLEWeb, a web-based, culturally tailored HIV/STI prevention program based

on the Sistas, Informing, Healing, Living, and Empowering program [14]. This program targeted underserved, young, at-risk African American women [15]. SiHLE-Web participants were recruited from community partners and attended four 1-h sessions simulating live group participation via interactive videos on sexual health content combined with real-time follow-up with video peers and health educators [15]. At the three-month follow-up, participants demonstrated increased knowledge of HIV/STI risks, risk reduction behaviors, and increased condom use self-efficacy [15].

In the UK, HIV Prevention England (HPE) collaborated with the Terence Higgins Trust to implement a two-year campaign to promote condom use and HIV testing through postal kits promoted via Facebook, Twitter, Grindr, Gaydar, and other social media [16]. HPE used Facebook to recruit individuals to evaluate the effectiveness of health messages and the design of campaign materials to improve comprehensibility among key populations [17].

In Australia, a two-part social media intervention was used to promote sexual health and condom use. The first part used Facebook advertisements and tagging youth on Facebook to expand the program reach [5]. The second part involved producing episodic videos based on social media feedback. These resulting YouTube videos delivered sexual health messages for MSM based on the lives of four fictional gay characters dealing with sexual health issues. Video feedback provided through diaries and social media tailored subsequent videos [18°°]. The project entered its fifth season, attaining 3000 fans and receiving 30,000 video views after three seasons. There were no additional public health outcomes measured [18°].

Several government programs have also used social media to promote safe sex behaviors and HIV prevention. In 2013, the US CDC highlighted social media research and outreach programs in 'Adolescents, Technology and Reducing Risk for HIV, STDs and Pregnancy' [3]. This compendium highlighted a behavioral intervention consisting of 23-min videos depicting sexual health scenarios, including negotiating condom use [19]. The intervention was first conducted in STD clinic waiting rooms, with video viewing as the treatment compared to standard waiting room procedures [19]. During a 14-month follow-up, new STD infections were reduced by 10 percent across three clinics. This efficacy led researchers to adapt an online format for implementation on YouTube [19]. Furthermore, the US CDC itself has developed a social media toolkit to promote online sexual health campaigns using Facebook, Twitter, and YouTube [3].

### Social media interventions to promote HIV testing

Expanding HIV test uptake is essential for the success of programs to achieve HIV viral suppression [20]. Social media may improve testing efforts because it potentially enhances community engagement, bidirectional communication, and reduces costs through wider online distribution [8]. It can enhance testing by serving as a platform for community building and improving intervention development and delivery.

First, social media can be used to develop intervention materials or methods for HIV testing promotion through creative contributory contests (CCCs). CCCs engage many individuals to contribute creative knowledge toward a public good, in this case short videos promoting HIV testing [21]. An initial open call for videos is followed by judging, recognizing the contributions of participants, and sustaining engagement over time [21]. A recent study demonstrated that a CCC developed through social media was effective in promoting HIV testing among Chinese MSM, with substantial cost saving [22].

Second, social media can be used to establish virtual peermentored communities that promote HIV testing [23\*\*]. For example, in Project HOPE built a number of intervention groups on Facebook and trained peer leaders to promote HIV testing and HIV prevention [23\*\*]. Project HOPE has effectively increased HIV test uptake among high-risk populations in Peru [23\*\*] and the US [6\*]. Similarly, a Taiwanese study found that social-media communities led by internet popular opinion leaders can facilitate promotion of HIV testing among MSM [24°].

Third, social media can serve as a platform for delivering newly designed or extant evidence-based interventions through online networks [25,26]. For example, one study developed an internet-based social marketing campaign to promote HIV testing among MSM in England [27]. The study recruited participants into a longitudinal panel via community websites and a prior survey, but did not identify a correlation between intervention and testing uptake [27]. An Australian study used social media to promote a 'pop-up' rapid HIV testing model (taking testing messages and services to target populations to increase the total number of HIV tests per hour, compared to clinic-based testing), concluding that the campaign increased testing uptake among those most at risk of HIV infection [28].

### Social media based safe drug use intervention for HIV prevention

Social media can also be used to encourage safe drug use as an avenue for HIV prevention. For example, one study assessed the possibility of using a live-chat social media intervention to reduce drug use among young MSM in the US [4°]. At 3-month follow-up, participants had fewer days of drug and alcohol use in the past month and less frequent condomless anal sex [4°].

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