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Hepatitis C in Black Individuals in the US

A Review

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IMPORTANCE In the US, the prevalence of hepatitis C virus (HCV) is 1.8% among people who are Black and 0.8% among people who are not Black. Mortality rates due to HCV are 5.01/100 000 among people who are Black and 2.98/100 000 among people who are White.

OBSERVATIONS While people of all races and ethnicities experienced increased rates of incident HCV between 2015 and 2021, Black individuals experienced the largest percentage increase of 0.3 to 1.4/100 000 (367%) compared with 1.8 to 2.7/100 000 among American Indian/Alaska Native (50%), 0.3 to 0.9/100 000 among Hispanic (200%), and 0.9 to 1.6/100 000 among White (78%) populations. Among 47 687 persons diagnosed with HCV in 2019-2020, including 37 877 (79%) covered by Medicaid (7666 Black and 24 374 White individuals), 23.5% of Black people and 23.7% of White people with Medicaid insurance initiated HCV treatment. Strategies to increase HCV screening include electronic health record prompts for universal HCV screening, which increased screening tests from 2052/month to 4169/month in an outpatient setting. Awareness of HCV status can be increased through point-of-care testing in community-based settings, which was associated with increased likelihood of receiving HCV test results compared with referral for testing off-site (69% on-site vs 19% off-site, $P < .001$). Access to HCV care can be facilitated by patient navigation, in which an individual is assigned to work with a patient to help them access care and treatments; this was associated with greater likelihood of HCV care access (odds ratio, 3.7 [95% CI, 2.9-4.8]) and treatment initiation within 6 months (odds ratio, 3.2 [95% CI, 2.3-4.2]) in a public health system providing health care to individuals regardless of their insurance status or ability to pay compared with usual care. Eliminating Medicaid's HCV treatment restrictions, including removal of a requirement for advanced fibrosis or a specialist prescriber, was associated with increased treatment rates from 2.4 persons per month to 72.3 persons per month in a retrospective study of 10 336 adults with HCV with no significant difference by race (526/1388 [37.8%] for Black vs 2706/8277 [32.6%] for White patients; adjusted odds ratio, 1.02 [95% CI, 0.8-1.3]).

CONCLUSIONS AND RELEVANCE In the US, the prevalence of HCV is higher in people who are Black than in people who are not Black. Point-of-care HCV tests, patient navigation, electronic health record prompts, and unrestricted access to HCV treatment in community-based settings have potential to increase diagnosis and treatment of HCV and improve outcomes in people who are Black.

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 Editor's Note

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Hepatitis C virus (HCV) is the most common chronic bloodborne infection in the US and a leading cause of mortality from infectious disease, primarily through progression to cirrhosis, liver failure, and hepatocellular carcinoma (HCC).¹⁻³ From 2013 to 2016, approximately 4.1 million people in the US had a positive HCV antibody test result, indicating past or current HCV infection, of whom approximately 2.4 million had current HCV infection with HCV RNA detected in their blood.¹ Among approximately 29 065 800 Black individuals in the US between 2013 and 2016, the prevalence of HCV infection was 1.8% compared with 0.8% among approximately 215 615 900 individuals of other races and ethnicities combined (prevalence ratio [PR], 2.2) (Table 1).⁴ Black individuals comprise 23% of all HCV-infected individuals in the US, but represent approximately 12% of the population.⁴ Among US residents in 2021, those who were non-Hispanic Black had an HCV mortality rate of 5.01/100 000 compared with 9.99/100 000 for American Indian/Alaska Native individuals, 1.32/100 000 for Asian/Pacific Islander individuals, 3.67/100 000 for Hispanic individuals, and 2.98/100 000 for non-Hispanic White individuals (Table 2).³ Of the approximately 13 895 HCV-related deaths in 2021, an estimated 279 were among American Indian/Alaska Native people, 293 among Asian/Pacific Islander people, 2442 among Black people, and 1901 among Hispanic people.

Because of the high prevalence and absolute number of annual HCV-related deaths in Black populations relative to other racial and ethnic minority groups, this review summarizes evidence regarding Black race and inequities in outcomes of HCV infection.

Methods

We searched PubMed for English-language studies published between January 2015 and September 2023 using search terms *hepatitis C*, *African American* or *Black*, and *United States*. References from these articles were evaluated to identify other relevant literature. We prioritized systematic reviews and randomized clinical trials.

Of 593 articles identified, 65 were included, consisting of 36 observational studies (19 retrospective cohort, 15 prospective cohort, 2 cross-sectional), 1 nonrandomized clinical trial, 4 randomized clinical trials, 5 systematic reviews, 6 reviews, 5 guidelines, 5 reports (4 US government agency, 1 global organization), and 3 viewpoint articles.

Discussion

HCV Epidemiology

HCV infection occurs primarily by percutaneous exposure to contaminated blood. In the US, most HCV infections (57%) are associated with injection drug use.³ HCV infection is associated with high-risk sexual practices (including those resulting in bleeding or damage to mucosa and drug use during sex) primarily among men who have sex with men living with HIV.⁵ Mother to child transmission of HCV occurs in 5.8% (95% CI, 4.2%-7.8%) of infants born to mothers with HCV infection and 10.8% (95% CI, 7.6%-15.2%) of infants born to mothers with HCV and HIV infection.⁶ Among

individuals infected with HCV, approximately 15% to 45% clear the infection spontaneously in the acute phase, within the first 6 months of infection.⁷ Individuals with active HCV replication, as indicated by the presence of HCV RNA in the blood 6 months or longer after initial infection, are considered to have chronic infection. Most individuals with HCV infection are asymptomatic and, without screening, remain unaware of their infection and therefore may transmit infection to others. Progression of liver disease to cirrhosis occurs in 20% to 30% of people with chronic HCV infection over 25 to 30 years.⁷ Individuals with HCV cirrhosis have increased risk of HCC, hepatic decompensation, and death. The natural history of HCV is influenced by host, viral, and environmental factors, and HCV can be cured by antiviral treatment with oral direct-acting antivirals (DAAs).^{7,8}

In 2017, the World Health Organization and US National Academies of Sciences called for elimination of HCV, defined as a 90% reduction in incident HCV infections and a 65% reduction in liver-related mortality by 2030 compared with 2015 rates.^{9,10} However, in 2021, approximately 69 800 newly acquired HCV infections were reported in the US, a 106% increase compared with 33 900 in 2015.³ Both the introduction of a new acute HCV case definition in 2020 to more accurately identify acute HCV cases and increases in opioid use likely contributed to this increase in acute infections despite probable reduced HCV detection in 2020 and 2021 due to the COVID-19 pandemic.³ While people from all races and ethnicities experienced increased rates of newly diagnosed acute HCV infections between 2015 and 2021, Black individuals experienced the greatest percentage increase, from 0.3 to 1.4/100 000, representing a 367% increase compared with 1.8 to 2.7/100 000 among American Indian/Alaska Native populations (50%), 0.3 to 0.9/100 000 among Hispanic individuals (200%), and 0.9 to 1.6/100 000 among White individuals (78%) (Table 1).³

From 2013 to 2016, the estimated HCV prevalence was higher in Black populations in the US than in other races and ethnicities. Differences across the 50 states ranged from a prevalence of 1.2/100 among 2.27 million Black people in Florida compared with 0.91/100 among 13.6 million people of non-Black races and ethnicities (PR among Black people compared with non-Black people, 1.3) to 4.9/100 among 0.24 million Black people in Washington, DC, compared with 0.4/100 of 0.30 million people of non-Black races and ethnicities (PR, 12.4).⁴ Mississippi was the only state with a lower estimated HCV prevalence among Black populations (0.97/100 Black people compared with 1.05/100 people of non-Black race and ethnicity; PR, 0.92). One potential explanation for higher HCV prevalence in Black populations is the lower likelihood of spontaneous HCV clearance in people of African ancestry compared with people of European ancestry related, in part, to genetic variations in the interferon lambda gene locus that are strongly associated with high rates of spontaneous acute HCV clearance. Regardless of ancestry, people with the CC genotype of the single-nucleotide variation (rs12979860) near the *IL28B* gene encoding interferon lambda-3 have a lower likelihood of progression to chronic infection (odds ratio [OR], 0.33; $P < 10^{-12}$).^{11,12} The more protective genetic variation is less common in people of African ancestry compared with European ancestry, contributing to greater likelihood of HCV chronicity in Black people.^{12,13}

Table 1. Estimated Number of Current HCV Infections and Infections Reported in 2021 in the US by Racial and Ethnic Groups and Vulnerable Population Groups

	Cumulative active HCV infections Prevalence, %	HCV infections detected and reported to the CDC ^a		
		Acute infections, rate/100 000		Increase in HCV incidence 2015-2021, %
		2015	2021	
US population	1.0 ^b	0.8	1.6	100.0
Racial or ethnic group				
American Indian/Alaska Native	Not available	1.8	2.7	50.0
Black, non-Hispanic	1.8 ^c	0.3	1.4	366.7
Hispanic	0.7 ^c	0.3	0.9	200.0
White, non-Hispanic	0.8 ^c	0.9	1.6	77.8
Other vulnerable populations				
Without homes	10.8 ^b	Not available	Not available	Not available
Under incarceration	10.7 ^b	Not available	Not available	Not available

Abbreviations: CDC, Centers for Disease Control and Prevention; HCV, hepatitis C virus.

^a Data were taken from the CDC.³ Acute infection represents new HCV infections confirmed based on clinical features of jaundice or total bilirubin levels ≥ 3.0 mg/dL (to convert to $\mu\text{mol/L}$, multiply by 17.104) or elevated serum alanine aminotransferase levels >200 IU/L (to convert to $\mu\text{kat/L}$, multiply by 0.0167), and the absence of a more likely diagnosis or documented negative HCV antibody result followed within 12 months by a positive HCV antibody test result (anti-HCV test conversion) in the absence of a more likely diagnosis or a documented negative HCV antibody or negative HCV detection test result (in someone without a prior diagnosis of HCV infection) followed

within 12 months by a positive HCV detection test result (HCV RNA test conversion).

^b Data from Hofmeister et al.¹ Data estimates for the noninstitutionalized, civilian population were obtained from the National Health and Nutrition Examination Survey (NHANES) 2013-2016 and data for the 2013-2016 population that was incarcerated and homeless (not included in NHANES) were estimated using a combination of literature reviews and population-size estimation approaches.

^c Data from Bradley et al.⁴ Data were obtained from NHANES 2013-2016 and include the US noninstitutionalized, civilian adult population.

Other factors may also contribute to higher rates of HCV disease in Black people in the US. Zoning laws that were adopted in more than 900 US cities from 1908 until 1930 and restrictive covenants that existed between the early 1900s until 1948 prohibited the sale or rental of land to Black people in certain areas and prevented Black individuals from living in majority White neighborhoods.^{14,15} These laws combined with discriminatory practices by US real estate and banking industries (eg, "redlining" or designating Black neighborhoods ineligible for federal mortgages) from 1933 to 1968 have led to isolated Black communities.¹⁴⁻¹⁶ Racial isolation, a form of racial segregation that influences the degree to which people from different races interact, is associated with high rates of unemployment, poverty, violence, and injection drug use in the isolated Black communities.¹⁴ A study of 93 large US metropolitan statistical areas (MSAs [adjacent counties that form a socioeconomic unit with at least 1 central city of 50 000 or more people]) demonstrated a median isolation index of 0.48, indicating that the typical Black resident in 47 of the 93 MSAs studied inhabited a defined geographic area where 48% or more of the residents were Black in 1990. Across all MSAs studied, on an isolation index scale of 0 to 1, a 0.50 increase in the isolation index of an MSA was associated with a 23% increase in the prevalence of injection drug use among Black individuals in those MSAs by 1998.¹⁴ This is relevant to rates of HCV in Black people because injection drug use remains the most common risk factor for HCV.³

Further, rates of incarceration for Black individuals are higher than rates for White individuals.¹⁷ Of 1.16 million individuals sentenced to prison in US state or federal correctional facilities at the end of 2021, 31% were White (who represent 67% of the US population) and 32% were Black (who represent 12% of the population).¹⁸ Incarceration is associated with a 62% increase in the risk of HCV acquisition (relative risk, 1.62 [95% CI, 1.28-2.05]) and the preva-

Table 2. Hepatitis C Virus Mortality Rates by Racial and Ethnic Groups in the US, 2021^a

	No.	Rate/100 000 (95% CI)
Total population	13 895	3.18 (3.13-3.24)
American Indian/Alaska Native	279	9.99 (8.78-11.19)
Asian/Pacific Islander	293	1.32 (1.17-1.48)
Black, non-Hispanic	2442	5.01 (4.81-5.22)
Hispanic	1901	3.67 (3.50-3.84)
White, non-Hispanic	8752	2.98 (2.91-3.04)

^a Data were taken from the Centers for Disease Control and Prevention.³

lence of HCV in US individuals who are incarcerated is 10.7% compared with 1% to 2% in the general population.^{1,19,20} Racial and ethnic minority groups accounted for approximately 63% of people who are incarcerated and infected with HCV.²¹

Diagnosis of HCV

Prior to 2020, HCV testing was recommended only for individuals with HCV infection risk factors such as injection drug use or elevated liver enzymes and adults born between 1945 and 1965.²² However, approximately 50% of US adults with chronic HCV are unaware of their infection.²³ In 2020, the US Preventive Services Task Force and Centers for Disease Control and Prevention updated recommendations from risk-based to universal screening for all adults 18 years and older at least once, with each pregnancy, and annually for high-risk groups including people who inject drugs and HIV-infected men who have sex with men (Box 1).^{24,25} These new guidelines may increase HCV screening to a wide range of settings beyond traditional medical settings.

Box 1. Commonly Asked Questions**Who Should Be Screened for HCV?**

The US Preventive Services Task Force and the Centers for Disease Control and Prevention recommend HCV screening for all adults ≥ 18 years at least once, with each pregnancy, and at least annually for high-risk groups including persons who inject drugs and HIV-infected men who have sex with men, regardless of race and ethnicity.

How Effective Is HCV Treatment?

HCV cure is achieved in $\geq 95\%$ of patients who take prescribed antivirals regardless of race or ethnicity and is associated with a reduction in the incidence of hepatocellular cancer and prevents HCV transmission to others.

Can Patients With HCV Be Treated in Primary Care Settings?

Clinicians practicing in primary care settings can treat HCV effectively, with patients treated in these settings achieving HCV cure rates that are similar to those for patients treated by specialists.

Abbreviation: HCV, hepatitis C virus.

HCV Treatment

Recommended treatment for HCV consists of 1 to 3 pills of DAAs taken orally for 8 or 12 weeks.²⁶ DAAs inhibit HCV nonstructural proteins involved in viral replication and cure 95% or more of treated patients, with mild adverse effects of fatigue, headache, and nausea reported in less than 25%.^{27,28} Cure or sustained virologic response (SVR) is defined as undetectable HCV RNA in the blood more than 12 weeks after treatment and was associated with a reduction in incidence of HCC from 41.8 (95% CI, 40.3-43.3) to 20.1 (95% CI, 18.4-21.9)/1000 patient-years ($P < .01$) and a 57% reduction in mortality (adjusted hazard ratio [aHR], 0.43 [95% CI, 0.42-0.45]) from 64.7 (95% CI, 63.9-65.4) to 36.5 (95% CI, 35.4-37.7)/1000 patient-years ($P < .01$).⁸ HCV cure was also associated with a reduced risk of incident diabetes (aHR, 0.74 [95% CI, 0.70-0.77]; $P < .01$), chronic kidney disease (aHR, 0.81 [95% CI, 0.78-0.85]; $P < .01$), and cardiovascular disease (aHR, 0.90 [95% CI, 0.86-0.94]; $P < .01$). High cure rates have been reported in Black (SVR, 95% [95% CI, 92%-97%]) and non-Black (SVR, 97% [95% CI, 96%-98%]) individuals who complete a course of HCV therapy.²⁹

Access to Treatment

To achieve the US goal of curing 80% of people infected by HCV,⁹ screening must be followed by treatment.³⁰ However, the number of individuals treated yearly since approval of DAAs in 2014 has been less than national goals of eliminating HCV in 260 000 people annually.^{9,31,32} Data from a large US prescription claims database reported that the number of people treated for HCV decreased from 164 232 in 2015 to 83 740 in 2020.³²

Among 14 063 people in Florida with Medicaid who were diagnosed with HCV from 2013 to 2018, treatment initiation was significantly less common among 2535 Black individuals compared with 9006 White individuals (aHR, 0.71 [95% CI, 0.52-0.98]; absolute rates not provided).³³ Among 894 patients with HCV enrolled at 4 US health care organizations in 2017-2018, logistic regression analyses that controlled for sex, race, age, insurance status, study site, cirrhosis status, Charlson Comorbidity Index score, and length of follow-up found the following factors associated with lower rates of HCV treatment ini-

tiation: Black race (72.6% vs 78.7% for White race; adjusted [aOR], 0.59 [95% CI, 0.36-0.98]), recent injection drug use (36.4% vs 75.5% among patients without recent injection drug use; aOR, 0.11 [95% CI, 0.02-0.54]), recent homelessness (53.6% vs 78.2% among people not recently homeless; aOR, 0.36 [95% CI, 0.14-0.94]), and recent incarceration (57.1% vs 78.0% among people not recently incarcerated; aOR, 0.34 [95% CI, 0.12-0.94]).³⁴ In a 2022 study of 47 687 persons with detectable HCV RNA in 2019-2020 including 37 877 (79%) covered by Medicaid (7666 Black, 24 374 White), rates of HCV treatment were similar among Black (23.5%) and White (23.7%) individuals. However, Black individuals with Medicaid insurance were less likely to initiate HCV treatment than White individuals with Medicaid (aOR, 0.93 [95% CI, 0.88-0.99]) in multivariable analyses adjusting for sex, age group, race, and Medicaid treatment restrictions.³¹

Potential Strategies to Eliminate Race Differences in HCV Outcomes

Increasing HCV Knowledge | The Viral Hepatitis National Strategic Plan recommends strategies to increase HCV awareness in Black and other racial and ethnic minority communities, including developing and disseminating accessible linguistically appropriate HCV education materials that align with cultural beliefs and values.³⁰ Data suggest that use of community-based participatory methods, including a community advisory board, education and training for community members on HCV topics, and overcoming stigma toward HCV, and involvement of young community members (who volunteer or coach in the community and are better positioned for outreach activities) may help increase knowledge and screening rates among racial and ethnic minority populations.³⁵

Improving HCV Screening Rates and Awareness of Infection | Guideline-recommended HCV screening should be implemented in clinical and community-based settings that serve racial and ethnic minority populations such as federally qualified health centers,³⁶ sexually transmitted infection clinics,³⁷ emergency departments,³⁸ safety-net hospitals,³⁹ correctional facilities,⁴⁰ substance use disorder treatment programs,⁴¹ shelters for people experiencing homelessness,^{42,43} syringe service programs,⁴⁴ and mobile testing vans (Box 2).⁴⁵ Implementation of opt-out HCV testing combined with HIV testing in a Dallas County Jail in Texas was associated with an increase in the acceptance rate of testing from 12.9% (118/915) to 96.4% (3042/3155).⁴⁰ In a randomized clinical trial of 162 people enrolled in a substance use disorder treatment program in New York City (25% Black and 51% Hispanic), availability of combined or bundled rapid HCV and HIV testing, compared with referral to either on-site or off-site laboratory testing, was associated with increased likelihood of receiving both HCV and HIV test results (69% on-site vs 19% off-site, $P < .01$) (Table 3).⁴¹ In an academic health care system with 2.7 million annual outpatient visits, electronic health record prompts for universal HCV screening was associated with an increase in screening tests from 2052/month to 4169/month. Compared with White race, Black race was associated with 59% increased odds of being screened (9044/156 288 screened postalert vs 4612/141 955 screened prealert implementation compared with 8698/258 498 postalert vs 4371/217 342 prealert for White patients; aOR, 1.59 [95% CI, 1.53-1.64]).⁴⁶ In a stepped-wedge randomized clinical trial of people born between 1945 and 1965 (28% Black) who were hospitalized at

1 of 2 US academic centers in 2020-2021, a default order for HCV screening resulted in a 69.9% (2257/3229) screening rate compared with 38.1% (1679/4405) using an electronic prompt for HCV screening (OR, 3.18 [95% CI, 2.59-3.89]; $P < .001$).³⁹

Increasing Access to HCV Treatment | Community leaders and stakeholders, such as faith-based leaders, peer educators, and medical professionals, may increase access to care in racial and ethnic minority populations by addressing feelings of stigmatization and reducing doubt and apprehension regarding HCV treatment.³⁵ Other approaches include using health literacy tools and communication campaign materials (eg, fact sheets, pamphlets, posters) depicting individuals from diverse races and ethnicities who describe positive experiences with HCV treatment.³⁰ Educational interventions that increase awareness about HCV and the availability of a safe and effective cure may reduce barriers to treatment and increase willingness to access treatment.⁵² Patient navigation services that include assistance with insurance enrollment and scheduling primary care and HCV specialist appointments may facilitate access to treatment for racial and ethnic minority populations.^{37,45,48} Initiatives in New York City (Check Hep C program)⁵³ and San Francisco (End Hep C SF program)⁵⁴ have demonstrated the benefits of including people who have lived with HCV infection in HCV access programs (peer-based linkage) in helping to increase community HCV screening and linkage to health care.^{54,55} The End Hep C SF initiative consists of a consortium of organizations working collaboratively to eliminate HCV and HCV-related inequities through targeted efforts to reach individuals in socially disadvantaged communities, including people who inject drugs and individuals who are homeless or marginally housed. Supported by people who provide HCV education, assist with access to high-quality health care, and help individuals track appointments, 252 people gained access to HCV care and at least 89 people achieved HCV cure the first year.⁵⁴ A combination of similar strategies were implemented among American Indian populations in the Cherokee Nation. Cherokee Nation leadership engagement enabled successful implementation of an HCV elimination program, which included HCV testing and treatment in a broad range of community settings combined with peer-based programs among American Indian populations in the Cherokee Nation. Program implementation led to an increase in the number of individuals treated for HCV from a mean (SD) of 95 (133) to 215 (9) per year.⁵⁶ A recent analysis of 1353 patients (62% Black, 61% uninsured, 16% without homes) born between 1945 and 1965 and newly diagnosed with HCV at a Dallas safety net health system used a prepost implementation design to assess the impact of patient navigation on access to care and HCV treatment initiation. Among 584 in the patient navigation group, access to HCV evaluation and treatment (OR, 3.7 [95% CI, 2.9-4.8]) and treatment initiation within 6 months (OR, 3.2 [95% CI, 2.3-4.2]) were higher compared with 769 patients in the usual care group.⁴⁷

Increasing HCV Treatment Rates | HCV treatment has been typically delivered in infectious disease or hepatology clinical offices in large academic medical centers. Mistrust of clinicians, long wait times for appointments, and transportation challenges reduce access to HCV treatment. Data examining prescription claims by 9692 clinicians for 57 620 patients treated for HCV in 2018 demonstrated that gastroenterologists remained the most common clinicians to write pre-

Box 2. Strategies to Increase Diagnosis and Treatment of HCV in People Who Are Black

Diagnosis

HCV screening in community-based settings such as federally qualified health centers, sexually transmitted infection clinics, emergency departments, inpatient settings, correctional facilities, substance use treatment programs, shelters for people experiencing homelessness, syringe service programs, and mobile testing vans

Use of point-of-care HCV tests in community-based settings

Electronic medical record-based universal HCV screening

Opt-out HCV screening in correctional settings

Improving Access to HCV Care

Use of peer/patient navigation services to support access to HCV care and other ancillary supports

Culturally appropriate HCV health literacy tools/materials (fact sheets, pamphlets)

Patient education on effectiveness and safety of HCV treatment

Nurse-led HCV referral, patient education, and HCV treatment support

HCV Treatment

Use of simplified HCV treatment algorithms in community-based settings, for example, primary care settings

Educational strategies to support HCV treatment by a wide range of clinicians including primary care clinicians

Telemedicine methods, such as video or telephone clinical visits, to increase access to HCV treating clinicians

Eliminate insurance coverage restrictions to HCV treatment

Innovative HCV treatment funding models such as subscription models for HCV treatment, in which pharmaceutical companies are paid a fixed amount for HCV treatment courses for as many patients that access HCV treatment for a fixed period. Other options include HCV treatment courses paid through federal funds made available for a fixed period

Abbreviation: HCV, hepatitis C virus.

scriptions for HCV treatment (30% of patients receiving DAAs vs 21% treated by primary care clinicians and 27% by advance practice clinicians) and that patients treated by gastroenterologists were significantly less likely to be Black or Hispanic.⁵⁷

Simple treatment algorithms, such as those recommended by the American Association for the Study of Liver Diseases/ Infectious Diseases Society of America (IDSA) HCV treatment guidelines,²⁶ and similarly high rates of HCV cure by physicians, nurse practitioners, or physician assistants in community settings can improve access to HCV care in community-based, nonspecialist settings.^{49,50} In an observational clinical trial including 12 community health centers in the District of Columbia, clinicians (6 specialists, 5 primary care physicians, and 5 nurse practitioners) completed a 3-hour HCV training course. Among 600 patients, 578 (96%) were Black with equally high rates of HCV cure reported among nurse practitioners (134/150, 89.3% [95% CI, 83.3%-93.8%]), primary care physicians (139/160, 86.9% [95% CI, 80.6%-91.7%]), and specialist practitioners (243/290, 83.8% [95% CI, 79.0%-87.8%]).⁴⁹ Collaborative educational models in which HCV care specialists support clinicians in a collaborative model of

Table 3. Data for Evidence-Based Interventions to Increase HCV Testing and Treatment in Black Populations

Study	Intervention	Study design	Setting	Population	Finding
HCV testing					
Frimpong et al, ⁴¹ 2020	On-site rapid HCV antibody testing: bundled HCV/HIV rapid testing provided simultaneously	Randomized clinical trial Comparison group: referral to on-site or off-site laboratory testing	Substance use disorder treatment programs	N = 162 (25% Black, 51% Hispanic) 79 On-site rapid testing 83 Standard-of-care referral	Receipt of rapid test results: Intervention: 45 (69%) Standard of care: 13 (19%) Adjusted risk ratio, 3.6 (95% CI, 2.2-6.1); <i>P</i> < .001
Hack et al, ⁴⁶ 2023	EMR prompts for universal HCV screening	Pre-post implementation	Outpatient setting in a large health care system	155 012 Total screen recipients (47.4% Black, 45.6% White)	Screening postuniversal alert vs prealert OR, 1.62 (95% CI, 1.54-1.70) Compared with White race, Black race was associated with 59% increased odds of being screened (9044 screened postalert vs 4612 screened prealert implementation compared with 8698 postalert vs 4371 prealert for White patients) aOR, 1.59 (95% CI, 1.53-1.64)
Mehta et al, ³⁹ 2022	Default order for HCV screening	Stepped-wedge randomized clinical trial Comparison group: electronic alert to consider HCV screening	Inpatient hospital setting	Intervention: n = 3229 (32.0% Black, 57.2% White) Control: n = 4405 (25.1% Black, 63.0% White)	Screening rate for default order for screening vs electronic alert to consider screening: Intervention: 69.9% (2257/3229) Control: 38.1% (1679/4405) OR, 3.18 (95% CI, 2.59-3.89); <i>P</i> < .001
Linkage to HCV care					
Strebe et al, ⁴⁷ 2023	Patient navigation Provision of support to patients to facilitate HCV care uptake. Staff contacted diagnosed patients by phone and then sent a letter. Nurse navigator, pharmacist, and pharmacy technician to (1) support patient assistance form (for HCV drug access) completion, (2) provide appointment reminders, and (3) reschedule missed appointments	Pre-post implementation Patients diagnosed prior to the patient navigation program were assigned to the usual care group (pre). Patients diagnosed after program implementation were assigned to the patient navigation group (post)	Safety net health system	N = 1353 patients (62% Black, 61% uninsured, 16% without homes) 584 Patient navigation 769 Usual care	Patient navigation group had higher odds vs usual care of linkage to HCV care: OR, 3.7 (95% CI, 2.9-4.8) To treatment initiation within 6 mo: OR, 3.2 (95% CI, 2.3-4.2)
Starbird et al, ⁴⁸ 2020	Nurse-initiated HCV referral, HCV education, patient navigation, clinical coordination, and appointment reminders	Randomized clinical trial Comparison group: usual care	Outpatient HIV care setting	N = 68 patients (81% Black, 15% White)	Linkage to HCV care nurse case management vs usual care (<i>P</i> = .03) Intervention: 47% Control: 25%
HCV treatment					
Kattakuzhy et al, ⁴⁹ 2017	Clinician 3-h HCV care training course Unrestricted access to HCV treatment	Nonrandomized open-label clinical trial	Federally qualified health centers in an urban area	N = 600 patients (96% Black)	16 Clinicians (5 infectious disease clinicians, 1 hepatologist, 5 primary care clinicians, and 5 nurse practitioners) were trained Similar HCV cure rates across clinician type Nurse practitioner: 89.3% (95% CI, 83.3%-93.8%) Primary care clinicians: 86.9% (95% CI, 80.6%-91.7%) Specialist: 83.8% (95% CI, 79.0%-87.8%)

(continued)

HCV medical education and care management have been associated with increased HCV care access for racial and ethnic minority populations.⁵⁰ One such model implemented in Baltimore, Maryland, is the Sharing the Cure program, which consisted of group sessions with clinicians in community-based settings including a 1-day con-

ference and 20 weekly 1-hour video conferences to train 53 primary care clinicians in HCV care over 4 years. In this time, 3250 patients (75.2% Black) were evaluated for HCV treatment.⁵⁰ Of 3237 patients with data, 2624 (81.1%) were HCV RNA positive, 838 of 2624 (31.9%) started treatment, 721 of 838 (86.0%)

Table 3. Data for Evidence-Based Interventions to Increase HCV Testing and Treatment in Black Populations (continued)

Study	Intervention	Study design	Setting	Population	Finding
Irvin et al, ⁵⁰ 2020	Education of clinicians to support HCV treatment efficacy	Observational cohort	Primary care clinics in an urban city	N = 3250 patients (75.2% Black) were evaluated for HCV treatment	Over 4-y Sharing the Cure implementation period: 53 Primary care clinicians completed training in HCV care 3237 Patients screened for HCV, 2624 (81.1%) HCV RNA positive, 838/2624 (31.9%) started treatment, 721/838 (86.0%) completed treatment, 543/721 (75.3%) achieved cure
Nephew et al, ⁵¹ 2022	Elimination of HCV treatment restrictions	Retrospective cohort	EMRs of adult patients seen at any Indiana University Health practices across Indiana, 2011-2021	N = 10 336 patients (13.4% Black, 80.1% White)	HCV treatment rates increased from 2.4 persons/mo to 72.3 persons/mo with no significant difference by race 526/1388 (37.8%) for Black patients 2706/8277 (32.7%) for White patients aOR, 1.02 (95% CI, 0.8-1.3)

Abbreviations: aOR, adjusted odds ratio; EMR, electronic medical record; HCV, hepatitis C virus; OR, odds ratio.

completed treatment, and 543 of 721 (75.3%) achieved cure. In this study, 693 patients (40%) had a liver fibrosis stage ineligible for treatment under state Medicaid guidelines at the time. Further, studies have shown favorable associations between the use of telemedicine and HCV treatment initiation in correctional and other settings.^{58,59}

The Affordable Care Act has expanded access to insurance for medically underserved populations and provides opportunities to increase access to HCV treatment through greater insurance coverage with optional state-level Medicaid expansion.^{60,61} However, despite substantial decreases in the cost of HCV treatment and models demonstrating societal cost-savings,⁶² barriers to accessing treatment persist even for patients who have health insurance, including denials of medication treatment due to lack of advanced liver disease, prior authorization requirements, and restrictions on medication availability for people who use drugs or alcohol.^{31,33,63}

Eliminating Medicaid HCV treatment restrictions was associated with increased treatment rates from 2.4 persons per month to 72.3 persons per month in a 2022 study of 10 336 adults with HCV from 2011 to 2021 with no significant difference by race (526/1388 [37.8%] for Black vs 2706/8277 [32.7%] for White patients; aOR, 1.02 [95% CI, 0.8-1.3]).⁵¹ A subscription model, or the "Netflix" model, in which health organizations, states, or countries pay a fixed fee to drug manufacturers for unlimited access to HCV treatment courses over a specified time was associated with treatment of at least 47 122 people in the first 2 years of implementation in Australia and projected treatment of 104 223 patients in the first 5 years at a cost of US \$7352/course.⁶⁴ A similar model was implemented in the states of Washington and Louisiana and is included as a key component of the US National Hepatitis C Elimination Program led by Francis Collins, MD (currently pending congressional approval).⁶³ The US Veterans Health Administration, which negotiated lower prices for oral DAA therapy in the VA system,⁵⁸ demonstrated uptake in DAA treatment increasing treatment initiation from less than 200/week to more than 1900/week during a period of removal of treatment restrictions. Further, this model of oral DAA treatment was associated with an anticipated lifetime cost savings of \$9 billion compared with no DAA treatment, with savings realized within 5 years.⁶²

Global Strategies | The US National Hepatitis C Elimination Program was recently proposed and requires congressional support to dedicate funds to HCV elimination efforts.^{63,65} The program aims to (1) provide funding for a test-and-treat approach to HCV through widespread point-of-care HCV RNA testing in communities, particularly in settings that provide services to populations with a high prevalence of HCV, such as community health centers, correctional institutions, emergency departments, and substance use disorder treatment programs; (2) increase access to HCV treatment by using the subscription model to increase availability of medication for underserved groups; and (3) implement a comprehensive public health effort to disseminate information and identify and treat people with HCV in a wide range of settings by clinicians.

Limitations

This review has several limitations. First, most of the included studies were observational. Few randomized clinical trials have evaluated interventions to improve racial equity in the diagnosis and treatment of HCV. Second, this review focused on Black populations in the US and did not address inequities in HCV diagnosis and treatment in other populations, such as people who are American Indian/Alaska Native or Hispanic, living in rural areas, or other populations with a high prevalence of HCV. Third, this was not a systematic review. The quality of included studies was not formally evaluated. Fourth, some relevant studies may have been missed.

Conclusions

In the US, the prevalence of HCV is higher in people who are Black than in people who are not Black. Point-of-care HCV tests, patient navigation, electronic health record prompts, and unrestricted access to HCV treatment in community-based settings have potential to increase diagnosis and treatment of HCV and improve outcomes in people who are Black.

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