Special Section: Cancer in People Who Identify as Lesbian, Gay, Bisexual, Transgender, Queer, or Gender-nonconforming

Introduction

In 2021, an estimated 7% of US adults reported identifying as lesbian, gay, bisexual, transgender, queer, questioning, or other diverse sexual orientation or gender identity (LGBTQ+), with larger percentages among younger generations (21% of Gen Z compared to 3% of baby boomers).[1] More than half of LGBTQ+ adults have experienced harassment, including slurs, micro-aggressions, sexual harassment, and violence, and 1 in 3 have experienced discrimination simply trying to use the bathroom.[2] This discrimination is most common among people of color and extends to health care settings.[2] One in 6 LGBTQ+ adults, and 1 in 5 transgender adults specifically, avoid health care due to previous discrimination.[2]

Similarly, LGBTQ+ individuals with cancer experience disparate outcomes across the cancer continuum, including prevention, screening and early detection, diagnosis, treatment, and palliative care. Although knowledge of these inequalities is accumulating, surveillance data on cancer in the LGBTQ+ population are currently limited to national surveys on risk factors and screening. Population-based data are unavailable for incidence and mortality because sexual orientation and gender identity are not consistently collected in medical records. In this special section, we describe the latest information on the prevalence of major modifiable cancer risk factors and screening in the LGBTQ+ population, as well as challenges faced by LGBTQ+ individuals with cancer based on current data.

Glossary

Sex: Assigned at birth as male, female, or intersex, based on external anatomy, reproductive organs, and chromosomes

Sexual orientation: A person's identity in relation to the gender or genders to which they are sexually attracted. These identities include heterosexual (opposite gender) gay/lesbian (same gender); bisexual (both binary genders); pansexual (all gender identities); and asexual (low or absent interest in sexual activity)

Gender: Socially constructed norms, behaviors, and roles associated with male and female sex

Gender identity: A person's internal sense of self that can exist across the spectrum of male and female

Gender dysphoria: Discomfort or distress that can occur when a person's gender identity differs from their sex assigned at birth or sex characteristics

Cisgender: A person whose gender identity aligns with their sex assigned at birth

Transgender: A person who identifies as other than the sex they were assigned at birth. This can include identifying with a different binary gender (male or female), both binary genders (bigender), a gender besides male or female (nonbinary or genderqueer), no gender (agender), or other.

Cancer Risk Factors

More than 40% of all cancers in the general population are attributable to potentially modifiable risk factors, such as tobacco use, excess body weight, alcohol consumption, and unhealthy diet.[3] Elevated prevalence of some cancer risk factors among LGBTQ+ individuals can be partially explained by minority stress (see inset).[4] The statistics in this section are based on the National Health Interview Survey for information by sexual orientation and the state-based Behavioral Risk

Factor Surveillance System for gender identity, both of which are conducted by the Centers for Disease Control and Prevention.

Smoking

Cigarette smoking increases the risk of lung cancer by 25-fold,[5] and increases the risk of at least 11 other cancers.[6] An estimated 16% of lesbian, gay, or bisexual individuals currently smoke cigarettes, compared to 12% of heterosexual individuals (Figure S1). Prevalence is highest among bisexual women (23%, versus 10% in heterosexual women and 17% in bisexual men). There is some evidence that bisexual individuals initiate smoking at younger ages than gay or lesbian individuals.[7] After adjusting for age, sex, education, race, and place of residence, lesbian and gay individuals are 27% more likely to smoke cigarettes than heterosexual individuals, and bisexual individuals are 66% more likely to smoke (Table S1). Transgender individuals are more likely than cisgender individuals to smoke cigarettes (17% versus 14%), although this disparity is confined to women (22% versus 12% among cisgender women, Figure S2).

Higher smoking rates in LGBTQ+ persons have been explained as a maladaptive coping mechanism (e.g., smoking viewed as stress reliever), in response to minority stressors, facilitated by predatory tobacco advertisements targeted at these communities.[8-11] These stressors may have a larger impact in LGBTQ+ persons of color, who are also at risk of experiencing racial discrimination[11, 12] and have larger differences in smoking prevalence by sexual orientation compared to White individuals (Figure S3).

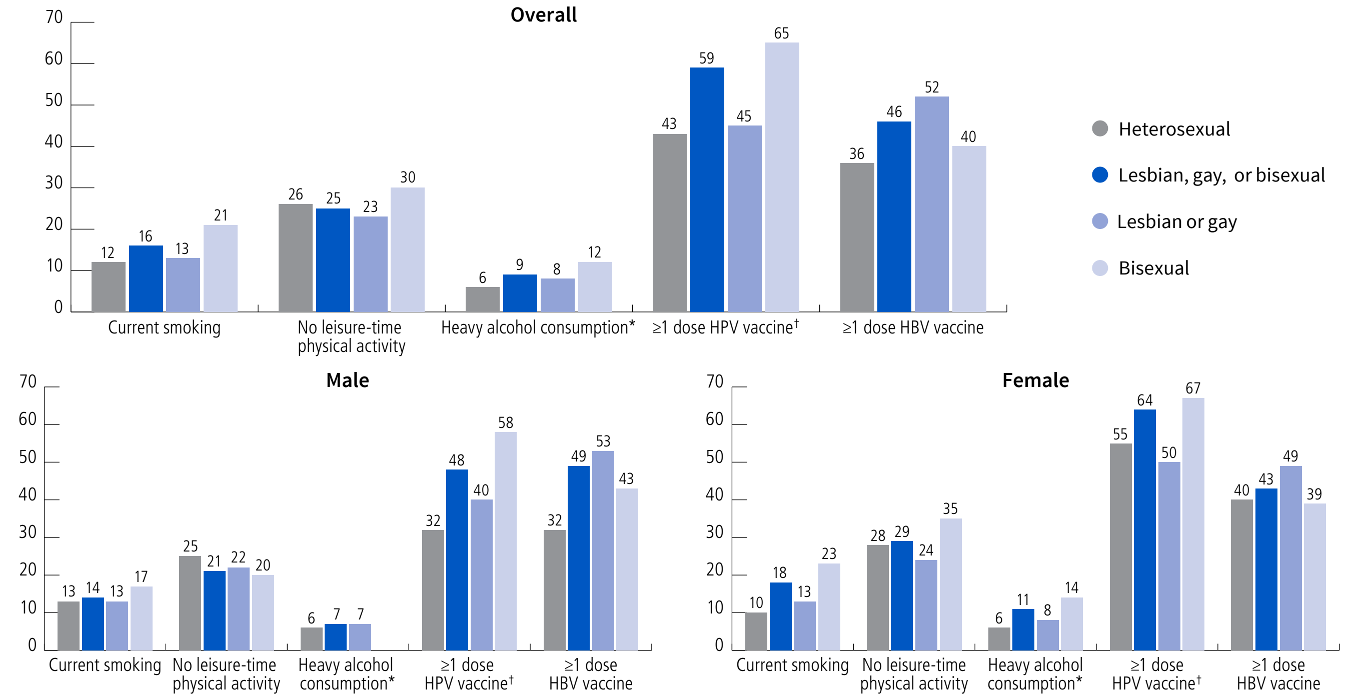
Tobacco use in youth is an important public health issue as nearly 90% of adults who smoke regularly began smoking before the age of 18, and 99% before the age of 26.[13] Lesbian, gay, and bisexual youth in grades 6-12 are much more likely to smoke cigarettes than heterosexual youth (4% versus 1%), and to use e-cigarettes (13% versus 8%, Figure S4). Transgender youth are also more likely to smoke cigarettes than cisgender youth (5% versus 1%) and to use e-cigarettes (11% versus 9%), although this difference is not statistically significant. LGBTQ+ youth also report earlier smoking initiation compared to non-LGBTQ+

Minority Stress and Intersectionality

Health disparities among LGBTQ+ individuals have been attributed in part to minority stress, which refers to "the discrepancy and conflict that arises between the values of a historically minoritized group and the dominant culture or society," as conceptualized by IH Meyer in 2003.[14] Minority stressors faced by LGBTQ+ individuals can be individual or structural and include overt prejudice, rejection, discrimination, and internalized homophobia. Exposure to these stressors may lead to increased prevalence of mental health or substance use disorders and unhealthy behaviors that increase cancer risk.[15] At the cellular level, psychological stress influences biochemical changes such as increased cortisol levels, which can lead to chronic inflammation that increases the risk of cancer and other diseases.[16] Research has also found that individuals who experience greater minority stress are more likely to express gene mutations that are functionally related to cancer,[17] and to have chronic side effects of cancer treatment.[18]

Intersectionality describes the interconnected nature of social categorizations, such as gender, sexual orientation, race, origin, class, and disability, and the resulting patterns of discrimination and disadvantage.[19] Individuals who identify with more than one marginalized group may experience multiple forms of minority stress.[20] Therefore, LGBTQ+ persons, along with other marginalized identities, such as persons of color or with lower socioeconomic status, may experience multiple intersecting systems of oppression (e.g., heterosexism, racism, and classism). Reducing minority stressors by implementing interventions at the structural, interpersonal, and individual level is a crucial component of mitigating cancer disparities in LGBTQ+ communities.[21] These interventions include establishing institutional safe spaces for LGBTQ+ individuals and programs designed to increase knowledge and empathy among providers.[21]

Figure S1. Cancer Risk Factors (%) by Sexual Orientation and Sex, Adults 18 Years and Older, US



HPV: Human papillomavirus. HBV: Hepatitis B virus. Survey estimates were considered unstable and suppressed if denominator sample size was <50 or the relative standard error was >=30%. *Males >14 drinks/week. Females >7 drinks/week. †Ages 18-29.

Source: National Health Interview Survey, 2021-2022 for smoking, 2020 and 2022 for physical activity and alcohol consumption, 2019 and 2022 for HPV vaccination, and 2021 for HBV vaccination.

youth.[22] Reasons for elevated smoking prevalence are similar to adults, but also include additional stressors related to coming out and family rejection.[23, 24]

There are many examples of successful interventions to reduce tobacco smoking in LGBTQ+ adults, including group cessation counseling and community-based programs, but less so among youth. To combat tobacco use among LGBTQ+ youth and young adults, the Food and Drug Administration launched the "This Free Life" campaign in 2016,[23] primarily on digital media, but also in some print and out-of-home marketing (e.g., billboards, bus shelters, etc.) marketing, in 12 designated market areas.[23] The campaign was successful in reaching more

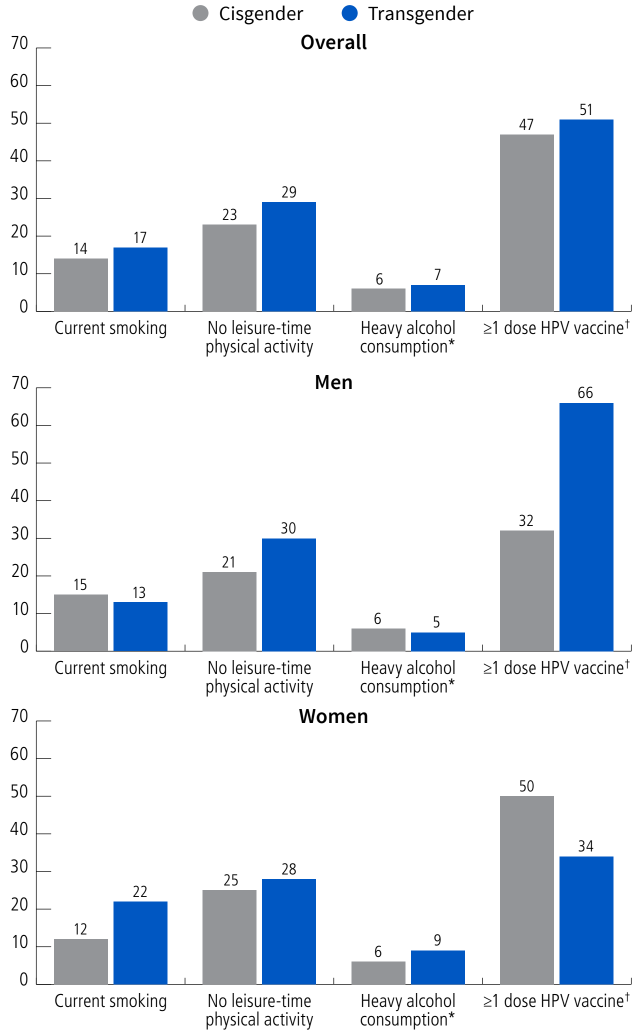
Table S1. Adjusted Prevalence Ratios for Cancer Screening Rates and Cancer Risk Factors by Sexual Orientation, Adults 18 Years and Older, US

	Cancer screening			Cancer risk factors				
	Breast Females 50-74 years	Cervical Females 21-65 years	Colorectal All adults 45-75 years	Current smoking	No leisure-time physical activity	Heavy alcohol consumption*	≥1 dose HPV vaccine†	≥1 dose HBV vaccine
Heterosexual	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Gay/Lesbian	0.97 (0.87, 1.08)	0.92 (0.84, 1.00)	1.14 (1.03, 1.26)	1.27 (1.07, 1.51)	1.06 (0.94, 1.20)	1.16 (0.91, 1.48)	0.98 (0.80, 1.20)	1.39 (1.25, 1.54)
Bisexual	0.94 (0.80, 1.10)	0.97 (0.91, 1.03)	0.89 (0.78, 1.02)	1.66 (1.44, 1.92)	1.08 (0.95, 1.22)	1.77 (1.39, 2.26)	1.29 (1.16, 1.43)	1.02 (0.89, 1.16)

HPV: Human papillomavirus; HBV: Hepatitis B virus. Adjusted for age, sex (when applicable), education, race/ethnicity, region. *Males >14 drinks/week. Females >7 drinks/week. †Ages 18-29

Source: National Health Interview Survey, 2021-2022 for smoking, 2020 and 2022 for physical activity and alcohol consumption, 2019 and 2022 for HPV vaccination, and 2021 for HBV vaccination.

Figure S2. Cancer Risk Factors (%) by Gender Identity, Adults 18 Years and Older, US



HPV: Human papillomavirus. *Males >14 drinks/week. Females >7 drinks/week. †Ages 18-29. HPV vaccination data includes data from AR, CT, GA, HI, IL, MA, MS, NJ, ND, SC, TN, and WV.

Source: Behavioral Risk Factor Surveillance System, 2020 and 2021.

than half of LGBTQ+ young adults in the market areas, resulting in greater intention to quit and increased awareness of harms, such as a greater proportion believing that using tobacco makes life harder.[23, 25] Notably, the prevalence of an attempt to quit smoking in the past year is higher among sexual minorities, bisexual (71%) and gay/lesbian (65%), compared to heterosexual (54%).[26] Increasing the number of smoking cessation programs, particularly for youth at a local level, and expanding target populations to all LGBTQ+ individuals (as opposed to primarily gay men) would help reduce the burden of cigarette smoking among LGBTQ+ individuals.[27, 28] Structural interventions, such as FDA regulation of the marketing and sale of tobacco products targeted at LGBTQ+ communities and broader interventions to combat structural homophobia and transphobia, are needed to reduce smoking and other tobacco use among both LGBTQ+ adults and youth.

Excess Body Weight and Physical Inactivity

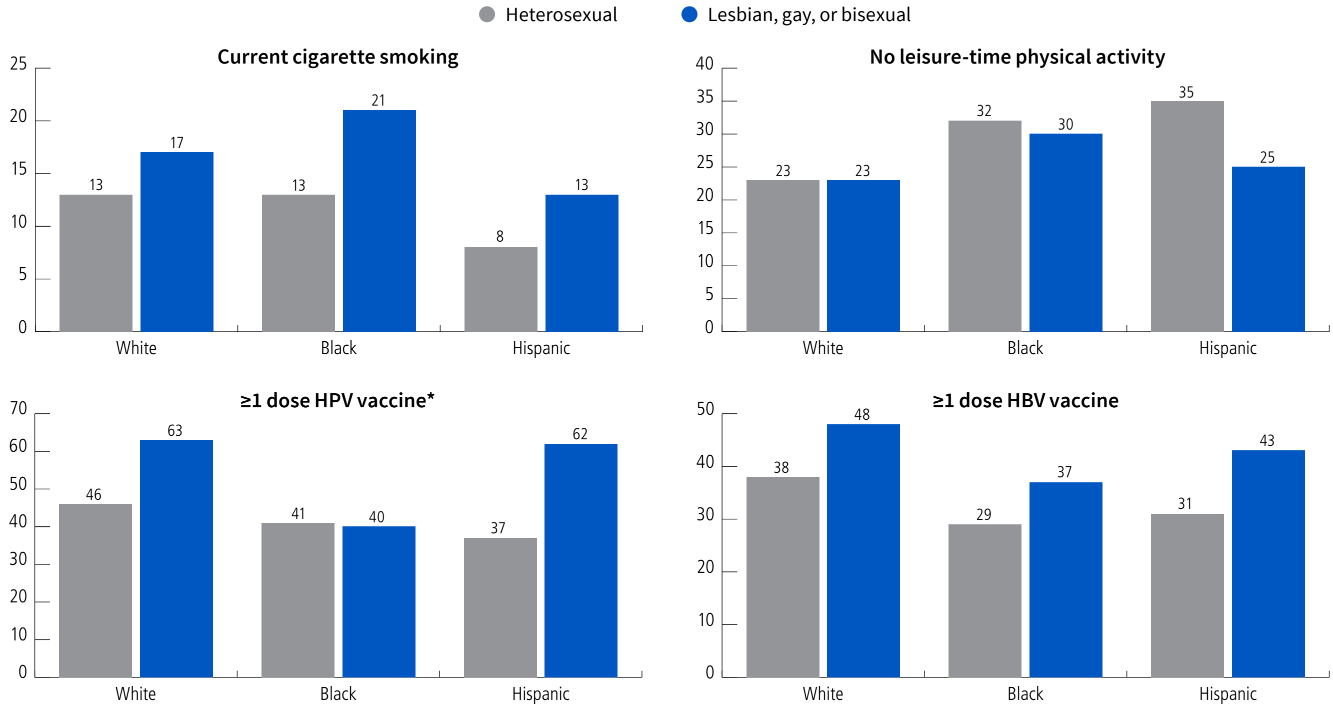
Excess body weight (body mass index [BMI] ≥ 25 kg/m^2) is associated with an increased risk of developing at least 12 types of cancer, including those of the uterine corpus, liver, kidney, esophagus, postmenopausal female breast cancer, and pancreas.[29] Lesbian and bisexual women are more likely to have excess body weight than heterosexual women, whereas gay men are less likely to have excess body weight compared to heterosexual men.[30] The reasons for greater prevalence of excess body weight among lesbian and bisexual women are unclear, but may be partly related to a lower level of engagement in physical activity.[31] For example, 35% of bisexual women report no leisure-time physical activity compared to 24% of lesbian women and 28% of heterosexual women (Figure S1). Physical inactivity is associated with an increased risk of seven cancer types, including bladder, colon, endometrium, and lung,[32-34] and excess leisure-time sitting is associated with an increased risk of cancer death.[33]

Minority stress may also contribute to excess body weight among lesbian and bisexual women, as the primary stress hormone, cortisol, is elevated among obese individuals.[35] Additionally, the influence of pervasive sexual objectification of the female body, body shame, and the development of eating disorders may be exacerbated in lesbian and bisexual women.[36, 37] However, some social scientists caution against the characterization of lesbians as "at risk" for obesity or other health conditions until more extensive high-quality research is available.[38]

Alcohol Use

Alcohol consumption increases the risk of liver, esophageal, colorectal, oral, stomach, and female breast cancers.[39] Lesbian, gay, or bisexual individuals

Figure S3. Cancer Risk Factors (%) by Sexual Orientation, Race, and Ethnicity, Adults 18 Years and Older, US



HPV: Human papillomavirus. HBV: Hepatitis B virus. *Ages 18-64. Survey estimates for Black and Hispanic individuals were unstable for heavy alcohol consumption, and are not shown. Survey estimates for gay, lesbian, and bisexual Asian American and Pacific Islander & American Indian and Alaska Native individuals were unstable and are not shown.

Source: National Health Interview Survey, 2021-2022 for smoking, 2020 and 2022 for physical activity, 2019 and 2022 for HPV vaccination, and 2021 for HBV vaccination.

are more likely than heterosexual people to drink alcohol excessively, especially among women.[40] For example, 14% of bisexual women consume more than 7 drinks per week compared to 8% of lesbian women and 6% of heterosexual women (Figure S1). Although the prevalence of heavy drinking is similar among transgender and cisgender individuals (Figure S2), heavier drinking has previously been reported among young transgender adults.[41] Reasons for excess alcohol use may include sexual minority stress and inaccurate perceptions of high peer alcohol consumption, perhaps related to nightlife settings in social media content.[42, 43] Alcohol is also more available in LGBTQ+-friendly spaces,[42, 44, 45] likely due to targeted advertisement by alcohol manufacturers.[46] Research documenting effective, targeted interventions to reduce alcohol use among LGBTQ+ individuals is lacking, particularly for transgender individuals and sexual minority women.[42, 47]

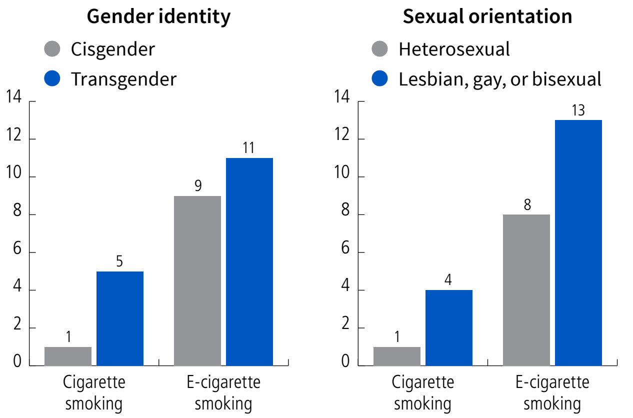
Infectious Agents

Although less than 5% of cancers in the US are attributable to infectious agents,[3] infection-related cancers are more prevalent in gay and bisexual men because anal intercourse is a common mode of viral transmission.[48] For example, 70% of human immunodeficiency virus (HIV) infections were attributed to male-to-male sexual contact in 2019, versus 22% to heterosexual contact and 7% to injection drug use.[49] Further, HIV-infected individuals have a 10-fold higher burden of infection-related cancers than the general population.[50]

Human Immunodeficiency Virus (HIV)

HIV is primarily transmitted through sexual intercourse and illicit injection drug use. HIV differs from other cancer-causing viruses because infection does not cause cancer directly, but indirectly through suppression of the immune system, which also results in an increased risk of cancers caused by other types of viral infection.[51]

Figure S4. Current Cigarette and E-Cigarette Use (%), Middle and High School Students, US, 2022



Source: National Youth Tobacco Survey, 2022.

At least 10 cancers are associated with HIV-infection,[52] three of which (non-Hodgkin lymphoma, Kaposi sarcoma, and cervical cancer) signal clinically relevant immunosuppression and progression to acquired immunodeficiency syndrome (AIDS), referred to as AIDS-defining cancers.[53] Additional HIV-associated cancers include liver, anal, lung, and Hodgkin lymphoma.[52]

Estimated annual incidence of HIV infection has declined from a peak of >130,000 in the mid-1980s to about 35,000 in 2019, with Black and Hispanic people representing 41% and 29%, respectively, of recent infections.[49] Effective HIV prevention strategies, such as pre-exposure prophylaxis with antiretroviral drugs,[54, 55] condom usage,[56] prompt and sustained treatment, and other harm-reduction strategies,[57] have contributed to recent declines in new infections and could accelerate progress with expanded and equitable access. Highly active antiretroviral therapy (HAART) is a treatment that can prevent or delay progression from HIV to AIDS.[58] The widespread uptake of HAART in the US in 1996 is associated with a 70% drop in the incidence of Kaposi sarcoma and a 50% drop in non-Hodgkin lymphoma among HIV-infected individuals.[59] In contrast, the risk increased by 40% for cervical cancer and by two-fold for non-AIDS-defining cancers, likely in large part due to an increase in life expectancy.[58, 59]

Human Papillomavirus (HPV)

HPV infection spreads primarily through intimate skin-to-skin contact and is common regardless of sexual orientation. Although most infections are asymptomatic and cleared by the body, persistent HPV infection causes nearly all cervical cancers, 90% of anal cancers, about 70% of oropharyngeal cancers, and 60% to 70% of vaginal, vulvar, and penile cancers.[60] There is evidence of higher HPV prevalence in some LGBTQ+ population groups. For example, one study of nearly 30,000 men found a prevalence of high-risk anal HPV of 41% in gay and bisexual men compared to 7% in heterosexual men among those who were HIV-negative, and 74% among HIV-positive gay and bisexual men.[61] Prior research has similarly shown elevated prevalence of HPV types associated with anal, cervical, and oral cancers cancer among people with HIV infection.[62, 63]

The first HPV vaccine, approved in 2006, protects against 4 types of HPV, while the most recent vaccine (Gardasil®9), approved in 2014, protects against 9 HPV types and has the potential to avert about 90% of HPV-caused cancers.[60] (For information about American Cancer Society recommendations for HPV vaccination, see cervical cancer prevention on page 29.) As a result of vaccine uptake, the prevalence of infection with vaccine-targeted HPV types declined by more than 80% between 2003-2006 and 2015-2018 among people ages 14-34 years.[64] Receipt of HPV vaccination is highest in people ages 18-29 years who are bisexual (65%), with similar prevalence among gay/lesbian (45%) and heterosexual individuals (43%, Figure S1). Regardless of sexual orientation, receipt of HPV vaccination is lower among Black versus White individuals (Figure S3). HPV vaccination is similar among transgender and cisgender individuals (Table S2).

Hepatitis B Virus (HBV)

Chronic HBV infection causes about 7% of all liver cancers in the United States[3] and is recognized as a risk factor for a small number of non-Hodgkin lymphoma cases.[65, 66] The virus is transmitted through blood or mucosal contact with infectious bodily fluids, including blood, saliva, and semen. It can also be transmitted to infants at birth or shortly thereafter. Most infections

Table S2. Adjusted Prevalence Ratios for Cancer Screening Rates and Cancer Risk Factors by Gender Identity, Adults 18 Years and Older, US

	Cancer screening			Cancer risk factors			
	Breast Females 50-74 years	Cervical Females 21-65 years	Colorectal All adults 45-75 years	Current smoking	No leisure-time physical activity	Heavy alcohol consumption*	≥1 dose HPV vaccine†
Cisgender	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Transgender	0.98 (0.86, 1.12)	0.69 (0.59, 0.80)	0.93 (0.81, 1.05)	1.14 (0.98, 1.33)	1.09 (0.92, 1.30)	1.29 (0.71, 2.35)	1.22 (0.93, 1.59)

Adjusted for age, sex (when applicable), education, race/ethnicity, region. *Males > 14 drinks/week. Female >7 drinks/week. †Ages 18-29. HPV vaccination data includes data from AR, CT, GA, HI, IL, MA, MS, NJ, ND, SC, TN, and WV.

Source: Behavioral Risk Factor Surveillance System, 2018 and 2020 for screening, 2020 and 2021 for risk factors.

occur in unvaccinated adults who engage in high-risk behaviors, including illicit injection drug use, sex with multiple partners, and unprotected anal intercourse.[67, 68]

Although a vaccine against HBV has been available since 1982, with infant vaccination recommended by the CDC beginning in 1991, 70% of adults ages 19 and older reported being unvaccinated in 2018.[69] As a result, the CDC now recommends vaccination of adults ages 19 to 59 universally and ages 60 and older who are high-risk (e.g., men with male sex partners), as well as in individuals younger than 19 years of age. Vaccination in 2021 was higher among lesbian, gay, or bisexual adults compared to heterosexual adults overall (46% versus 36%), with even larger disparities among men (49% versus 32%; Figure S1). Data on vaccination status by gender identity were unavailable. The CDC also recommends one-time HBV screening of all adults ages 18 and older because available treatment can slow the progress of HBV-associated liver disease and is associated with better health outcomes.[70] Although contemporary population estimates of HBV prevalence in the LGBTQ+ population are lacking in the US, a meta-analysis spanning 2000-2021 found a pooled, chronic HBV prevalence of 16% among transgender individuals,[71] significantly higher than the 4.3% reported nationally during 2015-2018.[72]

Hepatitis C Virus (HCV)

Nearly 25% of liver cancers are attributable to chronic HCV infection, which also increases the risk of non-Hodgkin lymphoma.[3] HCV mostly spreads through injection drug use, but is occasionally also transmitted through needle-stick injuries, mother-to-child transmission during birth, or sexual contact with an infected individual. Other risk factors for HCV infection include a higher number of sexual partners and a compromised immune system.[73, 74]

Compared to the general population, the prevalence of HCV infection is 58% higher among HIV-negative gay and bisexual men and more than six-fold higher among HIV-positive gay and bisexual men.[75] This may be, in part, because an estimated 10% to 20% of gay and bisexual men have injected illicit drugs,[76, 77] compared to 2% of the general male population.[78] Similar to alcohol use and cigarette smoking, illicit injection drug use may serve as a coping mechanism for unique minority stressors experienced by gay and bisexual men.[14] HCV prevalence is approximately 30% in gay and bisexual men with a history of illicit injection drug use compared to 3% in those without.[75] The prevalence of HCV among transgender individuals in the US is estimated to be 10%,[71] with higher prevalence among transgender women than transgender men,[79] as well as those with a history of illicit injection drug use.[80]

Most HCV infections become chronic, although only about 1 in 5 individuals are aware of their infection status. Therefore, one-time HCV screening is recommended for all adults ages 18-79 years because available antiviral treatment regimens can eliminate the infection and reduce cancer risk.[81] Unfortunately, lack of access and prohibitive cost has limited uptake.[82] A recent study based on claims data found that less than two-thirds of HCV-positive insured individuals received direct-acting antiviral treatment.[83] Screening and treatment are part of a 5-year program proposed by the Biden administration to eliminate HCV infection in the United States, along with prevention and monitoring of HCV infections.[82] To maximize their effectiveness, HCV elimination programs at the national, state, and local level should include transgender individuals and gay and bisexual men with a history of illicit injection drug use as a high-risk group.[84]

Barriers to Cancer Care

Although LGBTQ+ individuals were historically less likely to have health insurance than the general population, increased access to care as a result of the implementation of the Affordable Care Act in 2014 and the marriage equality Supreme Court decision in 2015 have narrowed this gap.[85] Perhaps the greatest health disparity faced by LGBTQ+ communities is the presumption-of-care gap, which is the fear that a provider will refuse care due to gender identity or sexual orientation.[86] There are currently 9 states (Alabama, Arkansas, Florida, Illinois, Mississippi, Montana, Ohio, South Carolina, and Tennessee) where it is legal for medical professionals to refuse care to LGBTQ+ patients, covering an estimated 20% of the LGBTQ+ population.[87]

Even where care is accessible, it may not be equitable, especially for transgender patients. One survey of medical students found that 95% were comfortable caring for lesbian, gay, or bisexual patients but only 70% were comfortable caring for transgender patients, and only 1 in 4 were confident regarding the health needs of transgender patients.[88] Among oncologists working at NCI-designated comprehensive cancer centers, only 40% were confident in their knowledge of health needs for lesbian, gay, or bisexual individuals, while only 20% were confident in their knowledge of the health needs of transgender individuals.[89] Inclusion of transgender health in medical and nursing school curricula and continuing education is a crucial step toward the provision of equitable care for transgender individuals with cancer.[90]

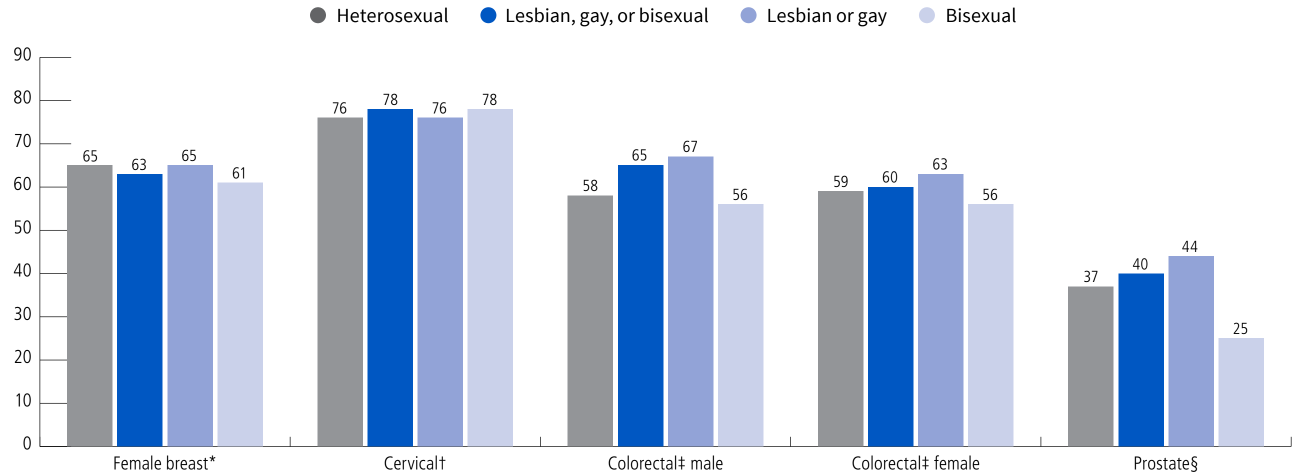
Additional barriers to care include fear of discrimination, discriminatory health care experiences, lack of usual source of care, and cost.[91-94] Transgender individuals with cancer frequently experience misgendering (use of incorrect pronouns), dismissal of their health concerns, discomfort with gender-labeled oncology services, and provider paternalism (choosing a course of action without patient input or consent).[95] These barriers to care lead to poor outcomes. For example, transgender individuals with cancer are more likely to be diagnosed with advanced-stage disease, less likely to receive treatment, and have poorer survival for many cancer types compared to cisgender individuals.[96]

Discriminatory care is even greater among LGBTQ+ individuals who have other marginalized identities, such as African Americans.[97] For example, one recent study found that among women with abnormal mammogram results or a breast cancer diagnosis, Black women who were sexual minorities were five times more likely to experience delays in care than White heterosexual women.[98] Black sexual minority women were also much less likely to have social support. Reducing racism and discrimination against LGBTQ+ individuals in health care is an essential step toward health equity.[99, 100]

Gender-affirming Care

Gender-affirming care for transgender individuals, including medical interventions such as hormone therapy and surgical procedures, is associated with reductions in depression, suicidal behaviors, and other negative health outcomes in an increasing number of studies.[101, 102] However, evidence for a relationship between receipt of gender-affirming care and cancer prevention and treatment is lacking and more research is needed. Patients who do undergo gender-affirming surgery should be assessed for possible genetic cancer predisposition and seek genetic counseling if appropriate.[103] In particular, individuals at very high risk of breast or ovarian cancer (e.g., those with pathogenic *BRCA* gene variants) may consider risk-reducing mastectomy or bilateral salpingo-oophorectomy. Although many cancer treatments are hormone-based and may interact with gender-affirming hormone therapy, most transgender patients are not counseled about potential issues and clinical guidelines are lacking.[104, 105]

Figure S5. Cancer Screening Prevalence (%) by Sexual Orientation, Adults 18 Years and Older, US, 2019 & 2021



Screening prevalence is based on American Cancer Society guidelines. *Mammogram within the past year (ages 45-54 years) or past two years (ages ≥55 years). †Pap test in the past 3 years among women ages 25-65 years OR Pap test and HPV test within the past 5 years among women ages 30-65 years. ‡FOBT/FIT, sigmoidoscopy, colonoscopy, computed tomography (CT) colonography, OR sDNA test in the past 1, 5, 10, 5 and 3 years, respectively. §Prostate specific antigen test within the past year, among males ages 50+ years who have not been diagnosed with prostate cancer.

Source: National Health Interview Survey, 2019 & 2021.

Cancer Screening

According to the National Health Interview Survey, cancer screening prevalence is lower among bisexual individuals compared to heterosexuals except for cervical cancer, with the largest gap for prostate cancer (25% versus 37%; Figure S5). In gay or lesbian individuals, however, screening is similar or higher, including 67% of gay men being current for colorectal cancer screening versus 58% of heterosexual men. Transgender individuals have lower prevalence of sex-specific cancer screenings compared to cisgender individuals, particularly for cervical cancer (59% versus 87%, Figure S6). While HPV infection prevalence among transgender men is similar to cisgender women, receipt of testosterone-based gender-affirming hormone therapy causes atrophy of the vagina and cervix, making the Pap test a less effective screening option.[106, 107] Therefore, screening every 5 years with a primary HPV test is especially important for transgender men.

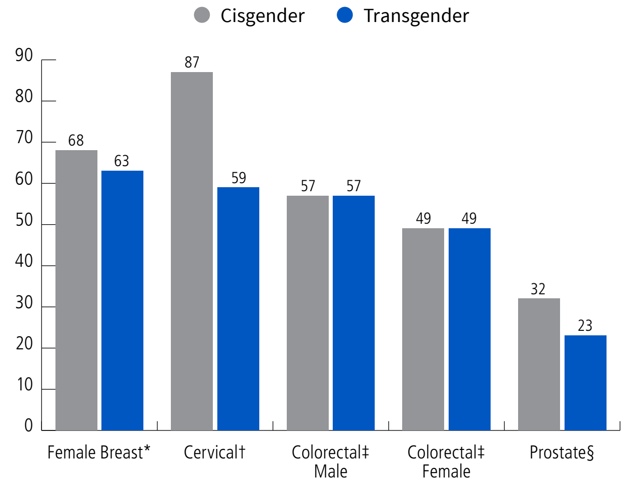
Lack of education and emotional and financial distress are common deterrents to screening among LGBTQ+ individuals,[94] with 65% unsure of which screenings they should receive and 70% unsure about when to begin cancer screening.[108] For example, a common misconception among lesbian women is that they have a lower risk of cervical cancer than heterosexual women.[109] Among transgender individuals, a significant barrier to screening is fear of misgendering, which can result in confusion or lack of insurance coverage for indicated tests.[108] In addition, screening recommendations often exclude specific guidance for transgender individuals. For example, prostate cancer screening guidelines do not include transgender women, many of whom utilize gender-affirming hormone therapy that will change their baseline prostate-specific antigen (PSA) level, the biomarker used to screen for prostate cancer.[110] Including recommendations for transgender individuals in screening guidelines is an important step toward health equity in these communities.

Disparities in Cancer Occurrence

Breast Cancer

Lesbian and bisexual women likely have a higher risk of breast cancer due to higher prevalence of risk factors, including fewer childbirths and higher alcohol use and excess body weight.[111] Although population-based breast cancer incidence is lacking,[112] one modeling study found a 10% higher breast cancer risk among bisexual women

Figure S6. Cancer Screening Prevalence (%) by Gender Identity, Adults 18 Years and Older, US, 2018 & 2020



Screening prevalence is based on American Cancer Society guidelines. *Mammogram within the past year (ages 45-54 years) or past two years (ages ≥55 years). †Pap test in the past 3 years among women ages 25-65 years OR Pap test and HPV test within the past 5 years among women ages 30-65 years. ‡FOBT/FIT, sigmoidoscopy, colonoscopy, computed tomography (CT) colonography, OR sDNA test in the past 1, 5, 10, 5 and 3 years, respectively. §Prostate specific antigen test within the past year, among males ages 50+ years who have not been diagnosed with prostate cancer.

Source: Behavioral Risk Factor Surveillance System, 2018 and 2020.

and 6% higher risk among lesbian women compared to heterosexual cisgender women.[113] Data on breast cancer associated with gender-affirming hormone therapy have been mixed, but transgender women appear to be at an increased risk during hormone treatment compared to cisgender men.[95, 114] Transgender men appear to have a higher risk of breast cancer compared to cisgender men,[113] likely due to lack of top surgery (surgery that removes or augments breast tissue for masculinization or feminization) or incomplete breast tissue removal during top surgery.[114] However, transgender men have a lower risk compared to transgender women.[95, 115]

Breast cancer outcomes are impacted by access to high-quality screening and treatment. Although breast cancer screening rates are similar regardless of sexual orientation, lesbian and bisexual women are more likely to receive a diagnostic mammogram than heterosexual women.[111, 117] One recent study found that compared to cisgender and heterosexual people, LGBTQ+ patients were more likely to experience delays between symptom onset and breast cancer diagnosis and to decline oncologist-recommended treatment, and are three times as likely to experience breast cancer recurrence.[118] Reasons for this could include patient distrust of the health care system due to discrimination, as well as failure on the part of health care professionals to fully evaluate symptoms in LGBTQ+ individuals.[119]

Gynecologic Cancers

Transgender men may remain at risk for gynecologic cancers after gender-affirming surgery, and cases of endometrial, ovarian, and cervical cancers have all been documented.[120] Testosterone therapy has been hypothesized to increase the risk of hormone-responsive endometrial and ovarian cancers because it can be converted to estrogen in the body.[120, 121] Epidemiologic evidence offers only conflicting evidence of this association,[120] and population-based incidence data which include transgender individuals are unavailable. Lower cervical cancer screening prevalence among transgender as compared to cisgender individuals (59% versus 87%, Figure S6) leaves transgender individuals at an elevated risk for cervical cancer. In addition to health care discrimination faced by many LGBTQ+ individuals, transgender men face further barriers to gynecologic oncology care, including discomfort with female sex organs that likely contribute to discrimination based on their transgender identity,[122] having to inform their provider about transgender health care needs, and fear of receiving a gynecologic exam, although epidemiologic evidence is conflicting.[120, 121, 123] These valid fears of disclosure and mistreatment lead to delayed diagnosis and worse health outcomes and can be addressed, in part, by increasing provider awareness and normalizing a broad range of patient backgrounds.[120]

Prostate Cancer

Several case-control studies have investigated prostate cancer risk among gay or bisexual men, with mixed results.[124] Some studies find that a history of sexually transmitted infections and many sexual partners increases the risk of prostate cancer.[124] More research is needed to determine if these factors contribute to prostate cancer risk among gay and bisexual men.

Prostate cancer screening using the prostate-specific antigen (PSA) test can detect asymptomatic disease that would otherwise never be detected. Prior to 1992 and the introduction of PSA screening, HIV-positive men appeared to be at an increased risk for prostate cancer.[125, 126] Following the introduction of PSA testing, this association has reversed, likely due to an increase in asymptomatic case detection among HIV-negative men and lower prevalence of PSA screening among low-income HIV-positive men.[127] Gay men are more likely to be screened for prostate cancer using PSA testing compared to heterosexual men (44% versus 37%, Figure S5), and to be screened at younger ages.[128]

Transgender women remain at risk of developing prostate cancer even after gender-affirming surgery.[129] Although women receiving gender-affirming hormone therapy are at lower risk for prostate cancer than cisgender men, there is some evidence of a higher prevalence of aggressive disease.[129, 130] Cancer may also have begun developing prior to gender-affirming hormone therapy onset.[131] Compared to cisgender men, transgender women have lower prevalence of PSA screening (Figure S6), likely due to lack of awareness of prostate cancer risk, stigma, and a lack of inclusion of this population in screening guidelines.[110]

Cancer Survivorship

The National LGBT Cancer Network estimates that there are 1 million LGBTQ+ cancer survivors in the US.[132] Compared to the general public, LGBTQ+ cancer survivors are more likely to have poor physical and mental health,[133] have higher prevalence of cigarette smoking and heavy alcohol use, and frequently experience homophobia and discomfort expressed by health care providers.[94, 134] Transgender patients also face discrimination in palliative care, including deliberately discourteous treatment, refusal to acknowledge gender identity or use preferred name, and privacy violations.[135] These circumstances and experiences reduce quality of life for cancer survivors, especially for those with high minority stress and/or low social support.[136, 137] For example, LGBTQ+ individuals with cancer are 3-6 times more likely to report high or very high distress levels.[136]

The American Cancer Society Cancer Action Network[SM] (ACS CAN), the advocacy affiliate of the American Cancer Society, recently invited a group of LGBTQ+ individuals with cancer and their families to participate in the Survivor Views research panel.[138] Key findings of the survey were that half of LGBTQ+ participants have concerns about facing discrimination in a health care setting, with 20% very concerned. Over half of those surveyed have concerns that legislation will impact their ability to receive care without discrimination. These negative outcomes were more common for Black and Hispanic LGBTQ+ individuals with cancer, as well as those living in the South. These survey data highlight the barriers preventing access to nondiscriminatory care faced by LGBTQ+ individuals with cancer. Improving this access is a necessary step toward equitable cancer care for all individuals with cancer, regardless of their identity.

Call for Increased Data Collection

Sexual orientation and gender identity (SOGI) influence the social determinants of health, including discrimination, social and community relationships, and access to health care, which is why the National Institutes of Health designated sexual and gender minority persons as a health disparity population for research in 2016.[139] Although the majority of oncologists believe SOGI data are important, as of 2020 fewer than half collected this information at their health care center.[140] Institutional collection of SOGI data is significantly associated with a provider's belief that knowledge of a patient's SOGI information is an important part of providing quality care.[140] Challenges in data collection include a lack of institutional guidelines, lack of awareness about specific information to collect, and fear or discomfort on the part of the patient or provider.[141] Interestingly, provider perceptions are not in alignment with patient preferences; 80% of clinicians in a national study believed their patients would refuse to disclose their SOGI data, while only 10% of patients reported such refusal.[142] In fact, LGBTQ+ patients are most likely to understand the value of this information,[142] suggesting that lacking data collection can be largely solved by provider education.

The lack of SOGI data collection at most health care facilities prevents population-based cancer registries and other entities that utilize electronic health records from accurately reporting this information to help inform cancer control efforts. Even when SOGI data are collected, sex or gender variables are often characterized inappropriately, leading to misinformation.[143] For example, when population-based cancer registries report on gender identity, it is recorded as a single data item for "sex" (e.g., "Male," or "Transsexual, natal male"), which can be misinterpreted.[144, 145] Successful reporting of SOGI information in cancer occurrence data will require more complete collection at the facility level and reevaluation of current reporting algorithms, such as implementation of a two-step method for collecting sex at birth and gender identity.[146] Additionally, SOGI data are not reported on death certificates.[147] Further, oncology clinical trials often fail to include LGBTQ+ individuals[148] or distinguish between sex and gender,[149] both of which can undermine equitable outcomes among LGBTQ+ individuals with cancer. The routine collection and reporting of SOGI data at all levels of health care and the inclusion of LGBTQ+ individuals by all governmental and nongovernmental entities engaged in research grant funding will facilitate health equity, inform targeted cancer control efforts, and ultimately improve health outcomes in this underserved population.

Summary

LGBTQ+ individuals are vulnerable to cancer disparities due to higher prevalence of cancer risk factors, such as smoking, likely in part because of stress caused by systemic discrimination. Programs to reduce risk factor prevalence among youth, such as the This Free Life anti-smoking campaign, are critical to reducing the future cancer burden because younger generations are more likely to identify as LGBTQ+. Insufficient access to high-quality care, limited provider knowledge of LGBTQ+ patient needs, discrimination in the health care setting, and a lack of population-based cancer occurrence data are all barriers to health equity that need to be addressed. Additionally, further research building on findings reported herein is warranted.

What Is the American Cancer Society Doing to Address Cancer Disparities in LGBTQ+ Communities?

Advocacy

Our advocacy affiliate, ACS CAN, engages in advocacy efforts at the federal, state, and local levels that reduce cancer disparities in LGBTQ+ communities. Following are some of the ways the organization is fighting to reduce cancer-related disparities, remove barriers to care, and improve health outcomes for LGBTQ+ communities:

- ACS CAN opposes legislation and regulations that include "conscience clauses."
- ACS CAN advocates to maintain the provision of the Affordable Care Act (ACA) that ensures broad protections against discrimination of LGBTQ+ individuals in health care services.
- ACS CAN advocates to ensure that all eligible individuals can access affordable, comprehensive health insurance through Medicaid expansion, which LGBTQ+ communities are more likely to depend on.
- ACS CAN pursues evidence-based policies that reduce the impact of tobacco, including for LGBTQ+ communities, such as comprehensive smoke-free policies, increased taxation of tobacco products, and adequate funding for prevention and cessation programs.
- ACS CAN supported the passage of the Respect for Marriage Act, which ensures marriage equality for same-sex couples and their families and protects their ability to access employer health insurance.

Outreach

- The American Cancer Society and CenterLink work together to educate LGBTQ+ individuals on cancer prevention and early detection, with a focus on colorectal cancer screening and tobacco cessation.

- The American Cancer Society collaborates with the National LGBT Cancer Network to improve the lives of LGBTQ+ cancer survivors and those at risk by educating, training, and advocating for the LGBTQ+ community through cancer outreach, education, and tobacco use reduction.
- The National Black Justice Coalition collaborates with the American Cancer Society and ACS CAN to reach Black LGBTQ+ communities and other constituents with important messages relating to cancer prevention and early detection.
- The American Cancer Society participates in Pride events across the country to engage LGBTQ+ community members around cancer prevention, early detection, and mission support information. In 2023, 80,000 people were reached at 65 Pride events.

Resources for LGBTQ+ Individuals With Cancer and Their Families

American Cancer Society Cancer Survivors Network®

The Cancer Survivors Network[SM] (CSN, csn.cancer.org) is a safe online community where survivors and caregivers can connect with others who have had similar experiences to share their stories, ask questions, and support each other.

Gay Men Talk About Cancer: csn.cancer.org/forum/180

Lesbians Talk About Cancer: csn.cancer.org/forum/181

Cancer*Care*

cancercare.org/tagged/lgbtq+

Cancer*Care* provides free, professional support services for the LGBTQ+ community affected by cancer, as well as practical information and additional resources.

National LGBT Cancer Network

cancer-network.org/

The National LGBT Cancer Network is an education, training, and advocacy organization that works to improve the lives of LGBTQ+ cancer survivors and those at risk. The services they offer LGBTQ+ individuals affected by cancer include free virtual LGBTQ+ support groups three times a week and directories of LGBTQ+-friendly providers. Their advocacy and research efforts include:

- Research on community impact, including collecting stories about how legislative attacks are affecting individuals with cancer
- Improving inclusiveness in cancer centers, including creating LGBTQ+ welcoming environments and developing an 8-part online enduring provider training called Welcoming Spaces
- Running the CDC-funded cancer and tobacco control LGBTQI+ disparity network, and offering technical assistance with cancer and tobacco control entities
- Advocating for increased data collection and elimination of menthol and other flavors in tobacco
- A pipeline diversity initiative for incoming professionals
- A series of patient educational campaigns, such as the Queer Health is Power screening campaign in New York state

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