

Kaiser Permanente Research Brief

HIV and AIDS

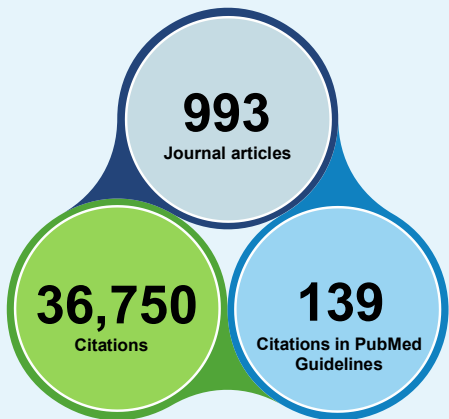
This brief summarizes the contributions of Kaiser Permanente Research since 2012 on the topic of HIV and AIDS.

Since the height of the HIV and AIDS epidemic in the mid-1980s, the number of new HIV infections occurring each year in the United States has fallen by more than two-thirds.¹ Nevertheless, according to the Centers for Disease Control and Prevention, approximately 38,000 new cases of HIV were diagnosed in the United States in 2022.² Further, the CDC estimates that 14% of people living with HIV are unaware of their infection.³ Two-thirds of new HIV diagnoses occur in men who have sex with men.² Moreover, despite representing just 30% of the U.S. population, more than 70% new HIV infections occur in Black and Latino Americans.²

Because of treatment advances and improved survival that began in the late 1990s, the number of Americans living with HIV has increased substantially.¹ By the end of 2022, an estimated 1.1 million adolescents and adults were living with HIV.⁴ Among those living with HIV, over 80% were receiving treatment for the disease, and nearly 70% of those being treated had achieved viral suppression.⁵ People who sustain viral suppression can remain healthy and have almost no risk of sexually transmitting HIV to uninfected partners. The risk of transmission has been further reduced through interventions such as pre-exposure prophylaxis, or PrEP, which is a prescription of HIV antiviral drugs that helps prevent infection in people without HIV.

HIV is an active area of study for Kaiser Permanente Research. Scientists across the organization have used our rich and comprehensive longitudinal data to advance knowledge in the areas of understanding risk, improving patient outcomes, and translating research findings into policy and practice. We have published nearly 1,000 articles related to HIV and AIDS since 2012, which have been cited almost 37,000 times.⁶ These articles are the product of observational studies, randomized controlled trials, meta-analyses, and other studies led by Kaiser Permanente scientists. Our unique environment — a fully integrated care and coverage model in which our research scientists, clinicians, medical groups, and health plan leaders collaborate — lets us contribute generalizable knowledge on HIV and AIDS, and many other research topics.

Kaiser Permanente publications related to HIV and AIDS since 2012



Source: Kaiser Permanente Publications Library and Scite metrics, as of October 8, 2024.

This brief summarizes a selection of the publications contained within the Kaiser Permanente Publications Library, which indexes journal articles and other publications authored by individuals affiliated with Kaiser Permanente. The work described in this brief originated from across Kaiser Permanente's 8 regions and was supported by a wide range of funding sources including internal research support as well as both governmental and nongovernmental extramural funding.

Understanding risk

Who is at risk for the development and progression of HIV and AIDS?

The work of Kaiser Permanente's scientists has contributed to a richer understanding of risk factors for transmission of HIV. In addition to well-established risk factors for HIV infection, such as high-risk sexual behavior or use of injected drugs, maternal-fetal transmission remains a risk, although it has been mitigated by improvements in screening and prevention practices.^{7; 8} Our researchers have studied disparities in HIV risk, and have found elevated risks among men who have sex with men, Latinos, and transgender patients.^{9; 10}

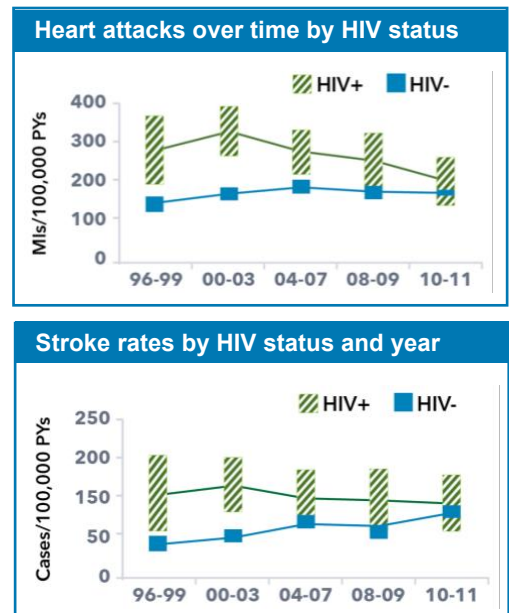
Our research has also informed the question of disease progression in patients with HIV infection. Many people with HIV are unaware that they have contracted the virus, and as such, do not receive appropriate treatment.¹¹ Furthermore, while timely initiation of antiretroviral therapy has increased with time, many patients with known HIV are unable to access the care they need.^{12; 13} Our research has found that the immune status of patients making their first contact for HIV care has not improved over time.¹¹ Our scientists have also explored instances of poor adherence to and refusal of anti-HIV treatment, with the goal of developing interventions to address the objections and concerns of these patients.^{14; 15}

What health risks do people with HIV and AIDS face?

In the early years of the HIV and AIDS epidemic, death from AIDS-related illnesses was the primary health risk in this group of patients. In 2023, with effective treatments being widely available, this is no longer the case.¹⁶⁻²³ While people with HIV are now living as long as people without HIV infection, evidence suggests that patients with HIV remain at higher risk of comorbid conditions, and that the onset of these conditions occurs earlier, relative to the onset in people without HIV.^{24; 25} As such, conditions associated with aging,²⁶⁻²⁹ such as non-AIDS-defining cancers,^{26; 30-36} cardiovascular disease,^{37; 38} chronic respiratory illness,³⁹ dementia,^{40; 41} and other forms of neurocognitive degeneration,²⁶ have increasingly contributed to morbidity and mortality among patients with HIV. Given these trends, our researchers have studied the delivery of screening and other forms of preventive care to these patients.^{42; 43}

Data from Kaiser Permanente have been instrumental in enriching our understanding of those cancers for which patients with HIV are at increased risk. Large studies conducted in Kaiser Permanente members have found significantly higher risks for several forms of cancer among people with HIV,⁴⁴⁻⁴⁹ and other work has suggested that risk factors for cancer (for example, smoking and infection with oncogenic viruses such as human papillomavirus) are very common among these patients.⁵⁰⁻⁵² Compared to those without HIV, patients with HIV have lower 5-year survival rates for some forms of cancer,⁵³ and higher rates of cancer-attributable mortality.⁵⁴ Recent research, however, suggests that earlier initiation of antiretroviral therapy may reduce the risk of virus-related cancers.⁵⁵

Our scientists were among the first to demonstrate an excess risk of cardiovascular diseases, including heart attacks, in patients with HIV.^{37; 38; 49; 56; 57} Moreover, the use of antiretroviral therapy, known as ART, has greatly complicated the treatment of elevated blood



cholesterol,⁵⁸⁻⁶⁰ and our research has demonstrated that many statin-eligible patients with HIV do not receive these medications.⁶¹ However, a more recent study conducted in Kaiser Permanente members found that the risk of heart attacks and strokes has declined in recent years,^{49; 62; 63} and other data suggest that these cardiovascular risks can be reduced by more intensive management of diabetes and high cholesterol in patients with HIV.⁶⁴ Increased attention to clinical and behavioral cardiovascular risk factors, and increased use of lipid-friendly ART medications,⁶⁵ may also have an effect on cardiovascular outcomes such as heart failure, a historically understudied condition currently being investigated actively within Kaiser Permanente.^{57; 66-68}

HIV has also been associated with an increased risk of liver dysfunction, liver cancer, and related mortality, particularly in patients with compromised immune systems and higher HIV viral loads, alcohol use, drug use, diabetes, or coinfection with hepatitis B or C.⁶⁹⁻⁷² This has renewed attention to hepatitis B vaccination and aggressive screening for and treatment of chronic hepatitis C among populations with HIV.⁷³⁻⁷⁵ Finally, although the risks of chronic kidney disease and end-stage renal disease in patients with HIV are declining with the availability of improved treatments,⁷⁶ these risks remain high,⁴⁹ particularly in Black patients.⁷⁷

Research conducted at Kaiser Permanente has also shown that mortality rates, rates of comorbid illness, and other outcomes are poorer in patients with HIV and concurrent substance use and/or psychiatric disorders, even after controlling for ART and health status.⁷⁸⁻⁸⁴ Our scientists have found that the gap in life expectancies between Kaiser Permanente members with and without HIV is narrower in patients with no history of drug or alcohol use.¹⁷ Smoking and alcohol use disorders are common, and often undertreated, among patients with HIV,⁸⁵⁻⁸⁷ and increases in alcohol use are associated with higher rates of sexually transmitted infections and poorer control of HIV disease.^{84; 88; 89} Research is underway to learn more about co-occurring behavioral health conditions in patients with HIV and to evaluate strategies for reducing the use of alcohol among these patients.^{80; 81; 90-93}

Improving Patient Outcomes

What strategies are effective in preventing HIV and AIDS?

Screening of people whose HIV status is unknown is effective in preventing transmission of the virus, and Kaiser Permanente continues to develop and refine innovative approaches to screening for HIV and other sexually transmitted diseases.⁹⁴ Our research has explored factors associated with screening rates,

Kaiser Permanente's San Francisco Medical Center cares for over 170,000 adult members.



From July 2012 through February 2015, 657 members initiated pre-exposure prophylaxis for HIV.



Despite little change in behaviors related to HIV transmission risk, there were no new cases of HIV diagnosed during this period.¹⁰⁵



including addressing concerns about the cost of implementing screening⁹⁵ and improving levels of HIV knowledge at the community level.^{9; 96} Kaiser Permanente scientists have explored numerous interventions for improving HIV screening,^{11; 97} including report cards⁹⁸ and the implementation of electronic health record alerts for screening pregnant women⁷ and other patients at high risk.⁹⁹ Our researchers have also explored the use of artificial intelligence techniques for identifying individuals at high risk of HIV infection using electronic health record information.¹⁰⁰ In patients with HIV infection identified through screening tests, counseling regarding sexual behaviors and use of injected drugs may be critical in preventing HIV transmission.^{99; 101; 102} In addition, treatment of HIV infection may be viewed more broadly as a component of prevention, insofar as viral suppression in treated individuals reduces the risk of transmission to their contacts.⁹⁹

Work by Kaiser Permanente researchers has demonstrated that, as treatment within a community lowers its total viral load, transmission of the virus is reduced, and total mortality declines as a result.^{18; 103}

Kaiser Permanente researchers and clinicians also are actively investigating the use and effectiveness of HIV pre-exposure prophylaxis, or PrEP. Research in our Northern California population among members enrolled in a PrEP protocol found high rates of PrEP adherence¹⁰⁴ and no new cases of HIV infection despite high rates of sexually transmitted infections and decreased condom usage.^{105; 106} Other benefits of PrEP may include reduced feelings of anxiety and stigma.¹⁰⁷ Despite these promising results, awareness and uptake of PrEP in patients at high risk, and compliance with recommended dosing, are continuing challenges.¹⁰⁸⁻¹¹⁵ Kaiser Permanente scientists in Southern California have studied the implementation of a primary care screening program that has significantly increased identification and enrollment of eligible patients into PrEP efforts.¹¹⁶ Nevertheless, barriers to PrEP initiation and adherence, including clinician identification of eligible patients, remain common.^{117; 118} Recent research has suggested that younger age, cannabis use, presence of a sexually transmitted infection, and fewer sexual partners may be risk factors for PrEP discontinuation.¹¹⁹ Moreover, high rates of sexually transmitted infections among PrEP users have emphasized the need for ongoing testing and programs to mitigate these risks.^{120; 121} Kaiser Permanente scientists are also involved in numerous trials evaluating the comparative effectiveness and safety of various PrEP regimens,^{60; 122; 123} as well as innovations in clinic design intended to better serve gay, lesbian, bisexual, and transgender and gender-fluid members.¹²⁴

How does early identification of HIV affect outcomes?

Large numbers of people with HIV are not aware that they have contracted the virus, and remain at risk for both virus transmission and progression of HIV.¹¹ Screening efforts are critical for the long-term health of these patients and those who may be vulnerable to HIV transmission,^{97; 99; 125} and early identification and prompt initiation of antiretroviral treatment may prevent comorbid cancer, cardiovascular disease, and other illnesses that occur frequently in people with HIV.^{31; 44; 62; 63; 126-128}

What are the key factors in effective treatment of people with HIV and AIDS?

Research at Kaiser Permanente has emphasized the importance of multidisciplinary care that addresses the behavioral, financial, and health concerns common to patients with HIV. Multidisciplinary care elements, including patient engagement with a medical record system and the use of clinical pharmacists, have been shown to enhance the care coordination that supports adherence and the achievement of viral suppression.^{15; 129} Kaiser Permanente scientists have identified subgroups of patients with HIV who may require additional outreach to foster their engagement with these care processes.¹³⁰⁻¹³² Our research has also underscored the role of a continuum of HIV care, in which linkages between timely diagnosis, use of antiretroviral therapy, and retention in care are carefully maintained, and has worked to identify subgroups of patients whose linkage with this continuum is suboptimal.^{83; 133} Recent research from Kaiser Permanente scientists has demonstrated the importance of office visits. Although the causality of the association is unclear, a study of nearly 3,000 members with HIV found that missing at least 1 office visit was associated with a 71% increase in mortality over the study period, and that each missed visit increased the patient's risk of dying by 12%.¹³⁴

More recent work is evaluating what types of health care visits lead to higher rates of viral suppression. For example, researchers have established that a single annual visit supplemented by email (with or without telephone visit) may lead to the same viral suppression achieved by 2 traditional in-person visits.¹³⁵ Further, our scientists and HIV care leaders have broadened the definition of quality care for HIV to include reduced

hospitalizations and prevention of other health conditions, and have investigated opportunities for providing such care at Kaiser Permanente.^{136; 137}

Our scientists are also involved in studies of antiretroviral therapy, or ART, medication effectiveness, acceptability, and safety.^{65; 138-143} Recent studies comparing the efficacy and safety of non-nucleoside reverse transcriptase inhibitors (NNRTIs) and integrase-strand transfer inhibitors (INSTIs) has found that drug resistance is more common in patients using NNRTIs,¹⁴⁴ and that the risk of virologic failure is lower in resistant patients switched to INSTIs.¹⁴⁵ However, while most modern ART agents are much safer than older drugs and drug regimens, there are substantial risks associated with INSTIs,¹⁴¹ including weight gain^{146; 147} and an elevated risk of diabetes.^{146; 148} Other research has suggested that some protease inhibitor ART agents may be associated with higher rates of liver complications¹⁴⁹ and heart failure.¹⁵⁰ Our scientists have contributed to research on the weight gains associated with various ART regimens,^{147; 151; 152} and have identified clinic factors, including regular medication dispensing reviews and enhanced adherence services, associated with higher rates of ART initiation and viral suppression.¹⁵³

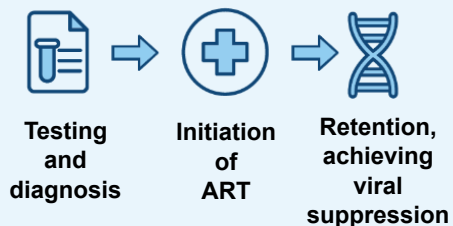
HIV disproportionately affects people who are Black and Latino, as well as people from the LGBTQ community.^{9; 16; 73; 154-156} These disparities are of great concern to Kaiser Permanente, given our long-standing commitment to eliminating them.¹⁵⁷ Although racial disparities in access to recommended treatments persist at a national level,¹⁵⁸ recent research has failed to find significant disparities in treatment access or viral load among Kaiser Permanente members with HIV and hepatitis C coinfection.¹⁵⁹

Researchers at Kaiser Permanente have also been involved in numerous studies illustrating the challenges of caring for patients with HIV during the COVID-19 pandemic. Our scientists found evidence that adherence to composite medications for HIV declined during the acute phase of the pandemic,¹³² though other data suggested that the use of tenofovir, either for the prevention or treatment of HIV infection, was protective against poor COVID-19 outcomes.¹⁶⁰ Other research found that the risk of post-vaccination breakthrough COVID-19 infection was higher among patients with HIV, suggesting that these patients may derive greater benefit from booster doses of these vaccines.^{161; 162}

Translating Research Findings Into Policy and Practice

Kaiser Permanente is a learning health care organization that works to systematically use research to inform policy and improve practice. Research, clinical, and operational partners within Kaiser Permanente have tested a range of interventions to reduce the risks of HIV, and to improve outcomes for patients with HIV. Kaiser Permanente's HIV Care Cascade and quality metrics have contributed to the national conversation by

Effective care for patients with HIV requires engagement throughout the continuum of care.



demonstrating that medication regimens with high rates of adherence are critical to the successful treatment of HIV.¹⁶³ The Kaiser Permanente hepatitis task force and HIV Interregional Initiative provide ongoing quality measurement and guide improvements in patient care and outcomes, with continued focus on improving HIV prevention, linkage and retention in care, tolerability of antiretroviral therapy, and outcomes. More recently, our scientists participated in a randomized study that demonstrated the effectiveness of a pharmacist-led intervention to reduce inappropriate medication prescribing among patients with HIV.¹⁶⁴ Other recent randomized trials tested the use of an HIV risk score, developed using electronic health record data, to

identify patients who may benefit from HIV pre-exposure prophylaxis,¹⁰⁰ and the use of electronic physician reminders to improve rates of PrEP initiation.¹⁶⁵

Kaiser Permanente research contributes not only to policy and practice changes within our own care delivery system, but also to the advancement of national understanding of HIV and AIDS. Our research on HIV and AIDS since 2012 has been cited nearly 140 times in recent consensus statements and clinical practice guidelines, including guidelines issued by the U.S. Public Health Service¹⁶⁶ and the World Health Organization.¹⁶⁷ Kaiser Permanente researchers and clinicians have also directly contributed to many consensus statements and practice guidelines. Kaiser Permanente clinician-researchers have led and contributed to the Infectious Diseases Society of America and the HIV Medicine Association guidelines,¹⁶⁸⁻¹⁷³ and have led systematic reviews for the U.S. Preventive Services Task Force.¹⁷⁴ Our scientists were also co-authors of a position statement on stewardship of antiretroviral medications from the Infectious Diseases Society of America, the HIV Medicine Association, and the American Academy of HIV Medicine.¹⁷⁵

Kaiser Permanente is also an established national and international leader in the field of HIV research. In 2012, as part of our participation in the International AIDS Conference, we shared our toolkit of clinical best practices and challenged clinicians across the nation to improve health equity for people living with HIV.¹⁷⁶ Our research groups lead numerous large trials evaluating new antiretroviral therapy treatments⁶⁵ and our scientists hold key leadership positions in important collaborative research efforts such as the Antiretroviral Therapy Cohort Collaboration,^{22; 177; 178} The District of Columbia HIV Cohort,^{21; 179} and the North American AIDS Cohort Collaboration on Research and Design,^{61; 143; 180-182} all funded by the National Institutes of Health.

Kaiser Permanente researchers also hold leadership roles in organizations such as the HIV Medicine Association and the American Academy of HIV Medicine. Our scientists have provided support to federal government decision-makers at the Health Resources and Services Administration and the Department of Health and Human Services, including our work on the HIV quality metrics panels convened by the Centers for Medicare & Medicaid Services and America's Health Insurance Plans.

This brief was written by Nicholas P. Emptage, Anna C. Davis, and Elizabeth A. McGlynn. It is available online from about.kaiserpermanente.org/our-story/health-research/research-briefs. The authors wish to thank the following researchers for their contributions to the development of this brief: Michael J. Silverberg and Michael A. Horberg. Learn more about Kaiser Permanente Research at about.kaiserpermanente.org/health-and-wellness/health-research.

References

- Centers for Disease Control and Prevention. *CDC Fact Sheet: Today's HIV/AIDS Epidemic*. Atlanta, GA: Author;2016.
- Centers for Disease Control and Prevention. Estimated HIV incidence and prevalence in the United States, 2018-2022. *HIV Surveillance Supplemental Report*. 2024;29(1).
- Centers for Disease Control and Prevention. *Estimated HIV incidence and prevalence in the United States, 2014–2018*. 2020.
- Centers for Disease Control and Prevention. *Diagnoses, deaths, and prevalence of HIV in the United States and 6 territories and freely associated states, 2022*. 2024.
- Centers for Disease Control and Prevention. *Monitoring selected national HIV prevention and care objectives by using HIV surveillance data—United States and 6 territories and freely associated states, 2022*. 2024.

6. KPPL Search, conducted on October 8, 2024: ((title:"HIV") OR (title:" human immunodeficiency virus") OR (title:"AIDS") OR (Msubject:" Acquired Immunodeficiency Syndrome") OR (Msubject:"Acquired Immunodeficiency Syndrome/*") OR (Msubject:"HIV-1") OR (Msubject:"HIV-1/*") OR (Msubject:"Sarcoma, Kaposi") OR (Msubject:"Anti-HIV Agents") OR (Msubject:"Anti-HIV Agents/*") OR (Msubject:"HIV Infections") OR (Msubject:"CD4 Lymphocyte Count") OR (Msubject:"HIV") OR (Msubject:"aids-related opportunistic infections")) AND publicationtype:"Journal Article". Dates: 2012 to 2024.
7. McLean TA, Lewkowitz AK, Test E, Zlatnik MG. Does an Electronic Health Record Improve Completeness of Prenatal Studies? *Applied clinical informatics*. 2015;6(4):669-676.
8. Dionne-Odom J, Khan MJ, Jauk VC, et al. HIV Status and Other Risk Factors for Prevalent and Incident Sexually Transmitted Infection during Pregnancy (2000-2014). *Infectious diseases in obstetrics and gynecology*. 2019;2019:6584101.
9. Rios-Ellis B, Becker D, Espinoza L, et al. Evaluation of a Community Health Worker Intervention to Reduce HIV/AIDS Stigma and Increase HIV Testing Among Underserved Latinos in the Southwestern U.S. *Public health reports (Washington, DC : 1974)*. 2015;130(5):458-467.
10. Smith LR, Yore J, Triplett DP, et al. Impact of Sexual Violence Across the Lifespan on HIV Risk Behaviors Among Transgender Women and Cisgender People Living With HIV. *Journal of acquired immune deficiency syndromes (1999)*. 2017;75(4):408-416.
11. Rodriguez CV, Horberg MA. HIV Testing, Staging, and Evaluation. *Infectious disease clinics of North America*. 2014;28(3):339-353.
12. Hanna DB, Buchacz K, Gebo KA, et al. Trends and disparities in antiretroviral therapy initiation and virologic suppression among newly treatment-eligible HIV-infected individuals in North America, 2001-2009. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2013;56(8):1174-1182.
13. Hanna DB, Buchacz K, Gebo KA, et al. Association between U.S. State AIDS Drug Assistance Program (ADAP) Features and HIV Antiretroviral Therapy Initiation, 2001-2009. *PloS one*. 2013;8(11):e78952.
14. Ralston JD, Silverberg MJ, Grothaus L, et al. Use of web-based shared medical records among patients with HIV. *The American journal of managed care*. 2013;19(4):e114-124.
15. Saberi P, Catz SL, Leyden WA, et al. Antiretroviral Therapy Adherence and Use of an Electronic Shared Medical Record Among People Living with HIV. *AIDS and behavior*. 2015;19 Suppl 2:177-185.
16. Samji H, Cescon A, Hogg RS, et al. Closing the Gap: Increases in Life Expectancy among Treated HIV-Positive Individuals in the United States and Canada. *PloS one*. 2013;8(12):e81355.
17. Marcus JL, Chao CR, Leyden WA, et al. Narrowing the gap in life expectancy between HIV-infected and HIV-uninfected individuals with access to care. *Journal of acquired immune deficiency syndromes (1999)*. 2016;73(1):39-46.
18. Althoff KN, Buchacz K, Hall HI, et al. U.S. Trends in Antiretroviral Therapy Use, HIV RNA Plasma Viral Loads, and CD4 T-Lymphocyte Cell Counts Among HIV-Infected Persons, 2000 to 2008. *Annals of internal medicine*. 2012;157(5):325-335.
19. Edwards JK, Cole SR, Breger TL, et al. Five-year mortality for adults entering HIV care under universal early treatment compared to the general US population. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2022;75(5):867-874.
20. Edwards JK, Cole SR, Breger TL, et al. Mortality Among Persons Entering HIV Care Compared With the General U.S. Population : An Observational Study. *Annals of internal medicine*. 2021;174(9):1197-1206.
21. Akselrod H, Byrne M, Lundberg J, et al. Improvements in Virologic Control Among PWH Over Time: Narrowing the Gap Between Those With and Without STIs. *AIDS and behavior*. 2022.
22. Trickey A, Sabin CA, Burkholder G, et al. Life expectancy after 2015 of adults with HIV on long-term antiretroviral therapy in Europe and North America: a collaborative analysis of cohort studies. *The lancet HIV*. 2023;10(5):e295-e307.

23. Trickey A, McGinnis K, Gill MJ, et al. Longitudinal trends in causes of death among adults with HIV on antiretroviral therapy in Europe and North America from 1996 to 2020: a collaboration of cohort studies. *The lancet HIV*. 2024;11(3):e176-e185.
24. Marcus JL, Leyden WA, Alexeeff SE, et al. Comparison of Overall and Comorbidity-Free Life Expectancy Between Insured Adults With and Without HIV Infection, 2000-2016. *JAMA network open*. 2020;3(6):e207954.
25. Althoff KN, Stewart C, Humes E, et al. The forecasted prevalence of comorbidities and multimorbidity in people with HIV in the United States through the year 2030: A modeling study. *PLoS medicine*. 2024;21(1):e1004325.
26. John MD, Greene M, Hessol NA, et al. Geriatric Assessments And Association With Vacs Index Among Hiv-Infected Older Adults In San Francisco. *Journal of acquired immune deficiency syndromes (1999)*. 2016;72(5):534-541.
27. Wong C, Gange SJ, Moore RD, et al. Multimorbidity Among Persons Living with Human Immunodeficiency Virus in the U.S. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2018;66(8):1230-1238.
28. Althoff KN, Stewart CN, Humes E, et al. The shifting age distribution of people with HIV using antiretroviral therapy in the United States. *AIDS (London, England)*. 2022;36(3):459-471.
29. Kasaie P, Stewart C, Humes E, et al. Projecting the age-distribution of men who have sex with men receiving HIV treatment in the United States. *Annals of epidemiology*. 2022;65:46-55.
30. Wang CC, Silverberg MJ, Abrams DI. Non-AIDS-Defining Malignancies in the HIV-Infected Population. *Current infectious disease reports*. 2014;16(6):406.
31. Dubrow R, Silverberg MJ, Park LS, Crothers K, Justice AC. HIV infection, aging, and immune function: implications for cancer risk and prevention. *Current opinion in oncology*. 2012;24(5):506-516.
32. Shiels MS, Althoff KN, Pfeiffer RM, et al. HIV Infection, Immune Suppression and Age at Diagnosis of Non-AIDS-Defining Cancers. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2017;64(4):468-475.
33. Burger EA, Dyer MA, Sy S, et al. Development and Calibration of a Mathematical Model of Anal Carcinogenesis for High-Risk HIV-Infected Men. *Journal of acquired immune deficiency syndromes (1999)*. 2018;79(1):10-19.
34. Hernández-Ramírez RU, Qin L, Lin H, et al. Association of immunosuppression and HIV viremia with anal cancer risk in persons living with HIV in the United States and Canada. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2020;70(6):1176-1185.
35. Castilho JL, Bian A, Jenkins CA, et al. CD4/CD8 Ratio and Cancer Risk among Adults with HIV. *Journal of the National Cancer Institute*. 2022.
36. Damgacioglu H, Lin YY, Ortiz AP, et al. State Variation in Squamous Cell Carcinoma of the Anus Incidence and Mortality, and Association With HIV/AIDS and Smoking in the United States. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2023;41(6):1228-1238.
37. Silverberg MJ, Leyden WA, Xu L, et al. Immunodeficiency and Risk of Myocardial Infarction Among HIV-Positive Individuals With Access to Care. *Journal of acquired immune deficiency syndromes (1999)*. 2014;65(2):160-166.
38. Drozd DR, Kitahata MM, Althoff KN, et al. Increased Risk of Myocardial Infarction in HIV-Infected Individuals in North America Compared to the General Population. *Journal of acquired immune deficiency syndromes (1999)*. 2017;75(5):568-576.
39. Crothers K, Rodriguez CV, Nance RM, et al. Accuracy of electronic health record data for the diagnosis of chronic obstructive pulmonary disease in persons living with HIV and uninfected persons. *Pharmacoepidemiology and drug safety*. 2019;28(2):140-147.
40. Lam JO, Hou CE, Hojilla JC, et al. Comparison of dementia risk after age 50 between individuals with and without HIV infection. *AIDS (London, England)*. 2021;35(5):821-828.
41. Lam JO, Lee C, Gilsanz P, et al. Comparison of dementia incidence and prevalence between individuals with and without HIV infection in primary care from 2000 to 2016. *AIDS (London, England)*. 2022;36(3):437-445.
42. Lam JO, Hurley LB, Udaltsova N, et al. Colorectal Cancer Screening in People With and Without HIV in an Integrated Health Care Setting. *Journal of acquired immune deficiency syndromes (1999)*. 2019;81(3):284-291.

43. Barnell GM, Merchant M, Lam JO, Silverberg MJ. Early Outcomes of a High-Resolution Anoscopy-Based Anal Cancer Screening Program Among People With HIV Enrolled in an Integrated Health Care System. *Journal of acquired immune deficiency syndromes (1999)*. 2019;81(3):292-299.
44. Silverberg MJ, Lau B, Justice AC, et al. Risk of Anal Cancer in HIV-Infected and HIV-Uninfected Individuals in North America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2012;54(7):1026-1034.
45. Silverberg MJ, Leyden W, Warton EM, Quesenberry CP, Jr., Engels EA, Asgari MM. HIV Infection Status, Immunodeficiency, and the Incidence of Non-Melanoma Skin Cancer. *Journal of the National Cancer Institute*. 2013;105(5):350-360.
46. Abraham AG, D'Souza G, Jing Y, et al. Invasive cervical cancer risk among HIV-infected women: A North American multi-cohort collaboration prospective study. *Journal of acquired immune deficiency syndromes (1999)*. 2013;62(4):405-413.
47. Beachler DC, Abraham AG, Silverberg MJ, et al. Incidence and risk factors of HPV-related and HPV-unrelated Head and Neck Squamous Cell Carcinoma in HIV-infected individuals. *Oral oncology*. 2014;50(12):1169-1176.
48. Asgari MM, Ray GT, Quesenberry CP, Katz KA, Silverberg MJ. Association of Multiple Primary Skin Cancers With Human Immunodeficiency Virus Infection, CD4 Count, and Viral Load. *JAMA dermatology*. 2017;153(9):892-896.
49. Mayer KH, Loo S, Crawford PM, et al. Excess Clinical Comorbidity Among HIV-Infected Patients Accessing Primary Care in US Community Health Centers. *Public health reports (Washington, DC : 1974)*. 2018;133(1):109-118.
50. Park LS, Hernández-Ramírez RU, Silverberg MJ, Crothers K, Dubrow R. Prevalence of non-HIV cancer risk factors in persons living with HIV/AIDS: a meta-analysis. *AIDS (London, England)*. 2016;30(2):273-291.
51. Schwartz LM, Castle PE, Follansbee S, et al. Risk factors for anal HPV infection and anal precancer in HIV-infected men who have sex with men. *The Journal of infectious diseases*. 2013;208(11):1768-1775.
52. Castle PE, Befano B, Schiffman M, et al. A comparison of high-grade cervical abnormality risks in women living with and without human immunodeficiency virus undergoing routine cervical-cancer screening. *Preventive medicine*. 2022;162:107157.
53. Marcus JL, Chao C, Leyden WA, et al. Survival Among HIV-Infected and HIV-Uninfected Individuals with Common Non-AIDS-Defining Cancers. *Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology*. 2015;24(8):1167-1173.
54. Engels EA, Yanik EL, Wheeler W, et al. Cancer-Attributable Mortality Among People With Treated Human Immunodeficiency Virus Infection in North America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2017;65(4):636-643.
55. Silverberg MJ, Leyden W, Hernández-Ramírez RU, et al. Timing of Antiretroviral Therapy Initiation and Risk of Cancer among Persons Living with Human Immunodeficiency Virus. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2021;72(11):1900-1909.
56. Marcus JL, Neugebauer RS, Leyden WA, et al. Use of abacavir and risk of cardiovascular disease among HIV-infected individuals. *Journal of acquired immune deficiency syndromes (1999)*. 2016;71(4):413-419.
57. Go AS, Reynolds K, Avula HR, et al. Human Immunodeficiency Virus Infection and Variation in Heart Failure Risk by Age, Sex, and Ethnicity: The HIV HEART Study. *Mayo Clinic proceedings*. 2022;97(3):465-479.
58. Wiggins BS, Lamprecht DG, Page RL, Saseen JJ. Recommendations for Managing Drug-Drug Interactions with Statins and HIV Medications. *American journal of cardiovascular drugs : drugs, devices, and other interventions*. 2017;17(5):375-389.
59. Wong C, Gange SJ, Moore RD, et al. Multimorbidity Among Persons Living with Human Immunodeficiency Virus in the United States. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2018;66(8):1230-1238.
60. Rivera AS, Pak KJ, Mefford MT, Hechter RC. Use of Tenofovir Alafenamide Fumarate for HIV Pre-Exposure Prophylaxis and Incidence of Hypertension and Initiation of Statins. *JAMA network open*. 2023;6(9):e2332968.

61. Coburn SB, Lang R, Zhang J, et al. Statins utilization in adults with HIV: The treatment gap and predictors of statin initiation. *Journal of acquired immune deficiency syndromes (1999)*. 2022.
62. Klein DB, Leyden WA, Xu L, et al. Declining Relative Risk for Myocardial Infarction Among HIV-Positive Compared With HIV-Negative Individuals With Access to Care. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2015;60(8):1278-1280.
63. Marcus JL, Leyden WA, Chao CR, et al. HIV infection and incidence of ischemic stroke. *AIDS (London, England)*. 2014;28(13):1911-1919.
64. Silverberg MJ, Levine TM, Lea AN, et al. Cardiovascular Disease Risk Factor Control in People With and Without HIV. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2024;78(5):1264-1271.
65. Palella FJ, Fisher M, Tebas P, et al. Simplification to rilpivirine/emtricitabine/tenofovir disoproxil fumarate from ritonavir-boosted protease inhibitor antiretroviral therapy in a randomized trial of HIV-1 RNA-suppressed participants. *AIDS (London, England)*. 2014;28(3):335-344.
66. Avula HR, Ambrosy AP, Silverberg MJ, et al. Human immunodeficiency virus infection and risks of morbidity and death in adults with incident heart failure. *European heart journal open*. 2021;1(3):oeab040.
67. Mefford MT, Silverberg MJ, Leong TK, et al. Multimorbidity Burden and Incident Heart Failure Among People With and Without HIV: The HIV-HEART Study. *Mayo Clinic proceedings Innovations, quality & outcomes*. 2022;6(3):218-227.
68. Lam JO, Leyden WA, Leong TK, et al. Variation in Heart Failure Risk by HIV Severity and Sex in People With HIV Infection. *Journal of acquired immune deficiency syndromes (1999)*. 2022;91(2):175-181.
69. Towner WJ, Xu L, Leyden WA, et al. The Effect of HIV Infection, Immunodeficiency and Antiretroviral Therapy on the Risk of Hepatic Dysfunction. *Journal of acquired immune deficiency syndromes (1999)*. 2012;60(3):321-327.
70. Klein MB, Althoff KN, Jing Y, et al. Risk of End-Stage Liver Disease in HIV-Viral Hepatitis Coinfected Persons in North America From the Early to Modern Antiretroviral Therapy Eras. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2016;63(9):1160-1167.
71. Nina Kim H, Newcomb CW, Carbonari DM, et al. Risk of HCC with Hepatitis B Viremia among HIV/HBV-Coinfected Persons in North America. *Hepatology (Baltimore, Md)*. 2021;74(3):1190-1202.
72. Sun J, Althoff KN, Jing Y, et al. Trends in Hepatocellular Carcinoma Incidence and Risk Among Persons With HIV in the US and Canada, 1996-2015. *JAMA network open*. 2021;4(2):e2037512.
73. Hoover KW, Butler M, Workowski KA, et al. Low Rates of Hepatitis Screening and Vaccination of HIV-Infected MSM in HIV Clinics. *Sexually transmitted diseases*. 2012;39(5):349-353.
74. Marcus JL, Leyden WA, Chao CR, et al. Differences in Response to Antiretroviral Therapy by Sex and Hepatitis C Infection Status. *AIDS patient care and STDs*. 2015;29(7):370-378.
75. Adams LM, Balderson B, Packett BJ, 2nd. Meeting the Challenge: Hepatitis C Virus and HIV Care Experiences Among HIV Specialty Providers. *AIDS patient care and STDs*. 2018;32(8):314-320.
76. Muzaale AD, Althoff KN, Sperati CJ, et al. Risk of End-Stage Renal Disease in HIV-Positive Potential Live Kidney Donors. *American journal of transplantation : official journal of the American Society of Transplantation and the American Society of Transplant Surgeons*. 2017;17(7):1823-1832.
77. Abraham AG, Althoff KN, Jing Y, et al. End Stage Renal Disease Among HIV-Infected Adults in North America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2015;60(6):941-949.
78. Satre DD, DeLorenze GN, Quesenberry CP, Tsai A, Weisner C. Factors Associated With Treatment Initiation for Psychiatric and Substance Use Disorders Among Persons With HIV. *Psychiatric services (Washington, DC)*. 2013;64(8):745-753.
79. DeLorenze GN, Tsai AL, Horberg MA, Quesenberry CP. Cost of Care for HIV-Infected Patients with Co-Occurring Substance Use Disorder or Psychiatric Disease: Report from a Large, Integrated Health Plan. *AIDS research and treatment*. 2014;2014:570546.

80. Silverberg MJ, Leyden WA, Leibowitz A, et al. Factors associated with hazardous alcohol use and motivation to reduce drinking among HIV primary care patients: Baseline findings from the Health & Motivation study. *Addictive behaviors*. 2018;84:110-117.
81. Williams EC, Lapham GT, Shortreed SM, et al. Among patients with unhealthy alcohol use, those with HIV are less likely than those without to receive evidence-based alcohol-related care: A national VA study. *Drug and alcohol dependence*. 2017;174:113-120.
82. Althoff KN, Chandran A, Zhang J, et al. LIFE EXPECTANCY DISPARITIES AMONG ADULTS WITH HIV IN THE UNITED STATES AND CANADA: THE IMPACT OF A REDUCTION IN DRUG- AND ALCOHOL-RELATED DEATHS USING THE LIVES SAVED SIMULATION (LISSO) MODEL. *American journal of epidemiology*. 2019;188(12):2097-2109.
83. Satre DD, Levine-Hall T, Sterling SA, et al. The relationship of smoking and unhealthy alcohol use to the HIV care continuum among people with HIV in an integrated health care system. *Drug and alcohol dependence*. 2021;219:108481.
84. Hojilla JC, Marcus J, Volk JE, et al. Alcohol and drug use, partner PrEP use and STI prevalence among people with HIV. *Sexually transmitted infections*. 2020;96(3):184-188.
85. Frost MC, Matson TE, Tsui JI, Williams EC. Influence of comorbid drug use disorder on receipt of evidence-based treatment for alcohol use disorder among VA patients with alcohol use disorder and Hepatitis C and/or HIV. *Drug and alcohol dependence*. 2019;194:288-295.
86. Bensley KM, McGinnis KA, Fortney J, et al. Patterns of Alcohol Use Among Patients Living With HIV in Urban, Large Rural, and Small Rural Areas. *The Journal of rural health : official journal of the American Rural Health Association and the National Rural Health Care Association*. 2019;16(5):621-623.
87. Lam JO, Levine-Hall T, Hood N, et al. Smoking and cessation treatment among persons with and without HIV in a U.S. integrated health system. *Drug and alcohol dependence*. 2020;213:108128.
88. Williams EC, McGinnis KA, Bobb JF, et al. Changes in alcohol use associated with changes in HIV disease severity over time: A national longitudinal study in the Veterans Aging Cohort. *Drug and alcohol dependence*. 2018;189:21-29.
89. Byrne M, Monroe AK, Doshi RK, Horberg MA, Castel AD. A Latent Class Analysis of Substance Use and Longitudinal HIV RNA Patterns Among PWH in DC Cohort. *AIDS and behavior*. 2024;28(2):682-694.
90. Williams EC, Lapham GT, Bobb JF, et al. Documented brief intervention not associated with resolution of unhealthy alcohol use one year later among VA patients living with HIV. *Journal of substance abuse treatment*. 2017;78:8-14.
91. Satre DD, Leibowitz AS, Leyden W, et al. Interventions to Reduce Unhealthy Alcohol Use among Primary Care Patients with HIV: the Health and Motivation Randomized Clinical Trial. *Journal of general internal medicine*. 2019;34(10):2054-2061.
92. Hechter RC, Horberg MA, Weisner C, et al. Healthcare Effectiveness Data and Information Set (HEDIS) measures of alcohol and drug treatment initiation and engagement among people living with the human immunodeficiency virus (HIV) and patients without an HIV diagnosis. *Substance abuse*. 2019;40(3):302-310.
93. Satre DD, Anderson AN, Leibowitz AS, et al. Implementing electronic substance use disorder and depression and anxiety screening and behavioral interventions in primary care clinics serving people with HIV: Protocol for the Promoting Access to Care Engagement (PACE) trial. *Contemporary clinical trials*. 2019;84:105833.
94. Horberg M, Eberhart L, Bhatia M, et al. Patient Demographics and the Utilization of a Novel 3-Anatomic-Site Testing Panel Including Rectal Self-Collection as Compared With Usual Care Testing. *Sexually transmitted diseases*. 2022;49(4):268-273.
95. Berg LJ, Delgado MK, Ginde AA, Montoy JC, Bendavid E, Camargo CA, Jr. Characteristics of U.S. Emergency Departments That Offer Routine Human Immunodeficiency Virus Screening. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine*. 2012;19(8):894-900.
96. Hoehn EF, FitzGerald MR, Bhatt SR, Robinson VM, Lippe JE, Reed JL. Do Adolescents With Higher Knowledge of HIV Have Lower Sexual Risk Behaviors? *Pediatric emergency care*. 2016;32(12):846-850.
97. Bhatt SR, Eckerle MD, Reed JL, et al. Implementation of Targeted Point of Care HIV Testing in a Pediatric Emergency Department. *Pediatric quality & safety*. 2020;5(1):e248.

98. Luu MN, Wada PY, Levine-Hall T, et al. Using a report card to increase HIV screening in a large primary care group practice. *BMJ open quality*. 2021;10(1):e000988.
99. Hechter RC, Bider-Canfield Z, Towner W. Effect of an Electronic Alert on Targeted HIV Testing Among High-Risk Populations. *The Permanente journal*. 2018;22:18-015.
100. Marcus JL, Hurley LB, Krakower DS, Alexeeff S, Silverberg MJ, Volk JE. Use of electronic health record data and machine learning to identify candidates for HIV pre-exposure prophylaxis: a modelling study. *The lancet HIV*. 2019;6(10):e688-e695.
101. Edelman EJ, Moore BA, Caffrey S, et al. HIV Testing and Sexual Risk Reduction Counseling in Office-Based Buprenorphine/Naloxone Treatment. *Journal of addiction medicine*. 2013;7(6):410-416.
102. O'Connor E, Lin JS, Burda BU, Henderson JT, Walsh ES, Whitlock EP. U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews. *Behavioral Sexual Risk Reduction Counseling in Primary Care to Prevent Sexually Transmitted Infections: An Updated Systematic Evidence Review for the U.S. Preventive Services Task Force*. Rockville (MD): Agency for Healthcare Research and Quality (US); 2014.
103. Gonsalves GS, Paltiel AD, Cleary PD, et al. A Flow-Based Model of the HIV Care Continuum in the United States. *Journal of acquired immune deficiency syndromes (1999)*. 2017;75(5):548-553.
104. Marcus JL, Hurley LB, Hare CB, et al. Preexposure Prophylaxis for HIV Prevention in a Large Integrated Health Care System: Adherence, Renal Safety, and Discontinuation. *Journal of acquired immune deficiency syndromes (1999)*. 2016;73(5):540-546.
105. Volk JE, Marcus JL, Phengrasamy T, et al. No New HIV Infections with Increasing Use of HIV Preexposure Prophylaxis in a Clinical Practice Setting. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2015;61(10):1601-1603.
106. Hojilla JC, Marcus JL, Silverberg MJ, et al. Early Adopters of Event-driven Human Immunodeficiency Virus Pre-exposure Prophylaxis in a Large Healthcare System in San Francisco. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2020;71(10):2710-2712.
107. Storholm ED, Volk JE, Marcus JL, Silverberg MJ, Satre DD. Risk Perception, Sexual Behaviors, and PrEP Adherence Among Substance-Using Men Who Have Sex with Men: a Qualitative Study. *Prevention science : the official journal of the Society for Prevention Research*. 2017;18(6):737-747.
108. Rolle CP, Rosenberg ES, Siegler AJ, et al. Challenges in Translating PrEP Interest into Uptake in an Observational Study of Young Black MSM. *Journal of acquired immune deficiency syndromes (1999)*. 2017;76(3):250-258.
109. Volk JE, Nguyen DP, Hare CB, Marcus JL. HIV Infection and Drug Resistance with Unsupervised Use of HIV Preexposure Prophylaxis. *AIDS research and human retroviruses*. 2018;34(4):329-330.
110. Serota DP, Rosenberg ES, Lockard AM, et al. Beyond the Biomedical: PrEP Failures in a Cohort of Young Black Men who have Sex with Men in Atlanta, GA. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2018;67(6):965-970.
111. Marcus JL, Hurley LB, Dentoni-Lasofsky D, et al. Barriers to preexposure prophylaxis use among individuals with recently acquired HIV infection in Northern California. *AIDS care*. 2019;31(5):536-544.
112. Hojilla JC, Hurley LB, Marcus JL, et al. Characterization of HIV Preexposure Prophylaxis Use Behaviors and HIV Incidence Among US Adults in an Integrated Health Care System. *JAMA network open*. 2021;4(8):e2122692.
113. Watson DL, Shaw PA, Petsis DT, et al. A retrospective study of HIV pre-exposure prophylaxis counselling among non-Hispanic Black youth diagnosed with bacterial sexually transmitted infections in the United States, 2014-2019. *Journal of the International AIDS Society*. 2022;25(2):e25867.
114. Bruxvoort K, Portugal C, Munis M, Pak K, Hechter R. Understanding Barriers and Facilitators of Pre-exposure Prophylaxis (PrEP) Among Transgender and Gender Diverse Adults in an Integrated Health Care System. *AIDS and behavior*. 2023;27(8):2579-2591.
115. Teitelman AM, Tieu HV, Chittamuru D, et al. A Randomized Controlled Pilot Study of Just4Us, a Counseling and Navigation Intervention to Promote Oral HIV Prophylaxis Uptake Among PrEP-Eligible Cisgender Women. *AIDS and behavior*. 2023;27(9):2944-2958.

116. Storholm ED, Siconolfi D, Huang W, et al. Project SLIP: Implementation of a PrEP Screening and Linkage Intervention in Primary Care. *AIDS and behavior*. 2021;25(8):2348-2357.
117. Bruxvoort KJ, Schumacher CM, Towner W, et al. Referral Linkage to Preexposure Prophylaxis Care and Persistence on Preexposure Prophylaxis in an Integrated Health Care System. *Journal of acquired immune deficiency syndromes (1999)*. 2021;87(3):918-927.
118. Davis TL, Mittal M, Oragwu AC, Wang MQ, Boekeloo BO. Examining HIV Diagnosis and Linkage to PrEP Prescription Among Members at An Integrated Health System in the Southeast United States. *AIDS and behavior*. 2022.
119. Serota DP, Rosenberg ES, Sullivan PS, et al. Pre-exposure prophylaxis uptake and discontinuation among young black men who have sex with men in Atlanta, Georgia: A prospective cohort study. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2020;71(3):574-582.
120. Hechter RC, Bruxvoort KJ, Zhou H, et al. Sexually Transmitted Infections Among Men and Transgender Women Using HIV Pre-exposure Prophylaxis in a Large Integrated Health System-A Cohort Study. *Journal of acquired immune deficiency syndromes (1999)*. 2022;91(1):1-8.
121. Schmidt MA, Dickerson JF, O'Keeffe-Rosetti MC, Salas SB, Donald JL, Tao G. Sexually Transmitted Infection Testing, Prevalence, and Treatment Among Individuals Receiving HIV Preexposure Prophylaxis Within an Integrated Healthcare Delivery System. *Sexually transmitted diseases*. 2022;49(9):616-621.
122. Wohl DA, Spinner CD, Flamm J, et al. HIV-1 infection kinetics, drug resistance, and long-term safety of pre-exposure prophylaxis with emtricitabine plus tenofovir alafenamide (DISCOVER): week 144 open-label extension of a randomised, controlled, phase 3 trial. *The lancet HIV*. 2024;11(8):e508-e521.
123. Rivera AS, Pak K, Mefford MT, Hechter RC. Changes in Glomerular Filtration Rate After Switching From Tenofovir Disoproxil Fumarate to Tenofovir Alafenamide Fumarate for Human Immunodeficiency Virus Preexposure Prophylaxis. *Open forum infectious diseases*. 2024;11(2):ofad695.
124. Jonas MC, Egan K, Sheu YS, McCarthy RJ, Horberg MA. Pride Medical at Capitol Hill: A New Lesbian, Gay, Bisexual, Transgender, Queer/Questioning plus (LGBTQ+) Patient Care Option at Kaiser Permanente Mid-Atlantic States. *Healthcare (Basel, Switzerland)*. 2023;11(21).
125. Chang JJ, Ashcraft AM. Human Immunodeficiency Virus in Adolescents: Risk, Prevention, Screening, and Treatment. *Primary care*. 2020;47(2):351-365.
126. Silverberg MJ, Lau B, Achenbach CJ, et al. Cumulative Incidence of Cancer Among Persons With HIV in North America: A Cohort Study. *Annals of internal medicine*. 2015;163(7):507-518.
127. Borges AH, Dubrow R, Silverberg MJ. Factors contributing to risk for cancer among HIV-infected individuals, and evidence that earlier combination antiretroviral therapy will alter this risk. *Current opinion in HIV and AIDS*. 2014;9(1):34-40.
128. Spence AB, Levy ME, Monroe A, et al. Cancer Incidence and Cancer Screening Practices Among a Cohort of Persons Receiving HIV Care in Washington, DC. *Journal of community health*. 2021;46(1):75-85.
129. Horberg MA, Bartemeier Hurley L, James Towner W, et al. Determination of Optimized Multidisciplinary Care Team for Maximal Antiretroviral Therapy Adherence. *Journal of acquired immune deficiency syndromes (1999)*. 2012;60(2):183-190.
130. Poteat T, Hanna DB, Rebeiro PF, et al. Characterizing the Human Immunodeficiency Virus Care Continuum Among Transgender Women and Cisgender Women and Men in Clinical Care: A Retrospective Time-series Analysis. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2020;70(6):1131-1138.
131. Tchakoute CT, Rhee SY, Hare CB, Shafer RW, Sainani K. Adherence to contemporary antiretroviral treatment regimens and impact on immunological and virologic outcomes in a US healthcare system. *PloS one*. 2022;17(2):e0263742.
132. Miller MJ, Eberhart LG, Jefferson CR, Horberg MA. Beyond Antiretroviral Treatment: Patterns and Factors Associated With Composite Medication Adherence Before and During the COVID-19 Pandemic in Patients With HIV With Multiple Chronic Conditions. *Journal of acquired immune deficiency syndromes (1999)*. 2023;92(5):405-413.
133. Stewart B, Byrne M, Levy M, Horberg MA, Monroe AK, Castel AD. The Association of Mental Health and Substance Use With Retention in HIV Care Among Black Women in Washington, District of Columbia. *Women's health issues : official publication of the Jacobs Institute of Women's Health*. 2024;34(3):250-256.

134. Horberg MA, Hurley LB, Silverberg MJ, Klein DB, Quesenberry CP, Mugavero MJ. Missed Office Visits and Risk of Mortality Among HIV-Infected Subjects in a Large Healthcare System in the United States. *AIDS patient care and STDs*. 2013;27(8):442-449.
135. Horberg MA, Blank JG, Rubenstein KB, et al. Impact of Alternative Encounter Types on HIV Viral Suppression Rates in an Integrated Health System. *AIDS patient care and STDs*. 2018;32(11):425-431.
136. Horberg MA. HIV Quality Measures and Outcomes-The Next Phase. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2016;62(2):240-241.
137. Horberg MA, Certa JM, Rubenstein KB, et al. Beyond the HIV Care Continuum and Viral Suppression: Broadening the Scope of Quality Metrics for Total HIV Patient Care. *AIDS patient care and STDs*. 2020;34(11):461-469.
138. Mills A, Crofoot G, McDonald C, et al. Tenofovir Alafenamide vs. Tenofovir Disoproxil Fumarate in the First Protease Inhibitor-based Single Tablet Regimen for Initial HIV-1 Therapy: A Randomized Phase 2 Study. *Journal of acquired immune deficiency syndromes (1999)*. 2015;69(4):439-445.
139. Horberg MA, Oakes AH, Hurley LB, et al. Association of raltegravir use with long-term health outcomes in HIV-infected patients: an observational post-licensure safety study in a large integrated healthcare system. *HIV clinical trials*. 2018;19(5):177-187.
140. Chen R, Scherzer R, Hsue PY, et al. Association of Tenofovir Use With Risk of Incident Heart Failure in HIV-Infected Patients. *Journal of the American Heart Association*. 2017;6(4):e005387.
141. Lu H, Cole SR, Westreich D, et al. Clinical effectiveness of integrase strand transfer inhibitor-based antiretroviral regimens among adults with human immunodeficiency virus: a collaboration of cohort studies in the United States and Canada. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2021;73(7):e1408-e1414.
142. Garris CP, Czarnogorski M, Dalessandro M, et al. Perspectives of people living with HIV-1 on implementation of long-acting cabotegravir plus rilpivirine in US healthcare settings: results from the CUSTOMIZE hybrid III implementation-effectiveness study. *Journal of the International AIDS Society*. 2022;25(9):e26006.
143. Jetsupphasuk M, Hudgens MG, Lu H, et al. Optimizing Treatment for Human Immunodeficiency Virus to Improve Clinical Outcomes Using Precision Medicine. *American journal of epidemiology*. 2023;192(8):1341-1349.
144. Rhee SY, Clutter D, Hare CB, et al. Virological Failure and Acquired Genotypic Resistance Associated With Contemporary Antiretroviral Treatment Regimens. *Open forum infectious diseases*. 2020;7(9):ofaa316.
145. Clutter DS, Fessel WJ, Rhee SY, et al. Response to Therapy in Antiretroviral Therapy-Naïve Patients with Isolated Nonnucleoside Reverse-Transcriptase Inhibitor-Associated Transmitted Drug Resistance. *Journal of acquired immune deficiency syndromes (1999)*. 2016;72(2):171-176.
146. Rebeiro PF, Jenkins CA, Bian A, et al. Risk of Incident Diabetes Mellitus, Weight Gain, and their Relationships with Integrase Inhibitor-based Initial Antiretroviral Therapy Among Persons with HIV in the US and Canada. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2021;73(7):e2234-e2242.
147. Bourgi K, Jenkins CA, Rebeiro PF, et al. Weight gain among treatment-naïve persons with HIV starting integrase inhibitors compared to non-nucleoside reverse transcriptase inhibitors or protease inhibitors in a large observational cohort in the United States and Canada. *Journal of the International AIDS Society*. 2020;23(4):e25484.
148. Wallace DE, Horberg MA, Benator DA, et al. Diabetes mellitus control in a large cohort of people with HIV in care-Washington, D.C. *AIDS care*. 2021;33(11):1464-1474.
149. Young J, Lo Re V, Kim HN, et al. Do contemporary antiretrovirals increase the risk of end-stage liver disease? Signals from patients starting therapy in the North American AIDS Cohort Collaboration on Research and Design. *Pharmacoepidemiology and drug safety*. 2022;31(2):214-224.
150. Silverberg MJ, Pimentel N, Leyden WA, et al. Initial antiretroviral therapy regimen and risk of heart failure. *AIDS (London, England)*. 2024;38(4):547-556.
151. Coelho LE, Jenkins CA, Shepherd BE, et al. Weight gain post-ART in HIV+ Latinos/as differs in the USA, Haiti, and Latin America. *Lancet Regional Health Americas*. 2022;8:100173.

152. Koethe JR, Jenkins CA, Lau B, et al. Rising Obesity Prevalence and Weight Gain Among Adults Starting Antiretroviral Therapy in the United States and Canada. *AIDS research and human retroviruses*. 2016;32(1):50-58.
153. Monroe AK, Happ LP, Rayeed N, et al. Clinic-level factors associated with time to antiretroviral initiation and viral suppression in a large urban cohort. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2020;71(7):e151-e158.
154. Wong C, Gange SJ, Buchacz K, et al. First Occurrence of Diabetes, Chronic Kidney Disease, and Hypertension Among North American HIV-Infected Adults, 2000-2013. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2017;64(4):459-467.
155. Desir FA, Lesko CR, Moore RD, et al. One Size Fits (n)One: The Influence of Sex, Age, and Sexual Human Immunodeficiency Virus (HIV) Acquisition Risk on Racial/Ethnic Disparities in the HIV Care Continuum in the United States. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2019;68(5):795-802.
156. Li J, Humes E, Lee JS, et al. Toward Ending the HIV Epidemic: Temporal Trends and Disparities in Early ART Initiation and Early Viral Suppression Among People Newly Entering HIV Care in the United States, 2012-2018. *Open forum infectious diseases*. 2022;9(8):ofac336.
157. Kaiser Permanente Statement on Our Commitment to Diversity and Inclusion [press release]. 2017.
158. Zalla LC, Cole SR, Eron JJ, et al. Association of Race and Ethnicity With Initial Prescription of Antiretroviral Therapy Among People With HIV in the US. *JAMA : the journal of the American Medical Association*. 2023;329(1):52-62.
159. Lam JO, Hurley LB, Chamberland S, et al. Hepatitis C treatment uptake and response among human immunodeficiency virus/hepatitis C virus-coinfected patients in a large integrated healthcare system. *International journal of STD & AIDS*. 2019;30(7):689-695.
160. Lea AN, Leyden WA, Sofrygin O, et al. Human Immunodeficiency Virus Status, Tenofovir Exposure, and the Risk of Poor Coronavirus Disease 19 Outcomes: Real-World Analysis From 6 United States Cohorts Before Vaccine Rollout. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2023;76(10):1727-1734.
161. Coburn SB, Humes E, Lang R, et al. Analysis of Postvaccination Breakthrough COVID-19 Infections Among Adults With HIV in the United States. *JAMA network open*. 2022;5(6):e2215934. Epub 2212022-2215906.
162. Link-Gelles R, Weber ZA, Reese SE, et al. Estimates of Bivalent mRNA Vaccine Durability in Preventing COVID-19-Associated Hospitalization and Critical Illness Among Adults with and Without Immunocompromising Conditions - VISION Network, September 2022-April 2023. *MMWR Morbidity and mortality weekly report*. 2023;72(21):579-588.
163. Horberg MA, Hurley LB, Klein DB, et al. The HIV Care Cascade Measured Over Time and by Age, Sex, and Race in a Large National Integrated Care System. *AIDS patient care and STDs*. 2015;29(11):582-590.
164. McNicholl IR, Gandhi M, Hare CB, Greene M, Pierluissi E. A Pharmacist-Led Program to Evaluate and Reduce Polypharmacy and Potentially Inappropriate Prescribing in Older, HIV-Positive Patients. *Pharmacotherapy*. 2017;37(12):1498-1506.
165. Volk JE, Leyden WA, Lea AN, et al. Using Electronic Health Records to Improve HIV Preexposure Prophylaxis Care: A Randomized Trial. *Journal of acquired immune deficiency syndromes (1999)*. 2024;95(4):362-369.
166. Centers for Disease Control and Prevention: U.S. Public Health Service. *Preexposure prophylaxis for the prevention of HIV infection in the United States—2017 Update: a clinical practice guideline*. 2018.
167. World Health Organization. *Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV*. 2015.
168. Aberg JA, Gallant JE, Ghanem KG, et al. Primary Care Guidelines for the Management of Persons Infected With HIV: 2013 Update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2014;58(1):e1-34.
169. Aberg JA, Gallant JE, Ghanem KG, et al. Executive Summary: Primary Care Guidelines for the Management of Persons Infected With HIV: 2013 Update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2014;58(1):1-10.

170. Thompson MA, Horberg MA, Agwu AL, et al. Primary Care Guidance for Persons With Human Immunodeficiency Virus: 2020 Update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2021;73(11):e3572-e3605.
171. Thompson MA, Horberg MA, Agwu AL, et al. Erratum to: Primary Care Guidance for Persons With Human Immunodeficiency Virus: 2020 Update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2022;74(10):1893-1898.
172. Armstrong WS, Agwu AL, Barrette EP, et al. Innovations in HIV care delivery during the COVID-19 pandemic: Policies to strengthen the Ending the Epidemic Initiative - A Policy Paper of the Infectious Diseases Society of America and the HIV Medicine Association. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2021;72(1):9-14.
173. Horberg M, Thompson M, Agwu A, et al. Primary Care Guidance for Providers of Care for Persons With Human Immunodeficiency Virus: 2024 Update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2024.
174. Henderson JT, Senger CA, Henninger M, Bean SI, Redmond N, O'Connor EA. Behavioral Counseling Interventions to Prevent Sexually Transmitted Infections: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. *JAMA : the journal of the American Medical Association*. 2020;324(7):682-699.
175. Koren DE, Scarsi KK, Farmer EK, et al. A Call to Action: The Role of Antiretroviral Stewardship in Inpatient Practice, a Joint Policy Paper of the Infectious Diseases Society of America, HIV Medicine Association, and American Academy of HIV Medicine. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2020;70(11):2241-2246.
176. AIDS 2012 Conference [press release]. 2012.
177. Trickey A, Ingle SM, Boyd A, et al. Contribution of alcohol use in HIV/hepatitis C virus co-infection to all-cause and cause-specific mortality: A collaboration of cohort studies. *Journal of viral hepatitis*. 2023;30(9):775-786.
178. Trickey A, Zhang L, Gill MJ, et al. Associations of modern initial antiretroviral drug regimens with all-cause mortality in adults with HIV in Europe and North America: a cohort study. *The lancet HIV*. 2022;9(6):e404-e413.
179. Jaurretche M, Byrne M, Happ LP, et al. HIV care continuum outcomes among recently diagnosed people with HIV (PWH) in Washington, DC. *Epidemiology and infection*. 2023;151:e45.
180. Zalla LC, Cole SR, Eron JJ, et al. Evaluating Clinic-Based Interventions to Reduce Racial Differences in Mortality among People with HIV in the United States. *The Journal of infectious diseases*. 2023.
181. Lang R, Hogan B, Zhu J, et al. The prevalence of mental health disorders in people with HIV and the effects on the HIV care continuum. *AIDS (London, England)*. 2023;37(2):259-269.
182. Kim J, Newcomb CW, Carbonari DM, et al. Hepatitis B care cascade among people with HIV/HBV coinfection in the North American AIDS Cohort Collaboration on Research and Design, 2012-2016. *PloS one*. 2023;18(9):e0290889.