

2020, sexually transmissible infections and HIV in gay, bisexual and other men who have sex with men

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Abstract. This editorial accompanies a series of papers dealing with this watershed period for HIV and sexually transmissible infections (STI) infections in gay, bisexual and other men who have sex with men (GBM). We are delighted to share with you the views of some international opinion leaders on what the future may hold and what challenges lie ahead. In this issue of the Journal, authors describe current HIV and STI incidence among GBM and predict the future.

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Introduction

At a time that is likely to go down in history as a watershed period for HIV infections and sexually transmissible infections (STI) in gay, bisexual and other men who have sex with men (GBM), we are delighted to share with you the views of some international opinion leaders on what the future may hold and what challenges lie ahead. In this issue of the Journal, authors describe current HIV and STI incidence among GBM and predict the future.^{1,2} Others describe changes in sexual practices, HIV testing, travel, preventive practices, drug use, mental health and stigma, all of which will affect HIV and STI rate.^{1–8} Finally, other authors provide recommendations about how to optimise the health of GBM during this period of rapid change and discuss the unintended consequences of getting this wrong.^{9–14} Community responses have always underpinned how individual GBM deal with HIV, but government policy provides the social and structural conditions for those community responses to thrive.

Throughout these articles, authors have recognised the importance of new biomedical HIV prevention interventions,

such as pre-exposure prophylaxis (PrEP) for controlling the HIV epidemic among GBM. Now, more than ever before, rates of HIV will be dependent on robust government policy and effective community engagement and much less on the decisions of individual GBM. Equitable access to highly effective HIV prevention interventions is critical because without equitable access there will be insufficient population-level control of HIV, and STI control will be more challenging and require more innovative approaches. At the same time, equitable access to highly effective HIV prevention interventions cannot be the sole focus of prevention efforts. Using PrEP as an example, authors in this issue highlight interactions between PrEP use and changes in sexual behaviour (e.g. condomless anal sex), the interconnectedness of HIV testing and PrEP use, and the potential for PrEP to both increase and decrease risk for STI. More upstream determinants of infection, such as poor mental health, may both indicate a need for PrEP and affect adherence to PrEP, and therefore the potential for PrEP to exacerbate (not reduce) HIV stigma if its uptake further perpetuates attitudes about ‘good’ and ‘bad’ behaviour among

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GBM who do or do not comply with these HIV prevention strategies. Clearly, the multilevel nature of drivers of the HIV epidemic among GBM described in this issue require comprehensive, multilevel approaches to HIV prevention.

The importance of equitable access to services is highlighted by Stahlman *et al.*, who describe marked differences in HIV incidence within high-income countries.¹ The authors argue that these differences within the same country are explained by differential access to HIV prevention strategies at individual, network and structural levels.¹ When all these factors are optimised, perhaps in ways that appear to have been occurring in San Francisco, HIV notifications can fall significantly, as they did from 2004 (708 notifications) to 2015 (235 notification).¹⁴ However, Stahlman *et al.* describe substantial differences in the incidence of HIV in young GBM, which has risen by 10% every year while declining in other groups.¹ The authors cite marked and tragic racial differences in the lifetime HIV acquisition risk with young Black GBM having a 50% lifetime HIV risk compared with 9% for White GBM.¹

The effective control of STIs will prove more difficult than HIV control given that condom use is falling in many countries.² Stenger *et al.* set the scene for what the future may hold by providing a historical picture of what was occurring in the 1970s and 1980s before HIV appeared.² They suggest further STI upsurge will occur, including STIs that were prevalent in the past, such as gay bowel syndrome and viral hepatitis. The authors warn of newer STIs, such as hepatitis C and potentially Zika virus.¹⁵ Yet, among these predictions, there is some good news, with considerable decline in human papillomavirus (HPV) infection and associated cancers likely in countries where HPV vaccination coverage exceeds critical vaccination thresholds.¹⁶ However, declines are likely only in countries where childhood vaccination of boys has been implemented, because HPV is so rapidly acquired after commencing sexual activity that vaccination of GBM after sexual debut will have much less impact.^{16,17}

Among STIs without available vaccines, several authors offer recommendations about interventions.^{3,9} First, clinical services must take full advantage of efficiency offered by the latest technological advances to ensure STI testing becomes as frequent, convenient and as cost-effective as possible. Condoms should be included in the mix of prevention strategies and Crosby argues that they are highly effective when used correctly.³ Other innovative avenues will also be needed. Refugio *et al.* cite the pilot work on doxycycline prophylaxis, strategies for web-based testing and screening clinics, such as the Dean Street clinic in the UK.⁹ But they argue that if large changes are to occur, we need to rely less on clinical providers and more on technology, Telehealth and future diagnostics. These sorts of changes can empower individuals and communities to take control over their own health. A potential bright spot in STI prevention is the concept that the more frequent testing associated with PrEP may substantially reduce the reproductive rate for some STIs and put downward pressure on transmission and incidence.

PrEP deserves special mention given that it is both extraordinarily effective, with high levels of adherence, and appears to be popular with many GBM whose behaviour puts

them at high risk.¹⁰ To date, most population-level effectiveness has come from models that indicate that universal uptake of PrEP by all GBM could result in 50–60% fewer infections in the next 10 years.¹⁰ However, achieving this would be expensive, estimated at approximately US\$1.6 million per one infection averted.¹⁸ A targeted approach with uptake of PrEP by high-risk GBM could achieve a similar result but at lower cost. A 50% reduction in the price of PrEP would also significantly decrease cost. Only in combination with other interventions, such as high testing coverage, STI prevention and control, behavioural risk reduction and treatment as prevention, can PrEP reduce HIV diagnoses on the population level by almost 96% in 10 years.³

The stigma surrounding HIV and homosexuality is a substantial impediment to effective HIV control because it creates a context in which individuals become fearful of disclosing their HIV status, and even of knowing their own HIV status. Stigma thereby reduces access to key interventions.⁴ Access to interventions such as HIV testing, PrEP, STI screening, behavioural interventions, health promotion, mental health and drug services is reduced by the fear engendered by stigma. Brown *et al.* describe the steps that are needed to reduce stigma throughout all aspects of society,⁴ although important research gaps remain in understanding what combination of antistigma strategies across individual, interpersonal and structural levels will be most effective.

Another factor that is operating against effective STI and HIV control is the high prevalence of mental health problems⁵ among some GBM attributed to sexual minority stress. In addition to being a significant health problem in its own right, poor mental health is associated with HIV acquisition, as well as lower treatment uptake. The influence of mental health means reaching necessary targets in HIV treatment cascades will also require attention to individuals' well being and social support. The authors argue for the implementation of strategies to address psychological and social barriers particularly in the most vulnerable subpopulations.¹¹

That drug use can also work against HIV and STI prevention is a long-standing tenet of HIV prevention. Race *et al.* point out that drawing a 'causal' link between the two is challenging given the complexity of the issue and the fact that drug use among men who have sex with men (MSM) is not always problematic.¹⁹ Race *et al.* provide clues to possible solutions, such as reducing stigma against GBM, because stigma results in social isolation that may facilitate problematic drug use.¹⁹ As so many others before them, Race *et al.* argue that harm will be reduced if governments decriminalise the use and possession of illicit drugs.¹⁹

A meta-analysis in this issue assesses hepatitis C virus (HCV) infection¹⁶ in GBM. Injection drug use remains the predominate route of transmission, but new cases were seen in men who did not inject drugs. Concomitantly, four studies reported the incidence of HCV infection increasing over time in accordance with condomless anal sex as a risk factor. Ulcerative STIs have also been associated with a higher incidence of HCV, so, not surprisingly, it is expected that incidence will rise over time among both HIV-positive and -negative men as syphilis and condomless anal intercourse become more common. In

contrast, the recent development of direct-acting antivirals for the treatment of HCV infection have the potential to markedly reduce population incidence.

The issue of travel and its effect on HIV and STI risk are discussed in one paper.⁶ The authors make the case that when men travel, their risk of acquiring HIV may vary markedly due not only to differences in drug use or sexual practices, but also because the number and proportion of their partners with transmissible HIV may vary, while disclosure between partners tends to be less common.⁶

Interventions

One of the most important interventions for prevention of HIV is testing. Testing forms the basis for treatment as prevention (TasP), which is of one of the most powerful interventions.¹¹ Flowers *et al.*¹¹ argue that if HIV testing is to be optimised, many issues need to be addressed, including technological, psychosocial and sociocultural issues. Flowers *et al.*¹¹ argue that because the incidence of HIV among GBM is primarily driven by the undiagnosed fraction, testing must be directed to those at greatest risk so programs detect those with early HIV infection.

Mayer *et al.* assert that accessible health services for STI and HIV control have never been more important.⁷ The authors describe how the Fenway Institute has adapted over time to serve those most afflicted by HIV and used this as an illustrative example for other health services. Mayer *et al.*⁷ suggest that optimal health services in 2020 should be making maximal use of technology and efficient models of service that are inclusive of all sexual orientations and gender identities that may be at risk of STI and HIV.

Addressing health care inequalities of GBM is a major issue for policy makers and health care providers.¹² In this issue, Keuroghlian *et al.*¹² raise the importance of equity in the context of lesbian, gay, bisexual and transgender (LGBT) people. They describe disparities in health care and an appalling lack of social and cultural competency of health care providers in this area. Although steps have been taken to address these factors, Keuroghlian *et al.*¹² argue that much more is needed, including active leadership, policies that include and protect LGBT people, engagement with local LGBT communities, training, inclusive processes and other mechanisms.

Another issue related to equity is the HPV vaccine.⁵ Despite GBM having a large burden of HPV disease, it is unlikely they will see the same benefits as those seen in heterosexuals. Oncogenic HPV has all but disappeared in heterosexuals in Australia, and similar marked falls in HPV-related cancers will likely follow. Fairley *et al.*¹⁷ make the case that without childhood HPV vaccine for boys, currently only performed in a handful of countries, GBM are unlikely to see the same wonderful changes that heterosexuals have.

Finally, we are reminded of the relative weakness of some of our STI control programs that rely only on behaviour change. In an unpublished qualitative study of 16 GBM from Brighton in the UK with recent gonorrhoea, the men were very clear: behaviour is unlikely to change to prevent an STI. These findings are similar to another qualitative paper recently published that found the only sexual practice that men were willing to change

to prevent STI was active rimming. This highlights the views of other papers in this issue, that non-condom-based interventions for STI will be needed if STI control is to succeed.

Surveillance

Finally, several papers make a case for improved surveillance of HIV and STI in this time of rapid and marked change.¹³ The principle investigators of the Australian Behavioural Surveillance Group who have been responsible for some of the most comprehensive longitudinal behavioural surveillance globally have suggested new risk categories. They make the point that condomless anal intercourse with casual partners is only unsafe in certain circumstances and no longer accurately measures HIV risk.¹⁴ Individuals with HIV on treatment and individuals without HIV who are 100% adherent to PrEP who do not use condoms are not at risk of either transmitting or acquiring HIV. To address this issue Holt *et al.* have developed seven mutually exclusive categories that take account of all these factors.¹⁸

German *et al.* describe the use of phylogenetic data to inform public health approaches to HIV surveillance among GBM,⁸ arguing that this rapidly evolving field can substantially improve our understanding of the HIV epidemic and describing how social networks, clusters and other factors influence transmission. Although there are appreciable methodological and ethical challenges that need to be addressed, the potential to inform public health approaches for HIV control is notable, particularly if it were available in real time.

We hope you find this special issue useful. Taken together, these articles point to the complexity of HIV and STI epidemics among GBM, and highlight that comprehensive combinations of prevention and control strategies are needed. We also note that although extensive, this special issue does not represent a complete depiction of strategies needed to address HIV and STI epidemics among GBM. Notable gaps include focused consideration of effective interventions (at individual, interpersonal and structural levels) for addressing inequities in HIV and STI prevention for racialised GBM, non-cisgendered GBM or GBM living in non-industrialised countries. How 'we' as a society choose to deal with these challenges will determine whether individuals suffer more than they should, and whether the community pays more than is necessary, for effective HIV and STI control.

References

- 1 Stalhman S, Lyons C, Sullivan P, Mayer K, Hosein S, Beyrer C, Baral S. HIV incidence among gay men and other men who have sex with men in 2020: where is the epidemic heading? *Sex Health* 2017; 14: 5–17. doi:10.1071/SH16070
- 2 Stenger MR, Baral S, Stalhman S, Wohlfeiler D, Barton JE, Peterman T. As through a glass, darkly: the future of sexually transmitted infections among gay, bisexual and other men who have sex with men. *Sex Health* 2017; 14: 18–27. doi:10.1071/SH16104
- 3 Crosby RA. Dealing with pre-exposure prophylaxis-associated condom migration: changing the paradigm for men who have sex with men. *Sex Health* 2017; 14: 106–10. doi:10.1071/SH16128
- 4 Brown G, Leonard W, Lyons A, Power J, Sander D, McColl W, Johnson R, James C, Hodson M, Carman M. Stigma, gay men and biomedical prevention: the challenges and opportunities of a rapidly

- changing HIV prevention landscape. *Sex Health* 2017; 14: 111–8. doi:[10.1071/SH16052](https://doi.org/10.1071/SH16052)
- 5 Batchelder AW, Saffren S, Mitchell AD, Ivardic I, O’Cleirigh C. Mental health in 2020 for men who have sex with men in the United States. *Sex Health* 2017; 14: 59–71. doi:[10.1071/SH16083](https://doi.org/10.1071/SH16083)
 - 6 Lee VC, Sullivan PS, Baral SD. Global travel and HIV/STI epidemics among men who have sex with men: what does the future hold? *Sex Health* 2017; 14: 51–8. doi:[10.1071/SH16099](https://doi.org/10.1071/SH16099)
 - 7 Mayer KH, Vanderwarker R, Grasso C, Boswell SL. Emerging models of clinical services for men who have sex with men: focused versus comprehensive approaches. *Sex Health* 2017; 14: 133–8. doi:[10.1071/SH16119](https://doi.org/10.1071/SH16119)
 - 8 German D, Grabowski MK, Beyrer C. Enhanced use of phylogenetic data to inform public health approaches to HIV among men who have sex with men. *Sex Health* 2017; 14: 89–96. doi:[10.1071/SH16056](https://doi.org/10.1071/SH16056)
 - 9 Refugio ON, Roberts C, West R, Klausner JD. Sexually transmissible infection control programs for men who have sex with men – what will they look like in 2020? *Sex Health* 2017; 14: 126–32. doi:[10.1071/SH16038](https://doi.org/10.1071/SH16038)
 - 10 Zablotska I. The likely impact of pre-exposure prophylaxis on HIV epidemics among men who have sex with men. *Sex Health* 2017; 14: 97–105. doi:[10.1071/SH16153](https://doi.org/10.1071/SH16153)
 - 11 Flowers P, Estcourt C, Sonnenberg P, Burns F. HIV testing intervention development among men who have sex with men in the developed world. *Sex Health* 2017; 14: 80–8. doi:[10.1071/SH16081](https://doi.org/10.1071/SH16081)
 - 12 Keuroghlian A, Ard K, Makadon H. Achieving health equity for lesbian, gay, bisexual and transgender (LGBT) people through sexual health education and LGBT-affirming health care environments. *Sex Health* 2017; 14: 119–22. doi:[10.1071/SH16145](https://doi.org/10.1071/SH16145)
 - 13 Holt M, Lea T, Mao L, Zablotska I, Lee E, Hull P, de Wit JBF, Prestage G. Adapting behavioural surveillance to antiretroviral-based HIV prevention: reviewing and anticipating trends in the Australian Gay Community Periodic Surveys. *Sex Health* 2017; 14: 72–9. doi:[10.1071/SH16072](https://doi.org/10.1071/SH16072)
 - 14 San Francisco Department of Health. Semi-annual surveillance report, HIV cases reported through December. San Francisco, CA: San Francisco Department of Public Health, Population Health Division Applied Research, Community Health Epidemiology, and Surveillance Branch (ARCHES); 2015.
 - 15 Jin F, Matthews GV, Grulich AE. Sexual transmission of hepatitis C virus among gay and bisexual men: a systematic review. *Sex Health* 2017; 14: 28–41. doi:[10.1071/SH16141](https://doi.org/10.1071/SH16141)
 - 16 Fairley CK, Zou H, Zhang L, Chow EPF. Human papillomavirus vaccination in men who have sex with men – what will be required by 2020 for the same dramatic changes seen in heterosexuals. *Sex Health* 2017; 14: 123–5. doi:[10.1071/SH16067](https://doi.org/10.1071/SH16067)
 - 17 Zou H, Tabrizi SN, Grulich AE, Hocking JS, Bradshaw CS, Cornall AM, Morrow A, Prestage G, Law MG, Garland SM, Chen MY, Fairley CK. Site-specific human papillomavirus infection in adolescent men who have sex with men (HYPER): an observational cohort study. *Lancet Infect Dis* 2015; 15: 65–73. doi:[10.1016/S1473-3099\(14\)70994-6](https://doi.org/10.1016/S1473-3099(14)70994-6)
 - 18 Juusola JL, Brandeau ML, Owens DK, Bendavid E. The cost-effectiveness of preexposure prophylaxis for HIV prevention in the United States in men who have sex with men. *Ann Intern Med* 2012; 156: 541–50.
 - 19 Race K, Lea T, Murphy D, Pienaa K. The future of drugs: recreational drug use and sexual health among gay and other men who have sex with men. *Sex Health* 2017; 14: 42–50. doi:[10.1071/SH16080](https://doi.org/10.1071/SH16080)