HHS Public Access

Author manuscript

*N Engl J Med*. Author manuscript; available in PMC 2022 July 22.

Published in final edited form as:

*N Engl J Med*. 2021 July 22; 385(4): 352–356. doi:10.1056/NEJMra2033007.

# Substance Use among Men Who Have Sex with Men

**Wilson M. Compton, M.D., M.P.E.**,
National Institute on Drug Abuse, Bethesda, MD

**Christopher M. Jones, Pharm.D., Dr.P.H.**
Centers for Disease Control and Prevention, Atlanta

IN RECENT YEARS, THE SOCIAL ACCEPTANCE OF AND LEGAL PROTECTIONS extended to persons in sexual minority groups have been increasing in many countries, including the United States. Despite this progress, stigma, discrimination, and structural barriers to services persist, causing health disparities and, in some cases, a diminished sense of well-being.[1] Substance use, across a range of licit and illicit substances, is higher among gay, bisexual, and other men who have sex with men (MSM) than among men who do not have sex with men.[1] This disparity is important, given the overdose crisis in the United States, rising rates of infectious disease transmission among people who use drugs, and engagement in high-risk sexual behaviors among some MSM who use drugs.[1,2] We provide a brief review of substance use in this high-risk population.

Viewing MSM as a uniform category is an oversimplification.[1] The term MSM is a broad behavioral descriptor that includes persons who identify as gay or bisexual, as well as men who identify as heterosexual but engage in sex with other men, including those who trade sex for money or drugs but do not identify as gay or bisexual. Even within subgroups of MSM, the degree of stigma and social factors related to race, ethnic group, and culture vary, and each of these factors influences substance use and related risk behaviors.[1–3]

In addition, the pattern and context of substance use among MSM vary and are related to the ensuing harms. Substance use may be intermittent or regular, it may or may not occur during sexual encounters, and it may or may not be part of a typical addiction phenotype. The substances used may be licit (e.g., tobacco, alcohol, and prescribed medications), illicit (e.g., nitrite compounds, 3,4-methylenedioxymethamphetamine [MDMA], and methamphetamine), or at the border between licit and illicit (e.g., prescription medications that are misused and cannabis).

Address reprint requests to Dr. Compton at the National Institute on Drug Abuse, 301 N. Stonestreet Ave., MSC 6025, Bethesda, MD 20892-6025, or at wcompton@nida.nih.gov.

The opinions expressed in this article are those of the authors and do not necessarily represent the opinions of the National Institute on Drug Abuse, the National Institutes of Health, the Centers for Disease Control and Prevention, or the Department of Health and Human Services.

Disclosure forms provided by the authors are available at NEJM.org.

## EPIDEMIOLOGY OF SUBSTANCE USE AMONG MSM

Population studies have documented increased rates of drug use among MSM (and most other sexual and gender minority groups), though reference populations vary among studies, sometimes including all other men and sometimes including only men who are sexually active exclusively with women and excluding men who are not sexually active. A general household study from 1981–1982 showed that overall drug use, as well as "hard drug" use and daily drug use, was more than twice as likely to occur among MSM as in the general population.[4] The National Comorbidity Survey, conducted between 1990 and 1992, showed that drug use disorders among MSM were 2.4 to 2.8 times as common as among other men.[5]

The 2017–2019 National Survey on Drug Use and Health (NSDUH) (https://datafiles.samhsa.gov/dataset/national-survey-drug-use-and-health-2019-nsduh-2019-ds0001/) involving the noninstitutionalized U.S. population (Fig. 1) showed that men who identify as gay or bisexual have higher rates of use of nearly all substances and higher rates of substance use disorders than men who identify as nongay or nonbisexual (i.e., heterosexual). Although the full range of MSM was not included in this study because the survey asks respondents only about sexual identity, not about sexual attraction or behavior, these findings are consistent with the seminal 2020 National Academies of Sciences, Engineering, and Medicine report, *Understanding the Well-Being of LGBTQI+ Populations,* which concluded that these populations are disproportionately burdened by the use of tobacco, alcohol, and other drugs, whether sexual orientation is assessed according to sexual identity, sexual attraction, or sexual behavior.[1]

With these data and other nationally representative U.S. data sets, differences in substance use between MSM and heterosexual men are also found across age groups and specific substances used.[6,7] Tobacco use overall is more common but daily tobacco use is less common among MSM than among men who have sex exclusively with women.[7] Heavy alcohol use does not appear to be more common among MSM than among other men,[7,8] a finding that is consistent with similar rates of heavy drinking in the previous month among these two groups, according to data from the 2017–2019 NSDUH (Fig. 1). One study involving college students showed that men with both-sex partners were less likely to engage in binge drinking than men with only opposite-sex partners.[9] There are also variations among subgroups of MSM, with rates of substance use particularly elevated among bisexual men.[10,11] In addition to demographic characteristics, geographic factors may play a role in substance use and related high-risk sexual behaviors, perhaps because the use of social media platforms to arrange for sexual encounters can differ among geographic regions.[12]

## COEXISTING PSYCHIATRIC ILLNESSES

Rates of mental illness or serious mental illness among MSM are two to three times as high as the rates among other men.[7,13] Research on motivations for substance use suggests that sexual minority-associated stress (e.g., from such pressures as stigma, internalized homophobia, and expectations of rejection),[14] exposure to trauma, and adverse childhood experiences play a part in the concurrence of substance use and psychiatric illnesses among MSM.[1,15] For example, a higher prevalence and more severe forms of previous abuse

and neglect have been noted among MSM who use methamphetamine than among MSM who do not use methamphetamine.[16] These intersecting risks related to increased rates of childhood sexual abuse, intimate partner violence, use of multiple substances (polydrug use), depression, sexual compulsivity, and HIV risk have been referred to as a syndemic (a syndrome of overlapping epidemics), underscoring the complexity in addressing the health and behavioral health needs of MSM.[17,18]

## HEALTH CONSEQUENCES OF DRUG USE AMONG MSM

Substance use among MSM, as with other persons who use substances, is associated with medical disorders due to the direct effects of the substances (e.g., lung and cardiovascular issues from tobacco use, liver damage from alcohol use, arrhythmias from stimulants, and respiratory disorders from opioid overdose) and indirect effects from the route of drug administration (e.g., HIV infection, viral hepatitis, and nasal damage); substance use is also associated with indirect effects on psychosocial functioning.[19] The association of drug use with sexual behavior and sexually transmitted infections (STIs) is particularly strong among MSM. Men with multiple sexual partners may be more likely to inject drugs,[20] and drug use and drugs-for-sex transactions have been identified as factors in same-sex behaviors for MSM who do not identify as gay.[21]

The term “chemsex” has been coined to describe the use of drugs in conjunction with planned sexual experiences by MSM.[22] Various drugs have been implicated, including inhaled nitrites (“poppers”), stimulants (e.g., methamphetamine and cocaine), alcohol, and other drugs (e.g., $\gamma$-hydroxybutyrate [GHB], $\gamma$-butyrolactone [GBL], and ketamine). Motivations for use of these substances vary but include a perceived increase in sexual pleasure and prolongation of sexual experiences.[2] A concern is that the use of these substances may be associated with unprotected anal intercourse and other sexual behaviors that increase the risks of transmission of HIV and other STIs.[22]

Use of inhaled nitrites is common among MSM and is associated with risky sexual behavior.[23,24] The risks appear to be driven not solely by the use of inhalant nitrites but also by the use of multiple drugs, since persons most at risk for STIs frequently coingest multiple substances.[24]

Especially in the United States, methamphetamine is used more frequently among MSM than among other men.[25–27] Methamphetamine use is associated with multiple sexual partners, inconsistent use of condoms, and poor adherence to antiretroviral preexposure prophylaxis or antiviral treatment generally[25,26,28,29] and has been identified as a factor contributing to rising rates of HIV transmission.[27] This observation is supported by the HIV surveillance program at the Centers for Disease Control and Prevention, which has shown that methamphetamine use is more frequent among MSM who are HIV-positive than among those who are HIV-negative.[30] A U.S. longitudinal study involving 4786 men, transgender men, and transgender women who have sex with men showed that methamphetamine use accounted for 35.7% of the incident HIV infections over a 1-year period; this represents an increase in the incidence of HIV seroconversion that is 7 times as high as the incidence among such persons who do not use methamphetamine.[27] The recent increase in U.S. rates

of fatal overdose involving methamphetamine suggests an additional concern for MSM, who disproportionately use this substance.[31]

Another concern regarding the MSM population is the use of substances and medications to counteract the effects of other drugs. These include medications to address stimulant-induced erectile dysfunction.[24,32] In a study involving college students, nonmedically indicated use of medications to treat erectile dysfunction was associated with gay or bisexual orientation, substance use, a high number of lifetime sexual partners, and "one-night stands."[33]

We emphasize that most MSM do not report substance use (other than alcohol) or have substance use disorders.[7] Clinicians can avoid inadvertently contributing to stigma by not assuming that all MSM engage in these high-risk behaviors. Our recommendations, outlined in Table 1, are based on those developed by the Gay and Lesbian Medical Association and those enumerated in the 2020 report from the National Academies of Sciences, Engineering, and Medicine[1] and offer a framework for clinicians and public health practitioners to provide stigma-free, trauma-informed care for MSM who use substances. These recommendations include discussing substance use and sexual behaviors with patients; offering preventive services; screening patients for substance use disorders; providing evidence-based substance use treatment and harm-reduction services, such as education about overdose prevention, provision of naloxone, and provision of sterile injection equipment for MSM who inject drugs; assessing patients for prior trauma; and providing care tailored to patients with a history of trauma.[1,14,16,25,27–30,34]

## CONCLUSIONS

High rates of substance use among MSM must be viewed in the context of differences in demographic characteristics, types of substances used, and patterns of use. Bisexual MSM have been found to have higher rates of substance use and substance use disorders than other subgroups of MSM and higher rates than heterosexual men. Use of methamphetamine, nitrite inhalants, and other drugs as part of sexual encounters is associated with high-risk sexual behaviors, such as unprotected anal intercourse, and contributes to the transmission of HIV infection and other STIs.[2,20–28]

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## REFERENCES

1. National Academies of Sciences, Engineering, and Medicine. Understanding the well-being of LGBTQI+ populations. Consensus study report. Washington, DC: National Academies Press, 2020 (https://www.nap.edu/catalog/25877/understanding-the-well-being-of-lgbtqi-populations).
2. Bourne A, Weatherburn P. Substance use among men who have sex with men: patterns, motivations, impacts and intervention development need. Sex Transm Infect 2017;93:342–6. [PubMed: 28400466]
3. Meyer IH. Minority stress and mental health in gay men. J Health Soc Behav 1995;36:38–56. [PubMed: 7738327]

4. Cottler LB, Helzer JE, Tipp JE. Lifetime patterns of substance use among general population subjects engaging in high risk sexual behaviors: implications for HIV risk. Am J Drug Alcohol Abuse 1990;16:207–22. [PubMed: 2288321]

5. Gilman SE, Cochran SD, Mays VM, Hughes M, Ostrow D, Kessler RC. Risk of psychiatric disorders among individuals reporting same-sex sexual partners in the National Comorbidity Survey. Am J Public Health 2001;91:933–9. [PubMed: 11392937]

6. Schuler MS, Rice CE, Evans-Polce RJ, Collins RL. Disparities in substance use behaviors and disorders among adult sexual minorities by age, gender, and sexual identity. Drug Alcohol Depend 2018;189:139–46. [PubMed: 29944989]

7. Medley G, Lipari RN, Bose J, Cribb DS, Kroutil LA, McHenry G. Sexual orientation and estimates of adult substance use and mental health: results from the 2015 National Survey on Drug Use and Health. NSDUH data review. Rockville, MD: Substance Abuse and Mental Health Services Administration, October 2016 (https://www.samhsa.gov/data/sites/default/files/NSDUH-SexualOrientation-2015/NSDUH-SexualOrientation-2015/NSDUH-SexualOrientation-2015.pdf).

8. Kerridge BT, Pickering RP, Saha TD, et al. Prevalence, sociodemographic correlates and DSM-5 substance use disorders and other psychiatric disorders among sexual minorities in the United States. Drug Alcohol Depend 2017;170:82–92. [PubMed: 27883948]

9. Eisenberg M, Wechsler H. Substance use behaviors among college students with same-sex and opposite-sex experience: results from a national study. Addict Behav 2003;28:899–913. [PubMed: 12788264]

10. McCabe SE, Hughes TL, Matthews AK, et al. Sexual orientation discrimination and tobacco use disparities in the United States. Nicotine Tob Res 2019;21:523–31. [PubMed: 29300994]

11. Boyd CJ, Veliz PT, Stephenson R, Hughes TL, McCabe SE. Severity of alcohol, tobacco, and drug use disorders among sexual minority individuals and their “not sure” counterparts. LGBT Health 2019;6:15–22. [PubMed: 30638419]

12. Cassels S, Meltzer D, Loustalot C, Ragsdale A, Shoptaw S, Gorbach PM. Geographic mobility, place attachment, and the changing geography of sex among African American and Latinx MSM who use substances in Los Angeles. J Urban Health 2020;97:609–22. [PubMed: 32996024]

13. Mercer CH, Prah P, Field N, et al. The health and well-being of men who have sex with men (MSM) in Britain: evidence from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). BMC Public Health 2016;16:525. [PubMed: 27386950]

14. Knight DA, Jarrett D. Preventive health care for men who have sex with men. Am Fam Physician 2015;91:844–51. [PubMed: 26131944]

15. Downing MJ, Benoit E, Brown D, et al. Early sexual experiences, mental health, and risk behavior among Black non-Hispanic and Hispanic/Latino men who have sex with men (MSM). J Child Sex Abus 2020;29:41–61. [PubMed: 31697197]

16. Lopez-Patton M, Kumar M, Jones D, Fonseca M, Kumar AM, Nemeroff CB. Childhood trauma and METH abuse among men who have sex with men: implications for intervention. J Psychiatr Res 2016;72:1–5. [PubMed: 26519763]

17. Herrick AL, Lim SH, Plankey MW, et al. Adversity and syndemic production among men participating in the Multicenter AIDS Cohort Study: a life-course approach. Am J Public Health 2013;103:79–85. [PubMed: 23153154]

18. Parsons JT, Grov C, Golub SA. Sexual compulsivity, co-occurring psychosocial health problems, and HIV risk among gay and bisexual men: further evidence of a syndemic. Am J Public Health 2012;102:156–62. [PubMed: 22095358]

19. Stall R, Paul JP, Greenwood G, et al. Alcohol use, drug use and alcohol-related problems among men who have sex with men: the Urban Men’s Health Study. Addiction 2001;96:1589–601. [PubMed: 11784456]

20. Johnston LD, O’Malley PM, Bachman JG, Schulenberg JE, Patrick ME, Miech RA. HIV/AIDS: risk & protective behaviors among adults ages 21 to 30 in the U.S., 2004–2018. Ann Arbor: University of Michigan Institute for Social Research, 2019.

21. Harawa NT, Williams JK, Ramamurthi HC, Manago C, Avina S, Jones M. Sexual behavior, sexual identity, and substance abuse among low-income bisexual and non-gay-identifying African American men who have sex with men. Arch Sex Behav 2008;37:748–62. [PubMed: 18546069]

22. Maxwell S, Shahmanesh M, Gafos M. Chemsex behaviours among men who have sex with men: a systematic review of the literature. Int J Drug Policy 2019;63:74–89. [PubMed: 30513473]
23. Hambrick HR, Park SH, Palamar JJ, Estreet A, Schneider JA, Duncan DT. Use of poppers and HIV risk behaviours among men who have sex with men in Paris, France: an observational study. Sex Health 2018;15:370–3. [PubMed: 29852927]
24. Yu G, Wall MM, Chiasson MA, Hirshfield S. Complex drug use patterns and associated HIV transmission risk behaviors in an Internet sample of U.S. men who have sex with men. Arch Sex Behav 2015;44:421–8. [PubMed: 25104104]
25. Shoptaw S, Reback CJ. Methamphetamine use and infectious disease-related behaviors in men who have sex with men: implications for interventions. Addiction 2007;102:Suppl 1:130–5. [PubMed: 17493062]
26. Gorbach PM, Javanbakht M, Ragsdale A, et al. Methamphetamine injection among young men who have sex with men: risk for human immunodeficiency virus transmission in a Los Angeles cohort. J Infect Dis 2020;222:Suppl 5:S471–S476. [PubMed: 32877561]
27. Grov C, Westmoreland D, Morrison C, Carrico AW, Nash D. The crisis we are not talking about: one-in-three annual HIV seroconversions among sexual and gender minorities were persistent methamphetamine users. J Acquir Immune Defic Syndr 2020;85:272–9. [PubMed: 32740370]
28. Hammoud MA, Jin F, Maher L, et al. Biomedical HIV protection among gay and bisexual men who use crystal methamphetamine. AIDS Behav 2020;24:1400–13. [PubMed: 31758350]
29. Knight R, Karamouzian M, Carson A, et al. Interventions to address substance use and sexual risk among gay, bisexual and other men who have sex with men who use methamphetamine: a systematic review. Drug Alcohol Depend 2019;194:410–29. [PubMed: 30502543]
30. Centers for Disease Control and Prevention. HIV infection risk, prevention, and testing behaviors among men who have sex with men — National HIV Behavioral Surveillance, 23 U.S. cities, 2017. HIV surveillance special report no. 22. February 2019 (https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-special-report-number-22.pdf).
31. Hoots B, Vivolo-Kantor A, Seth P. The rise in non-fatal and fatal overdoses involving stimulants with and without opioids in the United States. Addiction 2020;115:946–58. [PubMed: 31912625]
32. Mansergh G, Shouse RL, Marks G, et al. Methamphetamine and sildenafil (Viagra) use are linked to unprotected receptive and insertive anal sex, respectively, in a sample of men who have sex with men. Sex Transm Infect 2006;82:131–4. [PubMed: 16581738]
33. Harte CB, Meston CM. Recreational use of erectile dysfunction medications in undergraduate men in the United States: characteristics and associated risk factors. Arch Sex Behav 2011;40:597–606. [PubMed: 20358273]
34. Trivedi MH, Walker R, Ling W, et al. Bupropion and naltrexone in methamphetamine use disorder. N Engl J Med 2021;384:140–53. [PubMed: 33497547]

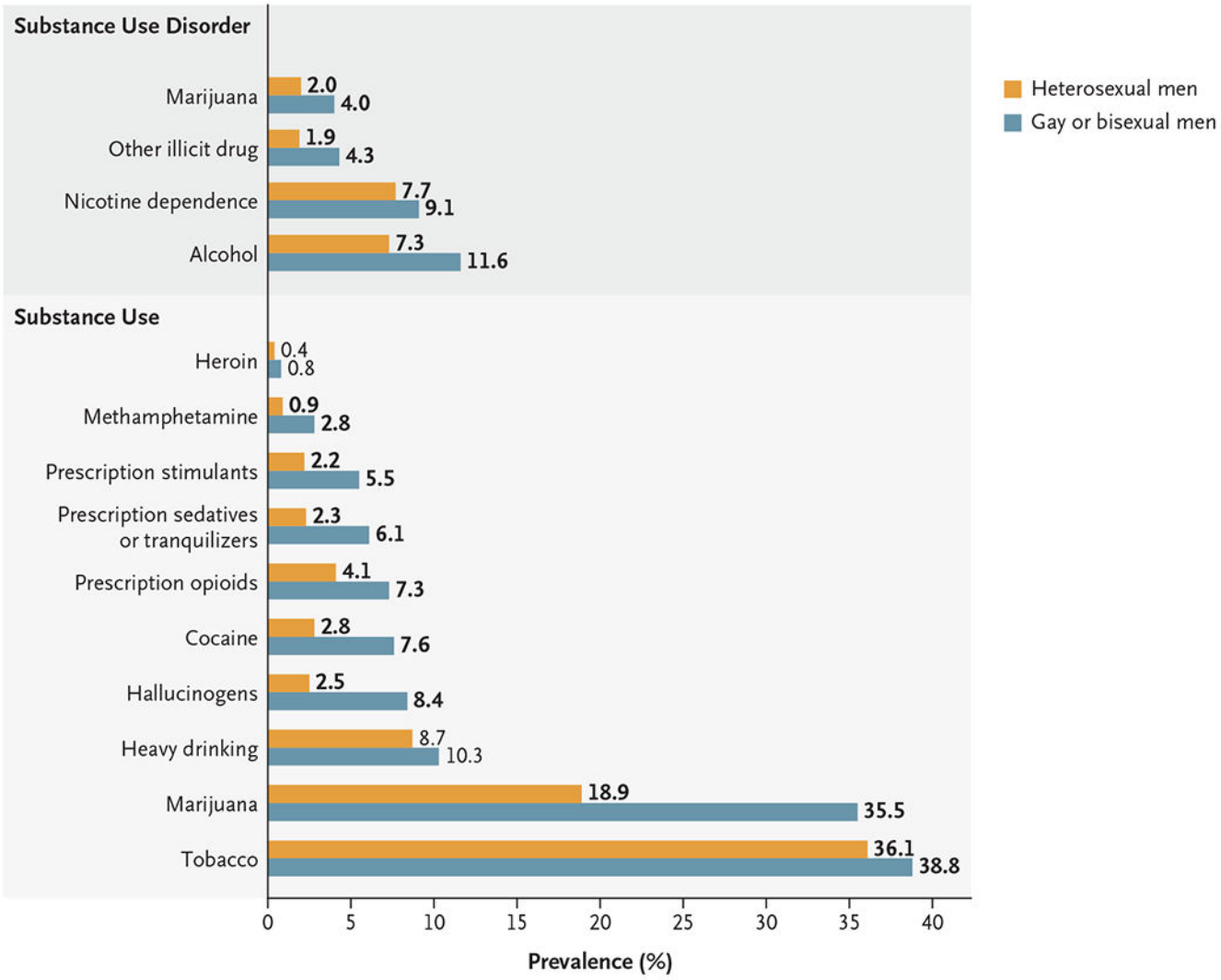


**Figure 1. Prevalence of Substance Use and Substance Use Disorders among Gay or Bisexual Men as Compared with Heterosexual Men in the United States, 2017–2019.**

All measures are for the previous year except heavy drinking and nicotine dependence, which are for the previous month. There were significant differences (boldface type; $P<0.05$) between gay or bisexual men and heterosexual men for all measures except heroin and heavy drinking. Data are from the Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health (NSDUH), for survey years 2017 through 2019 (https://datafiles.samhsa.gov/dataset/national-survey-drug-use-and-health-2019-nsduh-2019-ds0001/). The NSDUH questions respondents only about sexual identity, not about sexual attraction or behavior. Thus, the estimates presented in the figure do not capture the prevalence of substance use or substance use disorders among the full range of subgroups of men who have sex with men.

**Table 1.**

Recommendations for the Care of Men Who Have Sex with Men (MSM) and Use Substances or Have Substance Use Disorders.*

| |
|---|
| Create a welcoming clinical environment to help advance equitable access to stigma-free, trauma-informed health care and services. |
| Recognize that the MSM population is heterogeneous; men may identify as gay, bisexual, or transgender or in some other way. |
| Account for the various levels of stigma, discrimination, and risk that MSM face, depending on their sexual and gender minority status and race or ethnic group. |
| Incorporate sexual and substance use risk assessment into routine care, including screening for substance use and mental disorders. |
| Incorporate interventions to address substance use and sexual risk for high-risk patients. |
| When substance use–associated and other mental disorders are identified, link the patient to evidence-based substance use treatment and mental health treatment. |
| Provide harm-reduction services, such as education about overdose prevention, access to naloxone, and access to sterile injection equipment for MSM who inject drugs. |
| Provide the same preventive services that are offered to other male patients, with attention to issues that disproportionately affect MSM; consider hepatitis A and B vaccinations and preexposure prophylaxis against HIV for eligible patients. |
| Screen for sexually transmitted infections; when appropriate, provide direct care (or a referral to specialty care) for treatment of HIV infection, hepatitis C virus infection, and other sexually transmitted infections. |

* Recommendations are adapted from the National Academies of Sciences, Engineering, and Medicine 2020 report[1] and the Gay and Lesbian Medical Association Guidelines for Care of Lesbian, Gay, Bisexual, and Transgender Patients, 2006: (https://www.rainbowwelcome.org/uploads/pdfs/GLMA%20guidelines%202006%20FINAL.pdf). HIV denotes human immunodeficiency virus.