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Adult Smoking Cessation — United States, 2022

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Abstract

Tobacco dependence is a chronic condition driven by nicotine addiction. Successful quitting can be increased by health care provider intervention and evidence-based treatment. CDC assessed national estimates of cigarette smoking cessation indicators among U.S. adults using 2022 National Health Interview Survey data. In 2022, approximately two thirds (67.7%) of the 28.8 million U.S. adults who smoked wanted to quit, and approximately one half (53.3%) made a quit attempt, but only 8.8% quit smoking. One half of adults who smoked and saw a health professional during the past year received health professional advice (50.5%) or assistance (49.2%) to quit smoking. Among those who tried to quit, 38.3% used treatment (i.e., counseling or medication). Adults who usually smoked menthol (versus nonmenthol) cigarettes had higher prevalences of quitting interest (72.2% versus 65.4%; p<0.05) and past-year quit attempts (57.3% versus 50.4%; p<0.05), lower prevalences of receiving quit advice (48.2% versus 53.8%; p<0.05) and using cessation treatment (35.2% versus 41.5%; p<0.05), but similar prevalence of quit success (9.5% versus 7.9%; p = 0.19). Opportunities exist for both public health and health care sectors to increase smoking cessation, including expanding access to and utilization of cessation services and supports. Incorporating equitable cessation strategies into all commercial tobacco prevention and control efforts can help advance and support smoking cessation for all population groups.

Introduction

Quitting smoking reduces the risk for premature death and smoking-related diseases (*1*). Tobacco dependence is a chronic, relapsing condition driven by nicotine addiction, and quitting can be difficult (*1*). Social and structural barriers to quitting exist differentially among population groups (*2*). For example, whereas comprehensive, barrier-free insurance coverage of cessation treatment is known to increase quitting success, only 20 state Medicaid programs provided such coverage in 2022 (*1*,*3*). In addition, commercial factors, such as marketing and product design, can influence quitting behaviors (*1*,*4*,*5*). Evidence suggests that persons who smoke menthol (versus nonmenthol) cigarettes could be less likely to successfully quit (*5*); previous studies have shown this finding is especially true of Black or African American (Black) adults who smoke, a high proportion of whom smoke menthol cigarettes in part because of aggressive, targeted marketing of menthol cigarettes to this population group (*2*,*5*).

Quitting success is increased by health care provider intervention and by use of behavioral counseling and Food and Drug Administration–approved medications, particularly when these treatments are used together (*1*). Understanding quitting intentions and behaviors can help identify gaps in treatment use and facilitate the development and implementation of efforts to increase access to and use of treatment. Healthy People 2030* includes four cessation-related objectives: 1) increasing quit

*https://health.gov/healthypeople/objectives-and-data/browse-objectives/tobacco-use

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attempts (TU-11), 2) increasing successful cessation (TU-14), 3) increasing receipt of health care provider advice to quit (TU-12), and 4) increasing treatment use (TU-13). This study expands on previous publications describing cessation-related indicators, including exploring differences in these indicators by sociodemographic and health-related factors as well as by cigarette type (menthol versus nonmenthol) (*1*).

Methods

Data Source

The National Health Interview Survey is an annual, nationally representative household survey of noninstitutionalized U.S. civilians. In 2022, a total of 27,651 adults aged ≥18 years were surveyed (response rate = 47.7%).[†] Data were weighted to provide nationally representative estimates, adjusting for differences in selection probability and nonresponse. Consistent with previous studies, current smoking was defined as having ever smoked at least 100 cigarettes and currently smoking every day or some days (*1*). Former smoking was defined as having ever smoked at least 100 cigarettes and not currently smoking (*1*).

Smoking Cessation Indicators

Seven smoking cessation indicators were assessed: 1) interest in quitting, 2) past-year quit attempt (trying to quit smoking or successfully quitting in the past year), 3) recent successful cessation (former smoking and quit for ≥6 months in the past year), 4) receipt of health professional advice to quit tobacco use, 5) receipt of health professional assistance to quit (advice about ways to quit or prescription of cessation medication),[§] 6) use of counseling to quit,[¶] and 7) use of medication to quit.[**]

Data Analysis

Prevalence estimates were calculated for each cessation indicator overall and by sociodemographic and health characteristics. Differences in cessation indicators were assessed by usual type of cigarette smoked (menthol versus nonmenthol) both overall and among non-Hispanic White (White), non-Hispanic Black, and Hispanic or Latino (Hispanic) adults. Differences were assessed using Wald F chi-square tests with p-values <0.05 considered statistically significant. Analyses were conducted using SAS (version 9.4; SAS Institute) and SAS-callable SUDAAN (version 11.0.3; RTI International). This activity was reviewed

[†] https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2022/srvydesc-508.pdf

[§] Health professional advice and assistance were measured among respondents who currently smoked and respondents who quit smoking during the past 12 months who had seen a doctor, other health professional, or mental health professional during the past year.

[¶] Used one-on-one counseling; a stop smoking clinic, class, or support group; a telephone help line or quitline; or more than one of these modalities to stop smoking. Prevalence was measured among respondents who currently smoked who tried to quit during the past year and respondents who quit smoking during the past 2 years.

[**] Used nicotine patch, nicotine gum or lozenge, nicotine nasal spray or inhaler, varenicline, bupropion, or more than one of these medications to stop smoking. Prevalence was measured among respondents who currently smoked who tried to quit during the past year and respondents who quit smoking during the past 2 years.

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by CDC, deemed not research, and conducted consistent with applicable federal law and CDC policy.[††]

Results

Cessation Indicators

In 2022, 11.6% (95% CI = 11.1%–12.1%; estimated 28.8 million) of U.S. adults reported current cigarette smoking. Approximately two thirds of adults (67.7%) wanted to quit smoking, and approximately one half (53.3%) tried to quit in the past year, but fewer than one in 10 (8.8%) recently successfully quit (Table 1).

Among adults who currently smoked or who quit in the last year, 77.6% (95% CI = 75.7%–79.4%) and 83.1% (95% CI = 78.6%–87.1%), respectively, saw a health care provider in the past year. Among these adults, approximately one half received health professional advice (50.5%) or assistance (49.2%) to quit smoking (Table 2). Fewer than four in 10 (38.3%) adults who made a past-year quit attempt or quit smoking during the past 2 years used evidence-based treatment (counseling or medication) to help them quit. Medication[§§] was used more commonly than counseling[¶¶] (36.3% versus 7.3%). Very few used both medication and counseling (5.3%; 95% CI = 4.3%–6.4%).

Cessation Indicators by Sociodemographic and Health Characteristics

Cessation indicators varied by sociodemographic and health characteristics. For example, prevalence of past-year quit attempts ranged from 74.4% among persons aged 18–24 years to 47.5% among those aged 45–64 years (Table 1). Recent successful quitting ranged from 15.3% among those aged 18–24 years to 5.6% among those aged 45–64 and ≥65 years. Recent successful quitting also varied by education (ranging from 16.8% among those with a graduate degree to 4.0% among those without a high school diploma) and income level (ranging from 11.9% among those with high income to 7.5% among those with low income). Treatment use varied by race and ethnicity. Prevalence was 42.7% among White adults, followed by non-Hispanic adults of another race (33.6%), Black adults (32.6%), Hispanic adults (28.8%), and non-Hispanic Asian adults (15.9%) (Table 2). When stratified by insurance coverage, prevalences of receiving advice, receiving assistance, and using any treatment were lowest among uninsured adults (31.2%, 27.4%, and 20.4%, respectively). Adults reporting a smoking-related chronic disease, anxiety disorder, depression, or disability had higher prevalences of receiving advice or assistance and of using treatment than did adults without these conditions.

Cessation Indicators by Cigarette Type Smoked (Menthol Versus Nonmenthol)

Adults who usually smoked menthol (versus nonmenthol) cigarettes had higher prevalences of interest in quitting (72.2% versus 65.4%; p<0.05) and quit attempts (57.3% versus 50.4%; p<0.05), but a similar prevalence of recent successful cessation (9.5% versus 7.9%; p = 0.19) (Figure). Adults who smoked menthol (versus nonmenthol) cigarettes had lower prevalences of receiving advice to quit (48.2% versus 53.8%; p<0.05) and using treatment (35.2% versus 41.5%; p<0.05).

Discussion

In 2022, most adults who smoked wanted to quit, and approximately one half tried to quit in the past year, but fewer than 10% quit successfully. Consistent with previous studies, this analysis identified a low prevalence of clinical cessation intervention (i.e., advice and assistance) and treatment use (*1*). Several barriers to treatment access might play a part in this finding. Medication recalls and shortages have contributed to declines in prescriptions for cessation medication (*6*). Gaps exist in both clinician knowledge of cessation treatment and availability of comprehensive cessation-related clinical practice guidelines (*7*,*8*). Provision of cessation treatment in behavioral health settings and hospital-affiliated cessation programs is limited (*9*,*10*). Access barriers to Medicaid treatment coverage, such as treatment duration limits, annual limits on the number of covered quit attempts, and requirements for prior authorization, are common (*3*). In addition, threats to maintenance of current access exist, including recent discontinuation of the nicotine oral inhaler[***] as well as pending legal challenges to requirements in the Affordable Care Act for most private insurers to cover tobacco cessation treatments.[†††]

The U.S. Department of Health and Human Services has identified opportunities to advance and support smoking cessation, including among population groups experiencing smoking- and cessation-related disparities.[§§§] Comprehensive

[††] 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

[§§] The most commonly used medication was nicotine patch (19.6%), followed by nicotine gum or lozenge (18.4%), varenicline (9.6%), bupropion (6.4%), and nicotine spray or inhaler (1.0%).

[¶¶] The most commonly used counseling modality was one-on-one counseling (4.3%), followed by telephone quitline (3.7%), and class, support group, or clinic (2.4%).

[***] https://cdn.pfizer.com/pfizercom/DHCP_Letter_Nicotrol_Inhaler_5.30.2023.pdf

[†††] The Affordable Care Act requires most private insurance plans to cover treatment given an "A" or "B" grade by the U.S. Preventive Services Task Force (https://www.congress.gov/111/plaws/publ148/PLAW-111publ148.pdf). Tobacco cessation treatment currently receives an "A" grade (https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/tobacco-use-in-adults-and-pregnant-women-counseling-and-interventions). This requirement is currently being challenged in the courts. https://www.kff.org/womens-health-policy/issue-brief/explaining-litigation-challenging-the-acas-preventive-services-requirements-braidwood-management-inc-v-becerra/

TABLE 1. Prevalence of interest in quitting smoking,* past-year quit attempt,† and recent successful smoking cessation§ among adults aged ≥18 years, by selected characteristics — National Health Interview Survey, United States, 2022

Characteristic	% (95% CI)		
	Interested in quitting	Past-year quit attempt	Recent successful cessation
Overall	**67.7 (65.7–69.7)**	**53.3 (51.4–55.1)**	**8.8 (7.7–9.9)**
Sex			
Men	67.1 (64.4–69.8)	53.4 (50.8–56.0)	8.7 (7.2–10.4)
Women	68.5 (65.5–71.5)	53.1 (50.1–56.0)	8.9 (7.5–10.5)
Age group, yrs			
18–24	56.5 (43.1–69.2)	74.4 (63.9–83.1)	15.3 (9.3–23.2)
25–44	70.2 (66.7–73.5)	57.9 (54.8–60.9)	12.4 (10.4–14.7)
45–64	69.9 (66.8–72.8)	47.5 (44.5–50.4)	5.6 (4.2–7.3)
≥65	60.1 (55.5–64.5)	48.6 (44.7–52.6)	5.6 (3.9–7.7)
Race and ethnicity¶			
AI/AN	—**	—**	—**
Asian	53.5 (39.5–67.1)	59.5 (47.1–71.0)	—**
Black or African American	70.3 (64.5–75.6)	57.1 (51.7–62.4)	7.3 (4.8–10.5)
White	68.4 (66.0–70.8)	50.9 (48.7–53.0)	8.7 (7.5–10.1)
Hispanic or Latino	64.2 (57.7–70.4)	56.0 (50.2–61.7)	10.9 (7.7–14.9)
Other	75.4 (60.1–87.1)	70.7 (58.2–81.3)	—**
U.S. Census Bureau region††			
Northeast	68.7 (63.4–73.6)	56.0 (50.8–61.2)	8.3 (5.8–11.4)
Midwest	68.9 (65.3–72.4)	51.1 (47.6–54.5)	8.2 (6.3–10.3)
South	67.4 (63.9–70.8)	53.0 (50.1–55.9)	8.4 (6.8–10.3)
West	66.1 (61.5–70.4)	54.5 (49.8–59.1)	10.9 (8.2–14.2)
Urbanization level§§			
Urban	68.4 (66.1–70.6)	54.1 (52.0–56.2)	9.6 (8.4–11.0)
Rural	65.4 (60.6–70.1)	50.0 (45.9–54.2)	5.5 (4.0–7.4)
Educational attainment (among adults aged ≥25 yrs)			
0–12 yrs, no diploma	64.3 (58.7–69.5)	47.7 (42.7–52.8)	4.0 (2.3–6.2)
GED	66.4 (57.1–74.9)	52.3 (44.0–60.4)	—**
High school diploma	69.2 (65.6–72.7)	51.3 (47.7–54.8)	7.4 (5.7–9.3)
Some college, no degree	69.0 (64.1–73.6)	52.5 (47.8–57.1)	9.4 (7.1–12.0)
Associate degree (academic, technical, or vocational)	73.6 (68.2–78.6)	51.5 (46.0–57.0)	8.3 (5.5–12.0)
Bachelor's degree	68.4 (62.4–74.0)	55.8 (50.1–61.4)	14.8 (11.0–19.4)
Graduate degree (master's, doctoral, or professional)	67.8 (57.9–76.6)	64.9 (55.6–73.5)	16.8 (10.6–24.6)
Income to poverty ratio (income level)¶¶			
0–1.99 (low)	65.6 (62.4–68.8)	52.9 (49.9–55.9)	7.5 (6.1–9.2)
2.00–3.99 (middle)	68.8 (65.0–72.5)	52.8 (49.2–56.4)	7.8 (6.2–9.7)
≥4.00 (high)	70.0 (66.0–73.7)	54.4 (50.6–58.1)	11.9 (9.5–14.6)
Sexual orientation			
Heterosexual or straight	68.0 (65.8–70.0)	52.2 (50.2–54.1)	8.1 (7.0–9.3)
Bisexual	61.2 (48.1–73.3)	65.8 (54.7–75.7)	23.7 (15.4–33.6)
Lesbian or gay	69.6 (53.6–82.7)	67.5 (54.3–78.1)	—**
Health insurance coverage***			
Private	70.9 (68.0–73.7)	54.7 (51.9–57.5)	10.0 (8.4–11.8)
Medicaid (including dual eligibility)	66.0 (61.5–70.3)	53.5 (49.6–57.4)	9.2 (7.0–11.8)
Medicare only (aged ≥65 yrs)	62.4 (55.1–69.4)	50.0 (43.2–56.8)	5.3 (3.0–8.7)
Other public insurance	64.5 (57.2–71.4)	52.8 (46.1–59.3)	8.2 (5.2–12.5)
Uninsured	64.3 (59.0–69.5)	49.5 (43.9–55.0)	6.2 (4.1–8.9)
Disability†††			
Yes	64.6 (59.2–69.8)	53.7 (48.8–58.7)	7.7 (5.3–10.9)
No	68.3 (66.0–70.4)	53.2 (51.1–55.2)	9.0 (7.8–10.2)
Chronic disease diagnosis§§§			
Smoking-related chronic disease	68.7 (65.0–72.3)	53.1 (49.6–56.6)	7.8 (5.9–10.2)
Other chronic disease	69.2 (66.1–72.2)	55.6 (52.6–58.5)	8.7 (7.0–10.7)
No chronic disease	65.2 (61.5–68.8)	51.2 (47.8–54.5)	9.6 (7.8–11.6)

See table footnotes on the next page.

TABLE 1. (*Continued*) Prevalence of interest in quitting smoking,* past-year quit attempt,† and recent successful smoking cessation§ among adults aged ≥18 years, by selected characteristics — National Health Interview Survey, United States, 2022

Characteristic	% (95% CI)		
	Interested in quitting	Past-year quit attempt	Recent successful cessation
Anxiety disorder¶¶¶			
Yes	71.2 (67.4–74.8)	59.5 (56.0–63.0)	9.7 (7.6–12.1)
No	66.4 (63.9–68.8)	50.8 (48.5–53.0)	8.4 (7.2–9.7)
Depression** **			
Yes	69.4 (65.6–73.1)	58.8 (55.5–62.0)	9.3 (7.4–11.5)
No	67.0 (64.5–69.4)	50.9 (48.6–53.2)	8.6 (7.2–9.7)
**Mental health counseling (past year)†††† **			
Yes	70.9 (66.0–75.4)	64.8 (60.1–69.3)	12.0 (9.2–15.2)
No	67.1 (64.8–69.4)	50.9 (48.9–53.0)	8.1 (7.1–9.4)

Abbreviations: AI/AN = American Indian or Alaska Native; GED = general educational development certificate; NCHS = National Center for Health Statistics.

* Adults who currently smoked cigarettes who reported that they wanted to stop smoking completely.

† Adults who currently smoked cigarettes who reported that they stopped smoking for >1 day during the past 12 months because they were trying to quit smoking and adults who quit smoking during the past year among adults who currently smoke cigarettes and adults who quit smoking during the past year.

§ Adults who formerly smoked who quit smoking for ≥6 months during the past year among adults who currently smoke cigarettes (and have smoked for ≥2 years) and adults who quit smoking during the past year.

¶ Hispanic or Latino persons could be of any race. The group "Other, non-Hispanic" includes adults who were categorized as "non-Hispanic AI/AN and any other group" or "other single and multiple races" in the National Health Interview Survey public use file. All other groups were non-Hispanic, single-race categories.

** Estimates were statistically unreliable based on NCHS standards. https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf

†† https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

§§ Based on the 2013 NCHS Urban-Rural Classification Scheme for Counties (https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf). For this report, the four-level urbanization level variable available in the public use data file is reduced to a dichotomous variable.

¶¶ Ratio of family income to poverty threshold for family size, based on the imputed family income to poverty threshold variable.

*** Private: any private insurance plan; Medicaid: Medicaid or other state-sponsored health plans, including the Children's Health Insurance Program, or dual-enrolled in Medicare and Medicaid or other state-sponsored health plan; Medicare only: adults aged ≥65 years who had only Medicare coverage; other public insurance: any type of military coverage, coverage from other government programs, or Medicare among adults aged <65 years; and uninsured: no health insurance coverage. Insurance coverage is as of time of survey.

††† Disability was defined based on self-reported presence of selected limitations, including vision, hearing, mobility, remembering or concentrating, self-care, and communication. Respondents who indicated "A lot of difficulty" or "Cannot do at all/unable to do" to questions related to these elements were coded as living with a disability; those who responded "no difficulty" or "some difficulty" were coded as having no disability. https://www.cdc.gov/nchs/washington_group/index.htm

§§§ Respondent ever told by a health professional that they had a specific chronic disease, including smoking-related chronic disease (cancer of the bladder; cervix; colon or rectum; esophagus; head and neck; larynx; lung; liver; mouth, tongue, or lip; pancreas; stomach; throat or pharynx; or uterus; chronic obstructive pulmonary disease, emphysema, or chronic bronchitis; angina; coronary heart disease; myocardial infarction; stroke; or type 2 diabetes); other chronic disease (cancer of the blood, bone, brain, breast, gallbladder, ovary, prostate, skin [melanoma or nonmelanoma], or thyroid; leukemia, lymphoma, melanoma, or other type of cancer; asthma; arthritis; chronic fatigue syndrome; dementia; epilepsy; high cholesterol; hypertension; or type 1 diabetes); or no chronic disease.

¶¶¶ Respondent ever told by a health professional that they had any type of anxiety disorder.

**** Respondent ever told by a health professional that they had any type of depression.

†††† Received counseling or therapy from a mental health professional such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker during the past year.

commercial tobacco¶¶¶ prevention and control strategies, such as retail strategies and smoke-free policies, can support and increase cessation at the population level (*1*). Equitable implementation of such strategies needs to include attention to ensuring equitable access to cessation treatments and supports. Leveraging and expanding the current infrastructure of evidence-based cessation supports, including quitlines,**** digital cessation services,†††† and cessation-focused mass media campaigns can continue to advance smoking cessation (*1*). Expanding and promoting barrier-free, comprehensive cessation treatment coverage can increase availability and use of treatment (*1*). In addition, implementing systems-level changes in health care settings, including adoption of treatment protocols and standardized clinical workflows, can systematize clinical treatment delivery and might increase treatment access for the approximately three in four adults who smoke who see a health care provider in a given year§§§§

§§§ The U.S. Department of Health and Human Services Framework to Support and Accelerate Smoking Cessation outlines six goals, with supporting strategic opportunities, to advance smoking cessation in the United States. https://www.hhs.gov/sites/default/files/hhs-framework-support-accelerate-smoking-cessation-2024.pdf

¶¶¶ Commercial tobacco refers to tobacco products that are made and sold by companies. This definition does not include traditional tobacco used by some Indigenous groups for religious or ceremonial purposes.

**** All 50 states, the District of Columbia, Guam, and Puerto Rico have a tobacco cessation quitline with services free to callers, available through the national quitline portal (1-800-QUIT-NOW).

†††† Digital tobacco cessation services are available throughout the United States, including web-based interventions (www.smokefree.gov), and text-based interventions such as those available through the National Texting Portal (by texting QUITNOW to 333888). https://www.cdc.gov/tobacco/campaign/tips/quit-smoking/national-texting-portal.html

§§§§ The Million Hearts Tobacco Cessation Change Package outlines evidence-based and promising practice health systems changes to enhance and improve integration of tobacco dependence treatment into routine clinical care. https://millionhearts.hhs.gov/files/tobacco_cessation_change_pkg.pdf

TABLE 2. Prevalence of receiving health professional advice to quit smoking,* health professional assistance to quit smoking,† and use of counseling§ and medication¶ for cessation among adults aged ≥18 years, by selected characteristics — National Health Interview Survey, United States, 2022

Characteristic	% (95% CI)				
	Received health professional advice to quit	Received health professional assistance to quit	Used counseling	Used medication	Used counseling or medication
Overall	**50.5 (48.4–52.6)**	**49.2 (47.0–51.4)**	**7.3 (6.1–8.6)**	**36.3 (33.9–38.6)**	**38.3 (36.0–40.6)**
Sex					
Men	47.7 (44.6–50.9)	46.4 (43.3–49.5)	6.9 (5.4–8.7)	34.7 (31.5–38.0)	36.9 (33.7–40.2)
Women	53.5 (50.6–56.3)	52.2 (49.3–55.1)	7.8 (6.1–9.8)	38.2 (34.9–41.7)	40.0 (36.6–43.4)
Age group, yrs					
18–24	32.5 (21.0–45.7)	31.0 (19.9–43.9)	—**	26.9 (18.1–37.3)	28.3 (19.4–38.7)
25–44	37.2 (33.7–40.9)	38.1 (34.6–41.6)	5.5 (3.9–7.6)	28.6 (25.2–32.2)	30.9 (27.4–34.5)
45–64	60.3 (56.9–63.6)	56.4 (52.9–59.9)	9.1 (7.1–11.5)	44.7 (40.8–48.7)	46.8 (42.8–50.7)
≥65	59.9 (55.6–64.1)	60.1 (55.9–64.3)	10.2 (7.2–13.8)	45.7 (40.3–51.1)	47.3 (42.0–52.6)
Race and ethnicity††					
AI/AN	—**	—**	—**	—**	—**
Asian	34.3 (21.5–49.0)	41.8 (29.9–55.6)	—**	—**	15.9 (7.7–27.8)
Black or African American	49.5 (43.9–55.1)	48.8 (42.5–55.2)	11.3 (8.1–15.3)	28.8 (23.6–34.5)	32.6 (27.2–38.2)
White	54.4 (51.9–57.0)	51.7 (49.0–54.4)	6.7 (5.3–8.4)	41.1 (38.2–44.1)	42.7 (39.8–45.7)
Hispanic or Latino	33.4 (27.0–40.2)	36.4 (30.3–42.8)	7.0 (4.1–11.1)	26.6 (20.8–33.0)	28.8 (22.9–35.3)
Other	45.7 (31.7–60.1)	42.6 (29.1–56.9)	—**	28.8 (17.3–42.8)	33.6 (22.1–48.1)
U.S. Census Bureau region§§					
Northeast	59.1 (53.7–64.4)	55.4 (49.5–61.1)	7.5 (4.5–11.4)	42.5 (36.9–48.2)	44.0 (38.3–49.8)
Midwest	54.9 (50.8–59.0)	52.1 (47.8–56.3)	8.4 (5.8–11.6)	38.3 (33.2–43.6)	40.1 (35.0–45.4)
South	46.2 (43.0–49.5)	46.4 (42.9–49.8)	5.9 (4.4–7.8)	33.7 (30.3–37.2)	35.5 (32.2–39.0)
West	46.7 (41.8–51.6)	46.4 (41.1–51.8)	9.0 (6.3–12.3)	34.3 (28.7–40.2)	37.4 (31.9–43.1)
Urbanization level¶¶					
Urban	49.6 (47.3–51.9)	48.7 (46.3–51.2)	7.7 (6.3–9.1)	35.8 (33.3–38.5)	38.0 (35.4–40.6)
Rural	53.9 (49.2–58.5)	51.1 (46.0–56.1)	5.7 (3.3–9.0)	38.1 (32.9–43.5)	39.6 (34.5–45.0)
Educational attainment (among adults aged ≥25 yrs)					
0–12 yrs, no diploma	51.5 (45.7–57.3)	52.7 (46.7–58.7)	5.6 (3.2–9.0)	31.2 (25.3–37.6)	32.6 (26.6–39.0)
GED	56.4 (46.4–66.0)	52.4 (42.4–62.3)	—**	40.7 (29.7–52.4)	43.6 (32.5–55.2)
High school diploma	51.3 (47.3–55.2)	50.0 (45.9–54.1)	4.4 (2.8–6.6)	33.3 (29.0–37.7)	34.6 (30.3–39.1)
Some college, no degree	49.0 (44.1–53.9)	49.2 (44.3–54.1)	11.5 (8.1–15.7)	41.0 (35.1–47.2)	44.1 (38.0–50.2)
Associate degree (academic, technical, or vocational)	56.9 (51.2–62.5)	51.3 (45.7–57.0)	12.0 (8.0–17.0)	39.1 (32.5–46.0)	43.2 (36.6–50.0)
Bachelor's degree	46.7 (40.5–53.0)	45.7 (39.8–51.6)	7.0 (4.2–10.7)	43.9 (37.5–50.4)	45.3 (38.9–51.8)
Graduate degree (master's, doctoral, or professional)	48.4 (38.4–58.5)	45.6 (36.1–55.4)	—**	40.1 (29.8–51.1)	40.8 (30.5–51.8)
Income to poverty ratio (income level)***					
0–1.99 (low)	52.1 (48.8–55.3)	51.8 (48.4–55.1)	8.4 (6.7–10.5)	33.6 (30.1–37.2)	36.0 (32.5–39.7)
2.00–3.99 (middle)	49.2 (45.3–53.1)	48.3 (44.3–52.3)	7.4 (5.4–9.9)	35.7 (31.5–40.0)	37.3 (33.1–41.7)
≥4.00 (high)	49.4 (45.7–53.7)	46.3 (42.2–50.3)	5.4 (3.6–7.8)	40.8 (36.2–45.5)	42.5 (37.9–47.3)
Sexual orientation					
Heterosexual or straight	50.9 (48.7–53.2)	49.5 (47.2–51.8)	7.0 (5.8–8.4)	36.0 (33.5–38.5)	37.9 (35.5–40.4)
Bisexual	48.1 (36.3–60.1)	46.7 (35.0–58.7)	—**	41.0 (29.4–53.4)	42.8 (31.1–55.0)
Lesbian or gay	41.2 (28.1–55.2)	56.8 (41.8–71.1)	—**	—**	—**
Health insurance coverage†††					
Private	48.5 (45.3–51.7)	46.5 (43.4–49.7)	5.9 (4.6–7.5)	37.9 (34.5–41.4)	39.2 (35.8–42.8)
Medicaid (includes dual eligibility)	55.6 (51.2–59.8)	56.0 (51.6–60.4)	9.5 (6.8–13.0)	39.5 (34.3–44.9)	42.5 (37.3–47.8)
Medicare only (aged ≥65 yrs)	62.8 (55.7–69.6)	61.1 (53.9–68.0)	8.9 (4.9–14.7)	43.0 (34.9–51.4)	43.4 (35.3–51.8)
Other public insurance	60.4 (53.0–67.6)	61.6 (54.6–68.2)	14.7 (8.9–22.4)	50.0 (41.1–59.0)	53.0 (44.1–61.8)
Uninsured	31.2 (23.7–39.4)	27.4 (20.4–35.4)	—**	17.2 (12.3–23.0)	20.4 (15.0–26.6)
Disability§§§					
Yes	63.7 (58.7–68.5)	63.3 (58.1–68.3)	10.5 (7.0–15.1)	47.1 (40.9–53.4)	49.8 (43.6–56.0)
No	47.9 (45.7–50.1)	46.4 (44.1–48.8)	6.7 (5.6–8.1)	34.4 (31.9–37.0)	36.3 (33.8–38.9)
Chronic disease diagnosis¶¶¶					
Smoking-related chronic disease	69.0 (65.7–72.1)	65.9 (62.6–69.1)	10.9 (8.3–13.9)	50.3 (46.0–54.5)	52.5 (48.3–56.7)
Other chronic disease	49.8 (46.5–53.0)	48.9 (45.3–52.4)	7.3 (5.4–9.4)	36.5 (32.9–40.2)	38.4 (34.7–42.2)
No chronic disease	32.1 (28.2–36.2)	32.2 (28.2–36.3)	4.7 (3.1–6.9)	25.8 (21.9–30.1)	27.8 (23.8–32.1)

See table footnotes on the next page.

TABLE 2. (*Continued*) Prevalence of receiving health professional advice to quit smoking,* health professional assistance to quit smoking,† and use of counseling§ and medication¶ for cessation among adults aged ≥18 years, by selected characteristics — National Health Interview Survey, United States, 2022

Characteristic	% (95% CI)				
	Received health professional advice to quit	Received health professional assistance to quit	Used counseling	Used medication	Used counseling or medication
Anxiety disorder**					
Yes	56.6 (52.8–60.4)	54.6 (50.6–58.4)	12.3 (9.6–15.5)	44.9 (40.5–49.3)	48.3 (44.0–52.6)
No	46.7 (45.2–50.3)	46.8 (44.1–49.5)	4.9 (3.9–6.2)	32.2 (29.4–35.2)	33.6 (30.7–36.6)
Depression††††					
Yes	55.8 (52.1–59.4)	54.5 (50.9–58.1)	11.7 (9.2–14.7)	47.8 (43.6–52.1)	50.5 (46.3–54.7)
No	47.8 (45.1–50.5)	46.7 (43.9–49.4)	5.1 (3.9–6.4)	30.5 (27.7–33.4)	32.2 (29.4–35.1)
Mental health counseling (past year)§§§§					
Yes	51.9 (47.4–56.5)	54.7 (50.0–59.3)	15.1 (11.4–19.4)	45.6 (40.3–51.0)	49.1 (43.8–54.4)
No	50.1 (47.7–52.5)	47.7 (45.2–50.2)	5.2 (4.2–6.4)	33.8 (31.2–36.5)	35.4 (32.8–38.1)

Abbreviations: AI/AN = American Indian or Alaska Native; GED = general educational development certificate; NCHS = National Center for Health Statistics.

* Received advice from a health professional to quit tobacco use. Prevalence was measured among respondents who currently smoked cigarettes and respondents who quit smoking during the past 12 months who had seen a doctor, other health professional, or mental health professional during the past year.

† Received assistance from a health professional to quit (i.e., advice about ways to quit smoking or prescription of cessation medication). Prevalence was measured among respondents who currently smoked cigarettes and respondents who quit smoking during the past 12 months who had seen a doctor, other health professional, or mental health professional during the past year.

§ Used one-on-one counseling; a stop smoking clinic, class, or support group; a telephone help line or quitline; or more than one of these modalities to stop smoking. Prevalence was measured among respondents who currently smoked who tried to quit during the past year and respondents who quit smoking during the past 2 years.

¶ Used nicotine patch, nicotine gum or lozenge, nicotine nasal spray or inhaler, varenicline, bupropion, or more than one of these medications to stop smoking. Prevalence was measured among respondents who currently smoked who tried to quit during the past year and respondents who quit smoking during the past 2 years.

** Estimates were statistically unreliable based on NCHS standards. https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf

†† Hispanic or Latino persons could be of any race. The group "Other, non-Hispanic" includes adults who were categorized as "non-Hispanic AI/AN and any other group" or "other single and multiple races" in the National Health Interview Survey public use file. All other groups were non-Hispanic, single-race categories.

§§ https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

¶¶ Based on the 2013 NCHS Urban-Rural Classification Scheme for Counties (https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf). For this report, the four-level urbanization level variable available in the public use data file is reduced to a dichotomous variable.

*** Ratio of family income to poverty threshold for family size, based on the imputed family income to poverty threshold variable.

††† Private: any private insurance plan; Medicaid: Medicaid or other state-sponsored health plans, including the Children's Health Insurance Program, or dual-enrolled in Medicare and Medicaid or other state-sponsored health plan; Medicare only: adults aged ≥65 years who had only Medicare coverage; other public insurance: any type of military coverage, coverage from other government programs, or Medicare among adults aged <65 years; and uninsured: no health insurance coverage. Insurance coverage is as of time of survey.

§§§ Disability was defined based on self-reported presence of selected limitations, including vision, hearing, mobility, remembering or concentrating, self-care, and communication. Respondents who indicated "A lot of difficulty" or "Cannot do at all/unable to do" to questions related to these elements were coded as living with a disability; those who responded "no difficulty" or "some difficulty" were coded as having no disability. https://www.cdc.gov/nchs/washington_group/index.htm

¶¶¶ Respondent ever told by a health professional that they had a specific chronic disease, including smoking-related chronic disease (cancer of the bladder; cervix; colon or rectum; esophagus; head and neck; larynx; lung; liver; mouth, tongue, or lip; pancreas; stomach; throat or pharynx; or uterus; chronic obstructive pulmonary disease, emphysema, or chronic bronchitis; angina; coronary heart disease; myocardial infarction; stroke; or type 2 diabetes); other chronic disease (cancer of the blood, bone, brain, breast, gallbladder, ovary, prostate, skin [melanoma or nonmelanoma], or thyroid; leukemia, lymphoma, melanoma, or other type of cancer; asthma; arthritis; chronic fatigue syndrome; dementia; epilepsy; high cholesterol; hypertension; or type 1 diabetes); or no chronic disease.

**** Respondent ever told by a health professional that they had any type of anxiety disorder.

†††† Respondent ever told by a health professional that they had any type of depression.

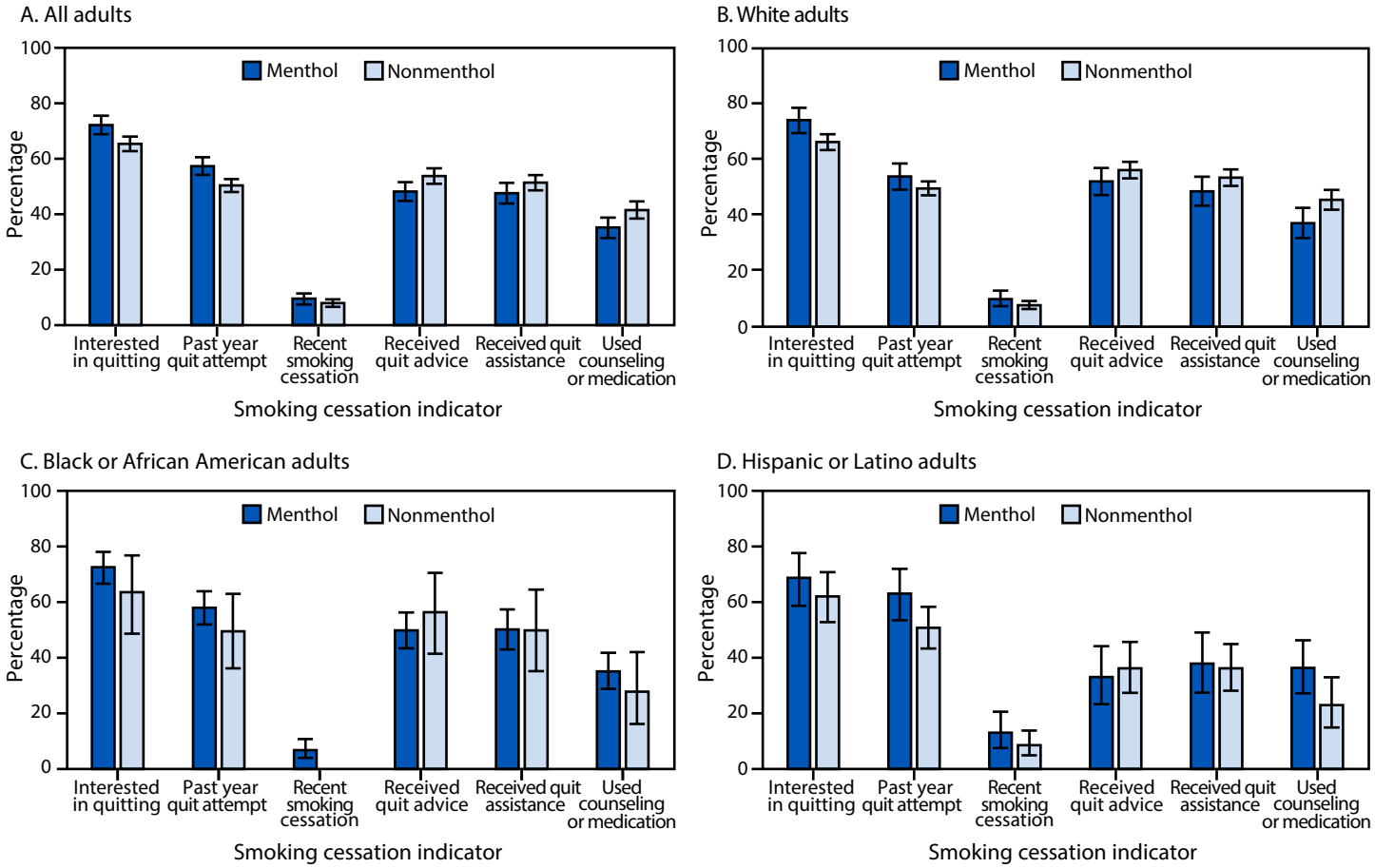
§§§§ Received counseling or therapy from a mental health professional such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker during the past year.

(*1*). This analysis identified a lower prevalence of receiving clinician advice and assistance to quit smoking among adults without smoking-related disease. Systemization of treatment delivery could help ensure clinical intervention for all adults who smoke, thereby potentially increasing the prevention of smoking-related disease and death (*1*).

As efforts toward advancing cessation continue, awareness of tobacco-related disparities and attention to the unique needs of each population group (e.g., cultural and language preferences and treatment access barriers) remain critical to ensuring equitable progress. For example, in this study, adults who smoked menthol (versus nonmenthol) cigarettes had a similarly low prevalence of quit success despite higher prevalences of quitting interest and quit attempts. This finding might be due, in part, to lower use of treatment in this group, which suggests a need to enhance treatment awareness, access, and use among adults who smoke menthol cigarettes, particularly as jurisdictions enact restrictions on the sale of flavored tobacco products.¶¶¶¶ Substantial evidence shows that adoption of policies that prohibit the sale of menthol cigarettes increases smoking cessation and could help reduce tobacco-related health disparities (*5*).

¶¶¶¶ https://assets.tobaccofreekids.org/factsheets/0398.pdf

FIGURE. Prevalence* of interest in quitting smoking,† past-year quit attempt,§ recent successful smoking cessation,¶ receiving health professional advice to quit, receiving health professional assistance to quit,†† and use of counseling or medication§§ for cessation among adults aged ≥18 years, by race and ethnicity¶¶ and type of cigarette usually smoked***,††† — National Health Interview Survey, United States, 2022**



* With 95% CIs indicated by error bars.
† Adults who currently smoked cigarettes who reported wanting to stop smoking completely.
§ Adults who currently smoked cigarettes who reported that they stopped smoking for >1 day during the past 12 months because they were trying to quit smoking and adults who quit smoking during the past year among adults who currently smoke cigarettes and adults who quit smoking during the past year.
¶ Adults who formerly smoked and quit smoking for ≥6 months during the past year among adults who currently smoke cigarettes (and have smoked for ≥2 years) and adults who quit smoking during the past year.
** Received advice from a health professional to quit tobacco use. Prevalence was measured among respondents who currently smoked cigarettes and respondents who quit smoking during the past 12 months who had seen a doctor, other health professional, or mental health professional during the past year.
†† Received assistance from a health professional to quit (i.e., advice about ways to quit smoking or prescription of cessation medication). Prevalence was measured among respondents who currently smoked cigarettes and respondents who quit smoking during the past 12 months who had seen a doctor, other health professional, or mental health professional during the past year.
§§ Used counseling (e.g., one-on-one counseling; a stop smoking clinic, class, or support group; a telephone help line or quitline; or more than one of these modalities) or medication (e.g., nicotine patch, nicotine gum or lozenge, nicotine nasal spray or inhaler, varenicline, bupropion, or more than one of these medications) to stop smoking. Prevalence was measured among respondents who currently smoked who tried to quit during the past year and respondents who quit smoking during the past 2 years.
¶¶ Hispanic or Latino (Hispanic) persons could be of any race. All other groups were non-Hispanic, single-race categories.
*** Type of cigarette usually smoked reported as menthol or nonmenthol. Persons who reported no usual type were excluded from the analysis.
††† The following differences were statistically significant (Wald F chi-square; p<0.05): all adults (interested in quitting, past-year quit attempt, received quit advice, and used counseling or medication); non-Hispanic White adults (interested in quitting and used counseling or medication); Hispanic adults (past-year quit attempt and used counseling or medication). The estimate for recent smoking cessation among non-Hispanic Black or African American adults who usually smoked nonmenthol cigarettes was statistically unreliable based on standards from the National Center for Health Statistics. https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf

Increasing and ensuring equitable awareness of and access to cessation services, including counseling and medication, (i.e., taking a cessation in all tobacco policies approach) is important to maximizing the impact of commercial tobacco control policies, including flavor prohibitions.

Limitations

The findings in this report are subject to at least two limitations. First, because the National Health Interview Survey does not sample institutionalized adults or adults in the military,

Summary

What is already known about this topic?

Evidence-based treatment and clinician intervention increase successful smoking cessation.

What is added by this report?

In 2022, the majority of the 28.8 million U.S. adults who smoked cigarettes wanted to quit, approximately one half tried to quit, but fewer than 10% were successful. Fewer than 40% of adults who smoked used treatment (counseling or medication) when trying to quit; one half received clinician advice or assistance to quit. Compared with adults who smoked nonmenthol cigarettes, those who smoked menthol cigarettes had similarly low quit success despite a higher quit attempt prevalence, potentially related to their lower treatment use.

What are the implications for public health practice?

Increasing access to and use of smoking cessation services and incorporating equitable cessation strategies into tobacco control efforts can support smoking cessation for everyone.

results are not generalizable to these groups. Second, survey responses were self-reported and not biochemically validated and might be subject to social desirability and recall bias.

Implications for Public Health Practice

Substantial progress has been made in reducing cigarette smoking in the United States, but disparities in use and cessation remain (*1*). Continued progress in reducing tobacco use and related disparities requires efforts to increase smoking cessation. Opportunities exist across public health and health care sectors to increase smoking cessation, including expanding access to and use of cessation services and supports. Incorporating equitable cessation opportunities into all commercial tobacco prevention and control efforts (i.e., taking a cessation in all tobacco policies approach) can help advance and support smoking cessation for all population groups and has potential to reduce tobacco-related health disparities.

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Suspected Counterfeit M-30 Oxycodone Pill Exposures and Acute Withdrawals Reported from a Single Hospital — Toxicology Investigators Consortium Core Registry, U.S. Census Bureau Western Region, 2017–2022

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Abstract

Availability of counterfeit prescription pills (counterfeit pills) containing illegally made fentanyl, including counterfeit M-30 oxycodone (counterfeit M-30) pills, has risen sharply in the United States and has been increasingly linked to overdose deaths. In 2023, approximately 115 million counterfeit pills were seized in U.S. High Intensity Drug Trafficking Areas. However, clinical data on counterfeit pill–related overdoses are limited. Medical toxicology consultations during 2017–2022 from one U.S. Census Bureau Western Region hospital participating in the Toxicology Investigators Consortium Core Registry were analyzed. A total of 352 cases suspected to involve counterfeit M-30 pills, including 143 (40.6%) cases of fentanyl exposure and 209 (59.4%) cases of acute withdrawal were identified; consultations increased from three in 2017, to 209 in 2022. Patients aged 15–34 years accounted for 95 (67.4%) exposure cases. Among all patients with exposures, 81.1% were hospitalized, 69.0% of whom were admitted to an intensive care unit. Additional substances were detected in 131 (91.6%) exposures. Providing outreach to younger persons misusing prescription pills, improving access to and distribution of harm reduction tools including fentanyl test strips and naloxone, and promoting linkage of persons treated for overdose in hospitals to harm reduction and substance use treatment services are strategies to reduce morbidity associated with use of counterfeit M-30.

Introduction

Broad distribution of counterfeit prescription pills (counterfeit pills) began in the United States in 2014.* Counterfeit pills are manufactured to mimic legitimate prescription drugs, but instead contain other drugs such as illegally made fentanyl (IMF). Counterfeit M-30 oxycodone (counterfeit M-30) accounts for the majority of counterfeit pills.† Approximately 115 million counterfeit pills were seized by law enforcement agents in U.S. High Intensity Drug Trafficking Areas§ in 2023, representing approximately one half of all fentanyl seizures.¶ In 2022, an estimated six in 10 seized counterfeit pills contained a potentially lethal dose of fentanyl (≥2 mg).** A recent study found that 55.8% of overdose deaths with evidence of counterfeit pill involvement occurred in western jurisdictions; counterfeit M-30 was implicated in the majority of deaths involving oxycodone pills (*1*). However, despite well-documented proliferation and evidence of involvement of counterfeit pill–related incidents in overdose deaths, clinical data are limited. This study analyzed data reported to the Toxicology Investigators Consortium (ToxIC) Core Registry from a single hospital (hospital A), a facility operating in the U.S. Census Bureau Western Region, during 2017–2022 (*2*).

Methods

Data Collection

Medical toxicologists participating in the ToxIC Core Registry collect patient data from bedside consultations (e.g., patient or proxy interviews, physical examination, and ancillary data). Variables collected include patient demographic characteristics, exposures (i.e., specific drugs taken), clinical presentation (e.g., respiratory depression), treatments administered (e.g., naloxone), and outcomes (e.g., hospitalization) (*3*).

Inclusion and Exclusion Criteria

Cases in the ToxIC Core Registry were identified as those in which the medical record mentioned 1) use of suspected counterfeit M-30, 2) symptomatic exposure to fentanyl (i.e., acute opioid overdose) or acute withdrawal from fentanyl, and 3) an administration route not typical for prescription fentanyl (i.e., nondermal). Of 986 hospital A cases initially identified, 505 (51.2%) were excluded because 1) laboratory testing data were not available to confirm fentanyl exposure, 2) the case was related to accidental or unintentional ingestion, or 3) the hospital visit or the clinical presentation was not directly related to the exposure (e.g., the patient was seen for an

* https://www.dea.gov/press-releases/2016/07/22/dea-report-counterfeit-pills-fueling-us-fentanyl-and-opioid-crisis
† https://www.dea.gov/sites/default/files/2021-05/Counterfeit%20Pills%20fact%20SHEET-5-13-21-FINAL.pdf
§ https://www.whitehouse.gov/ondcp/grant-programs/hidta/
¶ https://nida.nih.gov/news-events/news-releases/2024/05/over-115-million-pills-containing-illicit-fentanyl-seized-by-law-enforcement-in-2023
** https://www.dea.gov/alert/dea-laboratory-testing-reveals-6-out-10-fentanyl-laced-fake-prescription-pills-now-contain

addiction medicine consultation). The remaining 481 (48.8%) cases were reviewed by medical toxicologists from hospital A. Additional cases were excluded if 1) the visit was determined to be unrelated to suspected counterfeit M-30 pills (43), 2) fentanyl was not detected either through urine drug screen (UDS) or gas chromatography–mass spectrometry (GC-MS) laboratory testing (51), or 3) oxycodone was detected through UDS or GC-MS laboratory testing (35). Cases in which oxycodone was detected with fentanyl were excluded because the patient might have purposefully used prescription M-30 pills (obtained either with or without a personal prescription) and fentanyl. This exclusion process left 352 (36%) cases within the analytical sample.

Data Analysis

Data were analyzed descriptively, including patient demographic characteristics, route of suspected counterfeit M-30 administration, clinical presentation, clinical diagnosis, year of medical toxicology consultation, and treatment provided. Analyses were conducted using SAS (version 9.4; SAS Institute). This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[††]

Results

Exposure and Acute Withdrawal Consultations

During 2017–2022, a total of 352 suspected counterfeit M-30 pill–related cases were identified, including 143 exposures (40.6%) and 209 acute withdrawals (59.4%) (Table 1). Exposures increased from three in 2017 to 53 in 2022. Acute withdrawals first occurred in 2019 (seven) and increased to 38 in 2021, before sharply increasing to 156 in 2022.

Patient Demographic Characteristics and Routes of Administration

Patients with exposures (143) were predominantly male (71.3%). Of the 141 exposures with age data, patients aged 15–17 (32), 18–24 (25), and 25–34 (38) years accounted for approximately two thirds (67.4%) of exposures.

Among exposures, the most reported routes of administration were ingestion (44; 31.2%) and inhalation (36; 25.5%). Among acute withdrawals, inhalation was the most common route (132; 63.2%). Where data were available (243), route of administration also varied by age group, with 37.1% of patients aged 15–17 years reporting ingestion (versus 24.3% overall) and 79.8% of patients aged 25–34 years reporting inhalation (versus 67.9% overall) (Figure).

[††] 45 C.F.R. part 46; 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d), 5 U.S.C. Sect. 552a, 44 U.S.C. Sect. 3501 et seq.

Clinical Signs and Outcomes

Of the 143 patients with exposures, the majority were hospitalized (116; 81.1%); 80 (69.0%) of these patients were admitted to an intensive care unit (Table 2). Among patients with exposures, 74.1% had clinical signs of an opioid toxidrome; 56.6% of respiratory depression or bradypnea, and 38.5% of coma or central nervous system depression. Overall, two deaths were reported during hospitalization, both in patients with exposures (1.4%).

Detection of Substances

At least one substance other than fentanyl[§§] was detected among the majority of patients (322; 91.5%). The substances most commonly detected with fentanyl were amphetamine/methamphetamine (66.2%), benzodiazepines (17.0%), and cocaine (5.1%).

Naloxone Administration

Among patients with exposures who received naloxone (80.4%), a naloxone drip infusion was administered in 19.1% of patients. These patients included nine of 44 (20.5%) of those with ingestion exposures.

Discussion

Consultations for exposure to and acute withdrawal from suspected counterfeit M-30 pills increased during 2017–2022 at hospital A, from three in 2017 to 209 in 2022. Approximately two thirds of exposures occurred among patients aged 15–34 years. The majority of patients with suspected counterfeit M-30 exposure who were admitted to a hospital were admitted to an intensive care unit. Ingestion and inhalation were common routes of administration, and additional substances, including amphetamine/methamphetamine, benzodiazepines, and cocaine were frequently detected with fentanyl. These findings suggest that additional efforts are needed to prevent and reduce harm from use of counterfeit pills, especially among youths and young adults.

These findings are consistent with a broader trend that has been observed nationally and regionally. Overdose deaths with evidence of counterfeit pill exposure increased from 2.0% to 4.7% during July 2019–December 2021 in the United States, largely driven by a tripling in western jurisdictions (*1*). Further, 57.1% of decedents were aged <35 years, and 39.5% reported inhalation as the route of administration (*1*).

In this report, approximately one in three (31.2%) suspected counterfeit M-30 pill exposures occurred through ingestion.

[§§] Detection of a drug through UDS indicates that the person has recently used the drug and cannot be interpreted as meaning that the patient used the drug at the same time as fentanyl or that the drug contributed to the toxidrome or acute withdrawal symptoms treated by hospital physicians.

TABLE 1. Epidemiologic characteristics of medical toxicology consultations involving suspected counterfeit M-30 oxycodone pill exposures and acute withdrawals reported by hospital A — Toxicology Investigators Consortium Core Registry, U.S. Census Bureau Western Region, 2017–2022

Characteristic	No. (%) All cases	Exposures	Withdrawals
Total	**352 (100.0)**	**143 (40.6)**	**209 (59.4)**
Patient gender identity			
Female	**161 (45.7)**	41 (28.7)	120 (57.4)
Male	**191 (54.3)**	102 (71.3)	89 (42.6)
Patient age group, yrs*			
12–14	**3 (0.9)**	2 (1.4)	1 (0.5)
15–17	**40 (11.4)**	32 (22.7)	8 (3.8)
18–24	**54 (15.4)**	25 (17.7)	29 (13.9)
25–34	**127 (36.3)**	38 (27.0)	89 (42.6)
35–44	**65 (18.6)**	28 (19.9)	37 (17.7)
≥45	**61 (17.4)**	16 (11.3)	45 (21.5)
Missing	**2**	2	0
Patient race and ethnicity†,§			
Black or African American	**38 (10.8)**	17 (11.9)	21 (10.0)
White	**148 (42.0)**	43 (30.1)	105 (50.2)
Hispanic or Latino	**126 (35.8)**	57 (39.9)	69 (33.0)
Other or multiple races	**15 (4.3)**	7 (4.9)	8 (3.8)
Unknown	**25 (7.1)**	19 (13.3)	6 (2.9)
Route of administration¶			
Ingestion	**59 (16.9)**	44 (31.2)	15 (7.2)
Inhalation or smoking	**168 (48.0)**	36 (25.5)	132 (63.2)
Intranasal or snorting	**20 (5.7)**	14 (9.9)	6 (2.9)
Other	**3 (0.9)**	2 (1.4)	1 (0.5)
Unknown or not reported	**100 (28.6)**	45 (31.9)	55 (26.3)
Missing	**2**	2	0

TABLE 1. (*Continued*) Epidemiologic characteristics of medical toxicology consultations involving suspected counterfeit M-30 oxycodone pill exposures and acute withdrawals reported by hospital A — Toxicology Investigators Consortium Core Registry, U.S. Census Bureau Western Region, 2017–2022

Characteristic	No. (%) All cases	Exposures	Withdrawals
Year			
2017	**3 (0.9)**	3(2.1)	0 (—)
2018**	**10 (2.8)**	10 (7.0)	0 (—)
2019	**22 (6.3)**	15 (10.5)	7 (3.3)
2020	**28 (8.0)**	20 (14.0)	8 (3.8)
2021	**80 (22.7)**	42 (29.4)	38 (18.2)
2022	**209 (59.4)**	53 (37.1)	156 (74.6)

Abbreviation: GC-MS = gas chromatography–mass spectrometry.

* Age group percentages were calculated by dropping missing values (two) from the denominator.

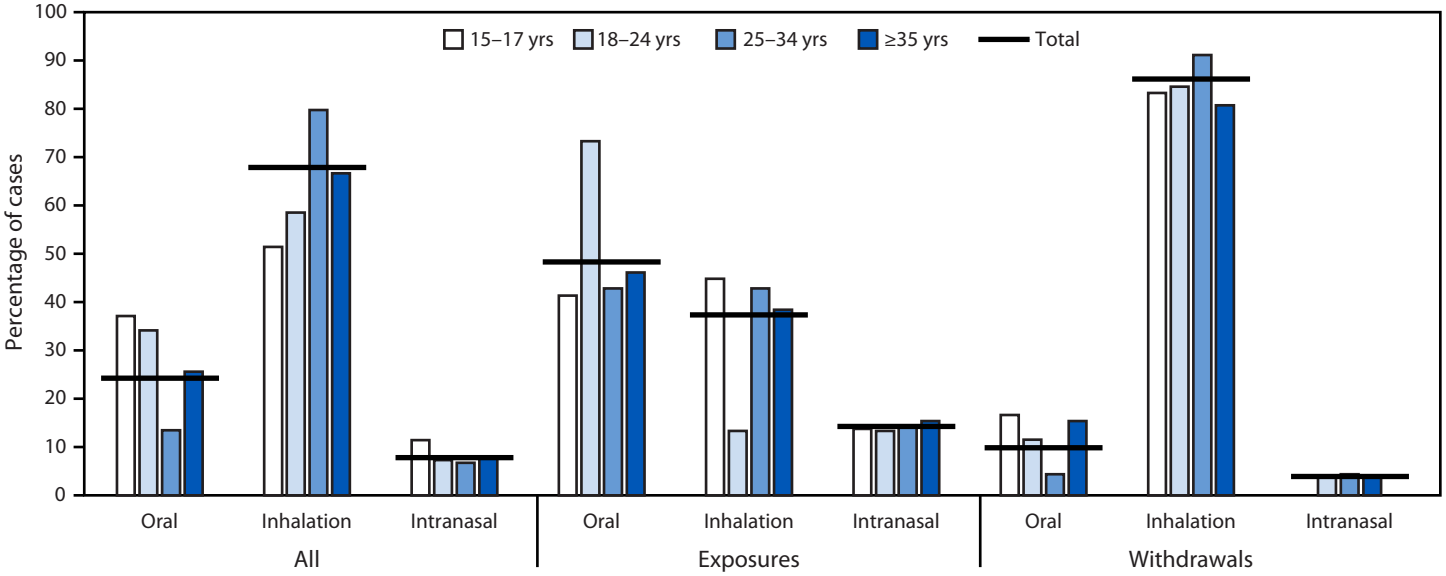
† Distribution by race and ethnicity was comparable to that of the residential population of the county where the hospital provides services, based on county-level U.S. Census Bureau data.

§ Persons of Hispanic or Latino (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic. Patients who identified as other or multiple races included American Indian or Alaskan Native, Asian, Australian Aboriginal, Native Hawaiian or Pacific Islander, or more than one race.

¶ Route of administration percentages were calculated by dropping missing values (two) from the denominator.

** In July 2018, hospital A implemented changes in toxicological testing for fentanyl that might have resulted in improved detection of cases. The previous methodology for GC-MS detection of fentanyl was replaced with a system that has a lower limit of detection; urine drug screening for fentanyl was instituted in addition to GC-MS.

FIGURE. Medical toxicology consultations involving suspected counterfeit M-30 oxycodone pill exposures and acute withdrawals reported by hospital A (N = 243), by age group and route of administration — Toxicology Investigators Consortium Core Registry, U.S. Census Bureau Western Region, 2017–2022*



* Cases presented (all cases = 243; exposures = 91; and withdrawals = 152) do not include patients aged 12–14 years (three) or cases with missing age data (two). Consultations in which route of administration data was not ingestion, not inhalation, not intranasal, not reported, unknown, or missing (all cases = 105; exposures = 49; and withdrawals = 56) are not reported and have been removed from the denominator; therefore, percentages only represent cases with route of administration data present in the medical record. One case was missing both age and route of administration data. Age groups for this figure are 15–17 years (35), 18–24 years (41), 25–34 years (89), and ≥35 years (78).

TABLE 2. Clinical and laboratory characteristics of medical toxicology consultations involving suspected counterfeit M-30 oxycodone pill exposures and acute withdrawals reported by hospital A — Toxicology Investigators Consortium Core Registry, U.S. Census Bureau Western Region, 2017–2022

Characteristic*	No. (%) All cases	Exposures	Withdrawals
Total	**352 (100.0)**	**143 (40.6)**	**209 (59.4)**
Highest level of care received			
Hospital admission†	**285 (81.0)**	116 (81.1)	169 (80.9)
ICU	**106 (37.2)**	80 (69.0)	26 (15.4)
Non-ICU	**179 (62.8)**	36 (31.0)	143 (84.6)
Emergency department	**9 (2.6)**	4 (2.8)	5 (2.4)
Unknown	**58 (16.5)**	23 (16.1)	35 (16.7)
Discharged alive			
Yes	**350 (99.4)**	141 (98.6)	209 (100.0)
No	**2 (0.6)**	2 (1.4)	0 (—)
Clinical signs			
Opioid toxidrome	**273 (77.6)**	106 (74.1)	167 (79.9)
Respiratory depression/Bradypnea	**97 (27.6)**	81 (56.6)	16 (7.7)
Coma/Central nervous system depression	**55 (15.6)**	55 (38.5)	0 (—)
Laboratory findings§			
Fentanyl with any additional substance of interest¶	**322 (91.5)**	131 (91.6)	191 (91.4)
Amphetamine/Methamphetamine**	**233 (66.2)**	78 (54.5)	155 (74.2)
Benzodiazepine††	**60 (17.0)**	34 (23.8)	26 (12.4)
Cocaine§§	**18 (5.1)**	15 (10.5)	3 (1.4)
Buprenorphine¶¶	**9 (2.6)**	3 (2.1)	6 (2.9)
Methadone***	**26 (7.4)**	4 (2.8)	22 (10.5)
Other opioids†††	**22 (6.3)**	4 (2.8)	18 (8.6)
Fentanyl with no other opioids, stimulants, or benzodiazepines	**30 (8.5)**	12 (8.4)	18 (8.6)
Naloxone administration§§§			
Any naloxone administration	**142 (40.3)**	115 (80.4)	27 (12.9)
Naloxone drip infusion	**22 (15.5)**	22 (19.1)	0 (—)
Intravenous	**27 (19.0)**	20 (17.4)	7 (25.9)
Intranasal	**20 (14.1)**	16 (13.9)	4 (14.8)
Intramuscular	**22 (15.5)**	18 (15.7)	4 (14.8)
Unknown route	**51 (35.9)**	39 (33.9)	12 (44.4)
No naloxone administration	**210 (59.7)**	28 (19.6)	182 (87.1)
Nonpharmacological treatment administered			
Intubation/Ventilatory management	**60 (17.0)**	51 (35.7)	9 (4.3)
Cardiopulmonary resuscitation	**7 (2.0)**	6 (4.2)	1 (0.5)

Abbreviations: GC-MS = gas chromatography–mass spectrometry; ICU = intensive care unit; UDS = urine drug screen.

* More than one clinical sign, laboratory finding, or treatment administered could be reported per case.

† Among hospitalized patients, non-ICU hospital admissions were to a general inpatient unit (178; 62.5%) or an inpatient psychiatric facility (19; 6.7%). ICU and non-ICU percentages are calculated using corresponding hospital admissions numbers as denominators.

§ All percentages are calculated using the respective group numbers (all cases = 352; exposures = 143; and withdrawals = 209) as denominators.

¶ Fentanyl detected in UDS analysis (291; 82.7%) and GC-MS analysis (174; 49.4%).

** Amphetamine/methamphetamine detected in UDS analysis (208; 59.1%) and GC-MS analysis (159; 45.2%).

†† Benzodiazepine detected in UDS analysis (55; 15.6%) and GC-MS analysis (23; 6.5%).

§§ Cocaine or cocaine metabolites detected in UDS analysis (16; 4.5%) and GC-MS analysis (10; 2.8%).

¶¶ Buprenorphine detected in UDS analysis (nine; 2.6%) and GC-MS analysis (one; 0.28%).

*** Methadone detected in UDS analysis (16; 4.5%) and GC-MS analysis (18; 5.1%). Methadone is prescribed for both chronic pain relief and as a medication for opioid use disorder. The intended use of methadone could not be determined using available data.

††† Opioids (other than fentanyl, buprenorphine, or methadone) detected in UDS analysis (22; 6.3%) and GC-MS analysis (10; 2.8%).

§§§ Naloxone route of administration (i.e., drip infusion, intravenous, intranasal, intramuscular, and unknown route) percentages are calculated among cases with any naloxone administration. Naloxone administration was identified in the case narrative or the respective treatment field.

Persons who ingest pills might believe they are using a legitimate prescription drug. Unsuspected exposure to IMF is concerning because of its high potency and the possibility of rapid overdose (*4*). IMF-related overdoses involving ingested pills might require naloxone drip infusion or extended observation because of delayed, recurrent toxicity, as fentanyl continues to be gradually absorbed (*5*). In this analysis, approximately one in five patients with ingestion exposure was administered a naloxone drip infusion.

Evidence that some persons purposefully use counterfeit pills with IMF exists. The majority of persons accessing syringe service programs in Washington reported knowing their pill contained IMF.¶¶ Some reports suggest that persons using drugs in the West might be shifting from injecting heroin to intentionally inhaling counterfeit pills with IMF because of cost, convenience, difficulties with injection, and reduced stigma (*6*). These findings are likely part of a larger nationwide shift toward inhaling or smoking IMF and away from injecting IMF (*7*).

In this study, detection of substances other than fentanyl was common. Co-exposure can mask opioid-related signs, complicating treatment. Further, sympathomimetic signs might appear after naloxone administration with stimulant co-exposures, and sedation could persist after naloxone administration with benzodiazepine co-exposures, both potentially requiring further medical intervention (*8*,*9*).

Approximately two thirds of exposures involved persons aged 15–34 years. Overdose deaths involving IMF among those aged 10–19 years sharply increased across 31 states during July 2019–December 2021, with evidence of counterfeit pills among one quarter of deaths (*10*). Easy access to counterfeit pills through sources such as social media*** might be increasing exposure to IMF and risk of overdose death among youths and young adults (*10*).

¶¶ https://adai.uw.edu/wordpress/wp-content/uploads/ssp-health-survey-2021.pdf

*** https://www.dea.gov/sites/default/files/2022-03/20220208-DEA_Social%20Media%20Drug%20Trafficking%20Threat%20Overview.pdf

Summary

What is already known about this topic?

Counterfeit prescription pill (counterfeit pill) availability has sharply increased in the United States and has increasingly been linked to overdose deaths.

What is added by this report?

Patients aged 15–34 years accounted for approximately two thirds of 143 suspected exposures to counterfeit pills containing fentanyl evaluated at a U.S. hospital. The majority of patients with exposures were hospitalized, 69% of whom were admitted to an intensive care unit. Substances in addition to fentanyl were detected in approximately 90% of exposures.

What are the implications for public health practice?

Outreach focusing on younger persons misusing prescription pills, improving access to harm reduction, and linking patients treated for overdoses in hospitals to substance use treatment might help prevent overdoses involving counterfeit pills.

Limitations

The findings in this report are subject to at least six limitations. First, descriptions of the drug products used are based on patient self-report and were not verifiable. Second, in July 2018, hospital A implemented changes in laboratory methodology to improve detection of fentanyl in patient specimens; this improvement in detection could account for some of the increase in cases identified during the study period. Third, less severe cases are unlikely to require a medical toxicology consultation, biasing results toward more severe or complex clinical presentations. Fourth, data within the ToxIC Core Registry on outcome, beyond clinical death, have improved over time but were limited during the study period. Fifth, hospital A outpatient addiction medicine services were discontinued in March 2022; after this date, patients experiencing acute withdrawal might have been more likely to be referred for a medical toxicology consultation, accounting for some of the increase in cases identified in this analysis. Finally, data were from a single site and are not generalizable.

Implications for Public Health Practice

Linking persons treated in hospitals for an overdose to evidence-based substance use treatment,[†††] and increasing outreach and linkage to care among youths and young adults who use diverted prescription pills (i.e., pills obtained without legitimate prescription) or who purposefully use IMF, could help prevent and minimize further harm associated with exposure to counterfeit pills. Other critical actions include improving access to harm reduction tools, such as fentanyl test strips to reduce unintentional exposure to IMF, and naloxone to reverse opioid overdose.[§§§] CDC recently launched support for surveillance activities through the Overdose Data to Action Program to provide laboratory testing of biologic specimens from patients with signs and symptoms of overdose, as well as testing of drug products and paraphernalia, to detect and track substances involved in drug overdoses. These data can help communities identify, tailor, and scale-up drug overdose prevention programs and policies.[¶¶¶] Increased awareness among clinicians, public health and public safety officials, and community-based organizations is needed to implement prevention strategies to reduce overdoses involving counterfeit pills.

[†††] https://www.cdc.gov/overdose-prevention/hcp/clinical-guidance/linkage-to-care.html?CDC_AAref_Val%20=%20https://www.cdc.gov/drugoverdose/featured-topics/linkage-to-care.html

[§§§] https://www.cdc.gov/overdose-prevention/php/od2a/harm-reduction.html
[¶¶¶] https://www.cdc.gov/overdose-prevention/php/od2a/surveillance.html

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Progress Toward Elimination of Mother-to-Child Transmission of Hepatitis B Virus — Region of the Americas, 2012–2022

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Abstract

In 2022, an estimated 5 million persons in the World Health Organization Region of the Americas (AMR) were living with chronic hepatitis B virus (HBV) infection, the leading cause of hepatocellular carcinoma and cirrhosis worldwide. Most chronic infections are acquired through mother-to-child transmission (MTCT) or horizontal transmission during childhood and are preventable with hepatitis B vaccination, including a birth dose (HepB-BD), followed by 2–3 additional doses (HepB3) in infancy. The Pan American Health Organization (PAHO) Elimination of MTCT of HBV infection strategy is intended to reduce chronic HBV infection (measured by hepatitis B surface antigen [HBsAg] seroprevalence) to ≤0.1% among children by achieving 1) ≥95% coverage with HepB-BD and HepB3; and 2) ≥80% of pregnant women received testing for HBsAg, and provision of hepatitis B immunoglobulin to HBV-exposed neonates. By 2012, all 51 AMR countries and territories (countries) provided HepB3 nationwide, and by 2021, 34 (67%) provided HepB-BD nationwide. Mathematical models estimate that HBsAg seroprevalence in children is ≤0.1% in 14 (28%) of 51 countries and at the regional level. Three (6%) of 51 countries met the 95% coverage targets for both HepB3 and HepB-BD during both 2021 and 2022. Of these, two have likely met criteria for the elimination of MTCT of HBV infection. However, in 2022, HepB3 coverage had declined by ≥10 percentage points in 15 (37%) of 41 countries with 2012 coverage data for comparison. These declines in HepB3 coverage, as well as the absence of HepB-BD in the routine immunization schedules in 17 countries, threaten PAHO's progress toward the elimination of MTCT of HBV infection. Efforts to introduce HepB-BD and maintain high HepB3 and HepB-BD coverage are needed.

Introduction

Globally, chronic hepatitis B virus (HBV) infection is the leading cause of hepatocellular carcinoma and cirrhosis (*1*). In 2022, an estimated 5 million persons in the World Health Organization (WHO) Region of the Americas (AMR)* had chronic HBV infection, and approximately 20,000 died from hepatitis B–related causes (*2*). Most chronic HBV infections are acquired through mother-to-child transmission (MTCT) or horizontal transmission during early childhood (*1*). Infections acquired at age ≤5 years are more likely to become chronic than are those acquired later in life (*1*). To prevent chronic HBV infection, WHO recommends that all infants receive a timely birth dose of hepatitis B vaccine (HepB-BD), defined as receipt within the first 24 hours of life, with 2–3 additional doses (HepB3) preferably administered during the first months of life, simultaneous with vaccines containing diphtheria, tetanus, and pertussis (*1*).

In 1999, the Pan American Health Organization (PAHO) recommended that the 51 countries and territories (countries) in AMR provide HepB3 vaccination for all infants nationwide (universal vaccination) and, in 2011, recommended the inclusion of a universal HepB-BD (*3*,*4*). In 2017, PAHO expanded its strategy for achieving the elimination of MTCT of HIV and syphilis to include HBV infection and Chagas disease (EMTCT Plus) (*5*). PAHO's EMTCT Plus strategy includes the impact target of reducing hepatitis B surface antigen (HBsAg) seroprevalence (a marker for chronic HBV infection) to ≤0.1% among children aged 4–6 years, and several programmatic targets: 1) achieving high coverage (≥95% nationally and >85% in all provinces or areas) with timely HepB-BD and HepB3; and 2) increasing HBsAg testing among pregnant women and provision of hepatitis B immunoglobulin (HBIG) to HBV-exposed neonates to ≥80% (*5*). The WHO global criteria for the elimination of MTCT of HBV infection are similar and include achieving ≤0.1% HBsAg seroprevalence among children aged ≤5 years† and ≥90% coverage

* PAHO/AMR consists of 51 countries and territories (referred to as countries in the text) as follows. Countries (35): Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Lucia, St. Vincent and the Grenadines, St. Kitts and Nevis, Suriname, Trinidad and Tobago, United States, Uruguay, and Venezuela; and territories (16): Anguilla, Aruba, Bermuda, Bonaire, Cayman Islands, Curaçao, French Guiana, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Sint Eustatius, Sint Maarten, Turks and Caicos Islands, and British Virgin Islands.

† Globally, WHO has defined the target as ≤0.1% HBsAg seroprevalence in children aged ≤5 years. In countries with a long history of sustained, high hepatitis B vaccination coverage, flexibility exists to conduct surveys among children aged >5 years. In AMR, PAHO has set the target age group for hepatitis B serosurveys to be children aged 4–6 years.

with timely HepB-BD and HepB3 for the two most recent, consecutive years (*6*). This report describes progress toward the elimination of MTCT of HBV infection in AMR during 2012–2022 (*3*,*5*,*6*).

Methods

Vaccination Activities

Hepatitis immunization schedules, year of hepatitis vaccine introduction nationwide (universal), and WHO/UNICEF National Immunization Coverage estimates or administrative immunization coverage for timely HepB-BD and HepB3 among children aged <1 year were compiled from PAHO, UNICEF, and WHO immunization data portals, unless otherwise indicated (*3*). WHO/UNICEF National Immunization Coverage estimates are based upon annual country reports submitted via the WHO/UNICEF Joint Reporting Form on Vaccination and coverage surveys.

HBsAg Seroprevalence

WHO recommends population-based, nationally representative HBsAg serosurveys among children aged ≤5 years to monitor progress toward the elimination of MTCT of HBV infection (*6*). Examples of representative serosurveys (national or subnational) in children or cohorts born after introduction and widespread use of hepatitis B vaccine in the AMR were identified through a search of literature published after 2016 and were reviewed (*3*). Mathematical modeling estimates of HBsAg seroprevalence in children published by the Global Burden of Disease Collaborators,[§] The Global Health Observatory,[¶] and the Center for Disease Analysis/Polaris Observatory Collaborators[**] were reviewed and compiled.

Additional Indicators for EMTCT Plus

Data on the proportion of pregnant women with at least four prenatal care visits and of births at health facilities were compiled from PAHO's Core Indicator Portal. Data describing the presence of policies for universal testing for HBV in antenatal care and provision of HBIG to HBV-exposed newborns were compiled from published literature and PAHO and country websites describing strategies for hepatitis B control and the elimination of MTCT of HBV infection. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[††]

[§] https://www.healthdata.org/research-analysis/gbd (Accessed July 2, 2024).
[¶] https://www.who.int/data/gho (Accessed July 2, 2024).
[**] https://cdafound.org/polaris/
[††] 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

Results

Vaccination Activities

HepB3. By 2012, all 51 AMR countries provided universal HepB3 vaccination (*3*) (Table 1). Regional HepB3 coverage increased steadily during the 1990s and ranged from 88% to 91% during 2005–2016 (Figure) (*3*). Regional coverage declined to 79% in 2019 but rebounded to 83% in 2022.

HepB3 coverage in 2022 declined by ≥13 percentage points from that in 2012 in the Andean Area, Central America, and Southern Cone and Brazil subregions (Table 1) and declined by ≥10 percentage points in 15 (37%) of 41 countries reporting data for both 2012 and 2022 (*3*). Coverage in Haiti and Suriname never exceeded 68% and 81%, respectively, during the reporting period. Twelve countries met the global target of ≥90% HepB3 coverage during both 2021 and 2022; among those, five met the PAHO target of ≥95% coverage.

HepB-BD. As of 2021, 34 (67%) countries provided universal HepB-BD vaccination (Table 1) (*3*). During 2000–2022, regional HepB-BD coverage increased from 23% to 65% (Figure) (*3*) and during 2012–2022, remained relatively stable or increased in all subregions. Among 15 countries reporting HepB-BD coverage for 2012 and 2022, coverage declined in 2022 by ≥10 percentage points in Argentina, Costa Rica, Mexico, and Venezuela compared with that in 2012 (*3*). Seven countries met the global target of ≥90% HepB-BD coverage during both 2021 and 2022; among those countries, five met the PAHO target of ≥95% coverage.

HBsAg Seroprevalence

Estimates from three mathematical models suggest that regional HBsAg seroprevalence among children aged ≤5 years is <0.1% (Table 2). Among 26 countries for which three modeled estimates are available, the estimated seroprevalence from all three models is ≤0.1% in 14 (54%) countries, among which two (Chile and Cuba) reported both HepB3 and HepB-BD coverage ≥95% during both 2021 and 2022. Recently published nationally representative HBsAg serosurveys that included children and vaccine-eligible cohorts conducted in Haiti, Mexico, and the United States corroborate the 2022 estimates for these countries. In addition, recently published HBsAg serosurvey results from population-based subnational surveys conducted in AMR show that decades of vaccination against HBV have led to reductions in the seroprevalence of HBsAg among cohorts that have been age-eligible for vaccination compared with seroprevalence among older cohorts.

Additional Indicators for EMTCT Plus

According to reports received by PAHO from 35 countries, as of 2020, 19 (54%) had national goals for the elimination of

TABLE 1. Year of introduction of hepatitis B vaccine,[*,†] hepatitis B vaccination schedules,[§,¶] and annual estimated or official coverage with third dose of hepatitis B vaccine and a timely hepatitis B birth dose[,††,§§] among children aged <1 year, by country or territory, subregion, and region — Region of the Americas, World Health Organization, 2012, 2017, and 2019–2022**

Subregion, Country/ Territory[¶¶]	Year of introduction		HepB vaccination schedule	HepB3 coverage, %						Timely HepB-BD coverage, %					
	HepB3	HepB-BD		2012	2017	2019	2020	2021	2022	2012	2017	2019	2020	2021	2022
North America**	NA	NA	NA	92	78	79	86	88	89	43	37	41	59	60	62
Canada	1993	1983	Varies by province[§]	70	71	84	84	84	83	NR	NR	NR	NR	NR	NR
Mexico	1999	2007	B, 2, 4, and 6 mos	99	58	56	77	80	83	94[§§]	NR	NR	50	50	50
United States	1991	1991	B,1–2, and 6–18 mos[§]	90	91	91	91	92	93	72	63	67	69	72	75
Central America**	NA	NA	NA	95	91	89	83	81	82	43	60	58	57	55	54
Costa Rica	1997	1997	B, 2, and 6 mos	91	97	94	91	87	94	90	87	87	89	71	71
El Salvador	1999	2015	B, 2, 4, and 6 mos	92	92	90	76	78	75	NA	91	91	90	87	86
Guatemala	2005	2010	B, 2, 4, and 6 mos	96	91	85	83	79	79	35	53	48	48	48	48
Honduras	2000	2007	B, 2, 4, and 6 mos	98	90	88	80	77	78	78	78	78	71	72	69
Nicaragua	1999	NA	2, 4, and 6 mos	98	98	98	92	87	92	NA	NA	NA	NA	NA	NA
Panama	1999	2002	B, 2, 4, and 6 mos	85	81	88	74	87	87	87	87	85	86	87	87
Andean Area**	NA	NA	NA	90	84	83	73	75	76	62	65	67	65	62	62
Bolivia	2000	NA	2, 4, and 6 mos	93	84	75	68	70	69	NA	NA	NA	NA	NA	NA
Colombia[††]	1994	2001	B, 2, 4, and 6 mos	92	92	92	88	86	87	85	81	81	88	87	85
Ecuador	1999	2009	B, 2, 4, and 6 mos	88	85	85	70	68	70	16	61	71	62	61	63
Peru	2003	2003	B, 2, 4, and 6 mos	95	89	88	72	82	82	81	80	82	75	77	79
Venezuela	2000	2008	B, 2, 4, and 6 mos	81	66	64	54	56	56	67	56	52	50	37	37
Southern Cone and Brazil**	NA	NA	NA	95	84	76	78	72	79	80	74	73	64	64	78
Argentina	2000	2000	B, 2, 4, and 6 mos	91	86	83	74	81	81	88	80	77	72	77	77
Brazil	1998	1998	B, 2, 4, and 6 mos	96	82	72	77	68	77	90	80	77	63	62	82
Chile	2005	2019	B, 2, 4, and 6 mos	90	93	96	93	95	96	NA	NA	65	99	98	99
Paraguay[††]	2002	2017	B, 2, 4, and 6 mos	91	91	86	79	70	69	NA	52	NR	NR	NR	NR
Uruguay	1999	NA	2, 4, and 6 mos	95	93	94	92	91	94	NA	NA	NA	NA	NA	NA
Latin Caribbean**	NA	NA	NA	46	77	72	71	71	72	47	49	47	44	42	43
Cuba	1990	1992	B, 2, 4, and 6 mos	96	99	99	99	99	99	99	99	99	99	99	99
Dominican Republic	1994	1997	B, 2, 4, and 6 mos	74	81	87	81	83	87	74	82	81	71	66	71
French Guiana	1994	2008	B, 2, and 11 mos[¶]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Guadeloupe	NR	NR	2, 4, and 11 mos[¶]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Haiti	2012	NA	6, 10, and 14 wks	NR	64	51	51	51	51	NA	NA	NA	NA	NA	NA
Martinique	NR	NR	2, 4, and 11 mos[¶]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Puerto Rico	1994	1999	B, 1–2, and 6–18 mos[§]	NA	NA	73	NA	NA	NA	NA	NA	59	NA	NA	NA
The Caribbean**	NA	NA	NA	92	90	93	86	86	90	5	9	22	24	29	30
Anguilla[††]	1997	2019	B, 2, 4, and 6 mos	100[§§]	89	77	86	79	88	NA	NA	100	100	100	100
Antigua and Barbuda	2000	2021	B, 2, 4, and 6 mos	98	95	99	95	92	99	NA	NA	NA	NA	19	19
Aruba[††]	2003	NA	1, 3, and 9 mos	94[§§]	95	94	NR	92	93	NA	NA	NA	NA	NA	NA
Bahamas	2001	NA	2, 4, and 6 mos	96	94	89	83	86	87	NA	NA	NA	NA	NA	NA
Barbados	2001	NA	2, 4, and 6 mos	87	90	90	85	82	86	NA	NA	NA	NA	NA	NA
Belize	1999	2018	B, 2, 4, and 6 mos	98	88	98	79	83	84	NA	NA	70	67	77	86
Bermuda[††]	1997	NA	6, 7, and 12 mos	92[§§]	81	97	89	100	89	NA	NA	NA	NA	NA	NA
Bonaire	2012	NR	2 mos, 14 wks, 5 mos, and 11 mos[¶]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cayman Islands[††]	1997	1997	B, 6 wks, and 9 mos	94[§§]	87	NR	79	84	90	NR	NR	NR	75	NR	NR
Curaçao[††]	2011	NR	B, 8, 14, and 22 wks	NR	85	98	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dominica	2006	2017	B, 2, 4, and 6 mos	97	91	99	97	92	92	NA	23	97	99	98	99
Grenada	2001	2017	B, 6–8, 16, and 24 wks	97	96	94	72	77	77	NA	78	96	92	90	91
Guyana	2001	2019	B, 2, 4, and 6 mos	97	97	99	99	98	98	NA	NA	35	49	58	57
Jamaica	2003	NA	6, 12, and 24 wks	96	93	96	95	89	98	NA	NA	NA	NA	NA	NA
Montserrat[††]	1999	2017	B, 2, 4, and 6 mos	94[§§]	100	100	NR	NR	98	NA	100	100	NR	80	83
Saba	2012	NR	2, 3, 4, and 11 mos[¶]	100[§§]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Saint Kitts and Nevis	1999	2015	B, 2, 4, and 6 mos	98	98	97	99	96	96	NA	83	84	93	95	96
Saint Lucia	2002	2018	B, 2, 4, and 6 mos	98	80	92	86	80	81	NA	NA	85	86	94	82
Saint Vincent and the Grenadines	2003	2017	B, 2, 4, and 6 mos	96	99	98	98	99	99	NA	30	99	96	93	93
Sint Eustatius	1997	NR	2, 3, 4, and 11 mos[¶]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sint Maarten[††]	2000	NA	2, 3, and 6 mos	91[§§]	94	NR	NR	NR	NR	NA	NA	NA	NA	NA	NA
Suriname	2005	2005	B, 2, 4, and 6 mos	76	67	77	51	72	77	51	80	79	79	79	79
Trinidad and Tobago	2003	NA	2, 4, and 6 mos	92	89	93	96	94	93	NA	NA	NA	NA	NA	NA
Turks and Caicos Islands[††]	1999	2019	B, 2, 4, and 6 mos	95[§§]	93	93	84	92	99	NA	NA	NR	NR	NR	100
British Virgin Islands[††]	1999	2016	B, 2, 4, and 6 mos	97[§§]	82	88	87	84	100	NA	90	98	94	NR	91
Total for Region of the Americas**	**NA**	**NA**	**NA**	**91**	**82**	**79**	**81**	**80**	**83**	**56**	**54**	**55**	**60**	**60**	**65**

See table footnotes on the next page.

TABLE 1. (*Continued*) Year of introduction of hepatitis B vaccine,*,† hepatitis B vaccination schedules,§,¶ and annual estimated or official coverage with third dose of hepatitis B vaccine and a timely hepatitis B birth dose,††,§§ among children aged <1 year, by country or territory, subregion, and region — Region of the Americas, World Health Organization, 2012, 2017, and 2019–2022**

Abbreviations: B = at birth; HepB = hepatitis B–containing vaccine; HepB3 = third dose of HepB; HepB-BD = birth dose of HepB; JRF = World Health Organization/UNICEF Joint Reporting Form on Vaccination; NA = not applicable; NR = data not reported; WUENIC = World Health Organization/UNICEF estimates of national immunization coverage.

* Year of introduction refers to the year the country or territory established universal HepB vaccination (HepB3 or HepB-BD) policies (i.e., HepB vaccination is recommended for all children throughout the country or territory according to schedule).

† All years of HepB3 introduction and all years of HepB-BD introduction before 2016 were compiled from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5392937. Years of HepB-BD introduction during and after 2016 were compiled from https://data.unicef.org/resources/immunization-country-profiles, https://paho-cim.shinyapps.io/immunization-dashboard, https://immunizationdata.who.int/global/wiise-detail-page/introduction-of-hepb-birth-dose?ISO_3_CODE=PRY&YEAR=, or directly from the JRF.

§ HepB vaccination schedules were compiled from https://immunizationdata.who.int/. Canada's provinces have varying schedules; some include a birth dose, and some initiate vaccination after 1 year of life. Details by Canadian province are available online (https://www.canada.ca/en/public-health/services/provincial-territorial-immunization-information.html). For the United States (including Puerto Rico), the HepB vaccination schedule was extracted from https://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf.

¶ If not available at https://immunizationdata.who.int/ or as indicated in footnote above, HepB vaccination schedules were compiled from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5392937.

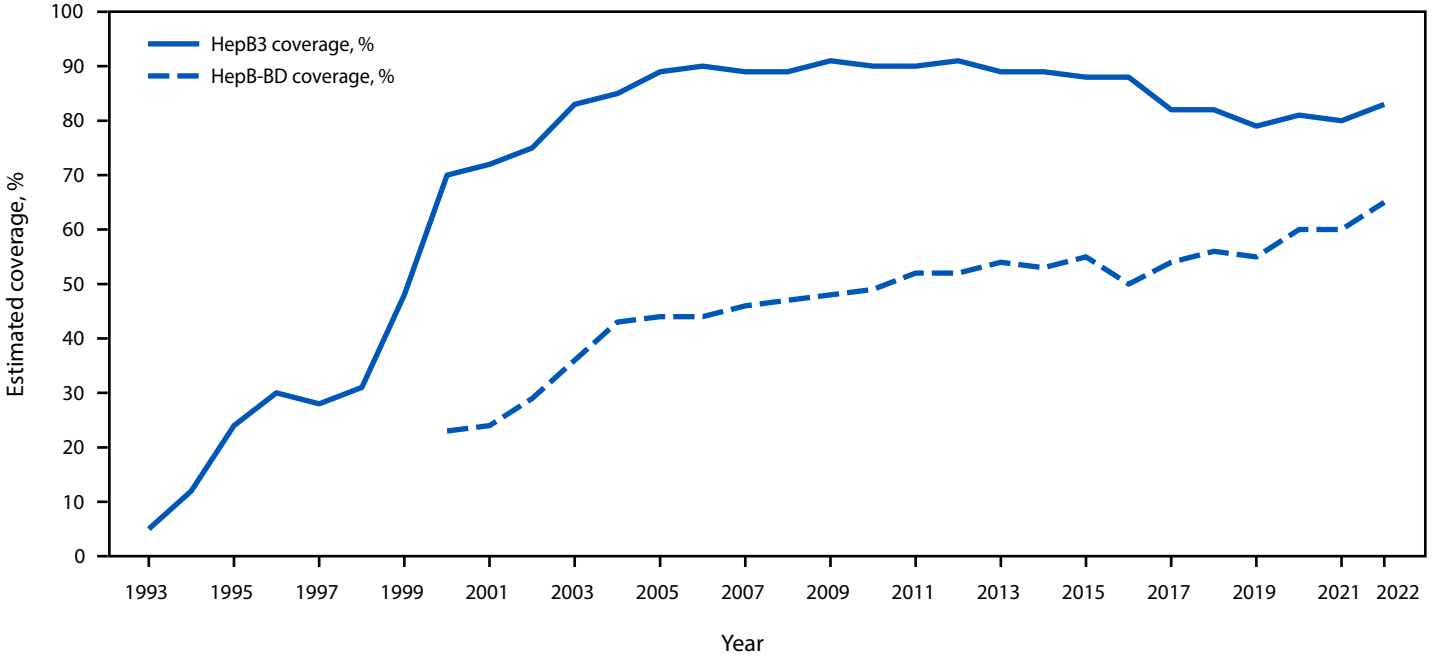
** Annual HepB3 and HepB-BD national coverage values are WUENIC prepared using data from the JRF; they were compiled from https://immunizationdata.who.int. Timely administration of HepB-BD is defined as administration within 24 hours of birth. For the United States, coverage estimates were determined as follows for HepB3 and HepB-BD: 2016–2018 estimates are among children aged 19–35 months during the previous survey year (e.g., 2018 estimate is from survey year 2017 data); 2019–2022 estimates are among children by age 24 months. The 2019 estimate is from combined 2015–2016 birth cohort, the 2020 estimate is from combined 2016–2017 birth cohort, the 2021 estimate is from combined 2017–2018 birth cohort, and the 2022 estimate is from combined 2018–2019 birth cohort. For Puerto Rico, HepB3 estimates are among children by age 24 months, by birth cohort; HepB-BD estimates are among children on the first day of life, by birth cohort. Data were not collected in Puerto Rico during some of the reporting years. In addition, even when data were collected, sample size was sometimes too small to calculate reliable coverage estimates. HepB3 and HepB-BD subregional and regional coverage estimates were generated using data from the 10-year period (2012–2022) for the 51 countries or territories using WUENIC estimates or official coverage. Countries or territories not reporting coverage or that have not adopted universal HepB-BD vaccination policies were assumed to have no coverage. HepB3 and HepB-BD subregional and regional coverage values were weighted coverage based upon the number of average annual births for 2012–2022, as available, from the United Nations population estimates.

†† Where annual WUENIC were not available, values are from official or administrative national immunization coverage as reported on the country or territory's JRF (https://paho-cim.shinyapps.io/immunization-dashboard). Any reported coverage exceeding 100% was considered 100%.

§§ Where annual WUENIC and official or administrative national immunization coverage as reported on the country or territory's JRF were not available, values are those provided in a previous report. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5392937

¶¶ Vaccination data for some territories within the Region of the Americas are not consistently reported to the World Health Organization separately from their associated countries.

FIGURE. Annual estimated coverage with the third dose of hepatitis B vaccine and timely hepatitis B birth dose* among children aged <1 year — Region of the Americas, World Health Organization, 1993–2022



Abbreviations: HepB3 = third dose of hepatitis B–containing vaccine; HepB-BD = birth dose of hepatitis B monovalent vaccine; WHO = World Health Organization.

* Regional coverage values are based upon WHO/UNICEF National Immunization Coverage estimates and were compiled from the WHO immunization data portal. https://immunizationdata.who.int

MTCT of HBV infection (*5*). Forty-three countries reported data on prenatal care visits by pregnant women; in 21 (49%) countries, ≥90% of pregnant women had at least four prenatal visits. In 27 of 30 (90%) countries with data on delivery location, ≥91.5% of births were at health facilities. Twenty-seven (84%) of 32 countries with data reported providing universal antenatal HBV testing, and 24 (75%) of 32 reported providing HBIG for neonates born to mothers with high levels of HBV DNA; however, the extent of coverage with these interventions is unknown in many AMR countries.

Discussion

Substantial progress has been made toward the elimination of MTCT of HBV infection in AMR. PAHO has supported vaccination against hepatitis B in the region since the 1990s by 1) advocating for vaccination to stakeholders, 2) providing technical support for the development of national vaccination policies, 3) building health care worker capacity, and 4) facilitating vaccine procurement.[§§] Mathematical models estimate the prevalence of chronic HBV infection among children aged ≤5 years, as measured by HBsAg seroprevalence, to be <0.1% regionally, and 14 countries met both regional and global impact targets for the elimination of MTCT of HBV infection (*5*,*6*). Among the 14 countries identified as likely to have met the HBsAg seroprevalence target, two reported HepB-BD and HepB3 coverage ≥95% during both 2021 and 2022, meeting both the regional and global programmatic targets for the elimination of MTCT of HBV infection, and both implemented antenatal and maternal and child health policies supporting the elimination of MTCT of HBV infection (*5*,*6*).

[§§] https://www.paho.org/en/revolving-fund

TABLE 2. Estimated hepatitis B surface antigen seroprevalence among children aged <5 years, coverage of reproductive health and maternal and child health services, and policies of interventions for the prevention of mother-to-child transmission of hepatitis B, by country or territory and region — Region of the Americas, World Health Organization, 2008–2022

Subregion, Country/ Territory	Estimated HBsAg seroprevalence among children aged ≤5 years, % (95% CI)*					Policy	
	Global Burden of Disease collaborators,[†] 2019	The Global Health Observatory,[§] 2020	Center for Disease Analysis/Polaris Observatory collaborators,[¶] 2022	Estimated antenatal care coverage with ≥4 visits, % (yr of data)**	Estimated births at health facilities, % (yr of data)**	Universal HBV testing in antenatal care, 2020–2022[††]	Provision of HBIG to HBV-exposed newborns, 2020[§§]
North America							
Canada[¶¶]	0.3 (0.2–0.3)	0.34 (0.29–0.39)	<0.1 (<0.1–<0.1)	99.0 (2020)	NR	Yes	Yes
Mexico***	0.02 (0.01–0.02)	0.03 (0.02–0.04)	<0.1 (<0.1–<0.1)	89.6 (2022)	NR	NR	Yes
United States***	0.03 (0.02–0.04)	0.01 (0.01–0.02)	<0.1 (<0.1–<0.1)	95.4 (2021)	97.8 (2021)	Yes	Yes
Central America							
Costa Rica	0.02 (0.02–0.03)	0.02 (0.01–0.03)	<0.1 (<0.1–<0.1)	94.1 (2022)	98.9 (2022)	Yes	Yes
El Salvador	0.07 (0.05–0.10)	0.02 (0.01–0.07)	<0.1 (<0.1–<0.1)	87.2 (2021)	99.7 (2022)	No	No
Guatemala	0.2 (0.1–0.2)	0.03 (0.02–0.04)	<0.1 (<0.1–<0.1)	43.0 (2014)	71.0 (2021)	Yes	No
Honduras	0.1 (0.1–0.2)	0.03 (0.01–0.11)	<0.1 (<0.1–<0.1)	89.0 (2012)	61.4 (2022)	No	No
Nicaragua	0.03 (0.03–0.03)	0.09 (0.05–0.17)	<0.1 (<0.1–0.1)	91.9 (2022)	96.3 (2022)	NR	NR
Panama	0.08 (0.05–0.11)	0.07 (0.05–0.09)	<0.1 (<0.1–<0.1)	88.2 (2019)	91.5 (2021)	Yes	No
Andean Area							
Bolivia	0.03 (0.02–0.04)	0.14 (0.05–0.29)	<0.1 (<0.1–<0.1)	81.3 (2022)	93.1 (2022)	NR	NR
Colombia[¶¶]	0.3 (0.2–0.3)	0.15 (0.12–0.19)	<0.1 (<0.1–<0.1)	81.6 (2021)	97.3 (2021)	Yes	Yes
Ecuador	0.04 (0.03–0.06)	0.09 (0.03–0.33)	<0.1 (<0.1–0.1)	79.0 (2013)	96.0 (2020)	Yes	Yes
Peru[¶¶]	0.04 (0.03–0.05)	0.06 (0.05–0.07)	<0.1 (<0.1–<0.1)	85.1 (2022)	93.3 (2022)	Yes	Yes
Venezuela	0.1 (0.1–0.2)	0.15 [0.12–0.18]	0.2 (0.2–0.4)	82.6 (2018)	NR	No	Yes
Southern Cone and Brazil							
Argentina	0.02 (0.01–0.03)	0.01 (0.01–0.02)	<0.1 (<0.1–<0.1)	72.8 (2021)	97.8 (2021)	Yes	Yes
Brazil	0.1 (0.1–0.2)	0.03 (0.02–0.03)	<0.1 (<0.1–<0.1)	92.9 (2022)	98.9 (2021)	Yes	Yes
Chile	0.02 (0.01–0.03)	0.03 (0.02–0.05)	<0.1 (<0.1–<0.1)	NR	99.6 (2021)	Yes	Yes
Paraguay	0.1 (0.1–0.2)	0.42 (0.09–2.08)	<0.1 (<0.1–<0.1)	79.6 (2021)	NR	Yes	Yes
Uruguay	0.01 (0.01–0.02)	0.15 (0.02–1.21)	NA	97.2 (2022)	100.0 (2021)	Yes	Yes
Latin Caribbean							
Cuba	0.02 (0.02–0.03)	0.03 (0.01–0.05)	<0.1 (<0.1–<0.1)	79.3 (2019)	99.8 (2022)	Yes	Yes
Dominican Republic	0.2 (0.1–0.2)	0.1 (0.03–0.37)	0.1 (<0.1–0.1)	92.6 (2019)	99.9 (2021)	NR	NR
French Guiana	NA	NA	NA	84.5 (2016)	NR	NR	NR
Guadeloupe	NA	NA	NA	NR	NR	NR	NR
Haiti***	0.3 (0.2–0.4)	1.04 (0.75–1.41)	0.4 (0.3–0.8)	67.0 (2012)	67.3 (2021)	No	No
Martinique	NA	NA	NA	98.5 (2016)	NR	NR	NR
Puerto Rico	0.04 (0.03–0.05)	NA	NA	97.8 (2020)	98.8 (2020)	NR	NR

See table footnotes on the next page.

TABLE 2. (*Continued*) Estimated hepatitis B surface antigen seroprevalence among children aged <5 years, coverage of reproductive health and maternal and child health services, and policies of interventions for the prevention of mother-to-child transmission of hepatitis B, by country or territory and region — Region of the Americas, World Health Organization, 2008–2022

Subregion, Country/ Territory	Estimated HBsAg seroprevalence among children aged ≤5 years, % (95% CI)*			Estimated antenatal care coverage with ≥4 visits, % (yr of data)**	Estimated births at health facilities, % (yr of data)**	Policy	
	Global Burden of Disease collaborators,† 2019	The Global Health Observatory,§ 2020	Center for Disease Analysis/Polaris Observatory collaborators,¶ 2022			Universal HBV testing in antenatal care, 2020–2022††	Provision of HBIG to HBV-exposed newborns, 2020§§
The Caribbean							
Anguilla	NA	NA	NA	100.0 (2012)	100.0 (2022)	Yes	Yes
Antigua and Barbuda	0.03 (0.02–0.04)	0.19 (0.07–0.68)	NA	75.0 (2022)	99.0 (2022)	Yes	Yes
Aruba	NA	NA	NA	100.0 (2020)	NR	NR	NR
Bahamas	0.03 (0.02–0.04)	0.16 (0.01–4.56)	NA	81.2 (2019)	99.2 (2022)	Yes	Yes
Barbados	0.03 (0.02–0.05)	0.18 (0.05–0.55)	NA	90.0 (2020)	98.2 (2022)	Yes	No
Belize	0.07 (0.05–0.09)	0.6 (0.46–0.76)	<0.1 (<0.1–<0.1)	NR	92.1 (2022)	Yes	No
Bermuda	0.2 (0.2–0.3)	NA	NA	98.0 (2021)	99.8 (2021)	Yes	Yes
Bonaire	NA	NA	NA	NR	NR	NR	NR
Cayman Islands	NA	NA	NA	97.0 (2017)	NR	Yes	Yes
Curaçao	NA	NA	NA	NR	NR	NR	NR
Dominica	0.04 (0.02–0.05)	0.2 (0.06–0.6)	NA	95.0 (2020)	99.0 (2022)	Yes	Yes
Grenada	0.06 (0.04–0.08)	0.12 (0.04–0.42)	NA	69.0 (2021)	NR	Yes	Yes
Guyana	0.05 (0.03–0.07)	0.4 (0.07–2.11)	0.1 (<0.1–0.2)	95.0 (2022)	NR	Yes	No
Jamaica	0.01 (0.01–0.02)	0.55 (0.37–0.79)	0.2 (0.1–0.3)	87.0 (2008)	NR	No	Yes
Montserrat	NA	NA	NA	100.0 (2022)	NR	NR	NR
Saba	NA	NA	NA	NR	NR	NR	NR
Saint Kitts and Nevis	0.03 (0.02–0.04)	0.06 (0.02–0.22)	NA	85.0 (2022)	100.0 (2022)	NR	NR
Saint Lucia	0.05 (0.04–0.07)	0.22 (0.06–0.77)	NA	90.0 (2022)	99.0 (2022)	NR	NR
Saint Vincent and the Grenadines	0.02 (0.01–0.03)	0.15 (0.05–0.49)	NA	NR	NR	NR	NR
Sint Eustatius	NA	NA	NA	NR	NR	NR	NR
Sint Maarten	NA	NA	NA	100.0 (2018)	NR	NR	NR
Suriname	0.04 (0.03–0.05)	0.07 (0.02–0.28)	0.1 (0.1–0.2)	66.8 (2010)	NR	Yes	Yes
Trinidad and Tobago	0.06 (0.04–0.08)	0.19 (0.04–0.81)	0.1 (0.1–0.2)	100.0 (2017)	NR	NR	NR
Turks and Caicos Islands	NA	NA	NA	57.7 (2022)	100.0 (2022)	Yes	Yes
British Virgin Islands	0.1 (0.1–0.1)	NA	NA	100.0 (2017)	100.0 (2022)	Yes	NR
Region of the Americas	**0.08 (0.06–0.11)**	**0.07 (0.05–0.13)**	**<0.1 (<0.1–<0.1)**	—	—	—	—

Abbreviations: HBIG = hepatitis B immune globulin; HBsAg = hepatitis B surface antigen; HBV = hepatitis B virus; NA = not available; NR = not reported.

* Data are presented in the format of original publication from referenced sources; thus, formatting within and between columns might differ.

† https://www.thelancet.com/journals/langas/article/PIIS2468-1253(22)00124-8/fulltext

§ https://www.who.int/data/gho/data/indicators/indicator-details/GHO/hepatitis-b-surface-antigen-(hbsag)-prevalence-among-children-under-5-years

¶ https://cdafound.org/polaris-countries-database/; https://www.sciencedirect.com/science/article/abs/pii/S2468125323001978?via%3Dihub

** https://opendata.paho.org/en/core-indicators/core-indicators-dashboard

†† Universal testing for HBV in antenatal care is the HBsAg testing of all women seeking antenatal care for the purposes of determining their eligibility for antiviral treatment during pregnancy and for the provision of HBIG to the exposed newborn (https://www.who.int/publications/i/item/9789240090903 [Accessed May 9, 2024]). Data are from Towards the Elimination of HIV, Syphilis, Hepatitis B, and Chagas disease in the Americas, EMTCT Plus Initiative 2010–2021, Annex Tables 1 and 4 (https://www.paho.org/en/documents/fact-sheet-emtct-plus-initiative-2011-2021-towards-elimination-hiv-syphilis-hepatitis-b); https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-7-hepatitis-b-vaccine.html; https://www.sciencedirect.com/science/article/pii/S0749379723000569?via%3Dihub; https://www.cdc.gov/hepatitis/statistics/2022surveillance/perinatal-hepatitis-b.htm [All accessed May 24, 2024].

§§ HBIG prophylaxis provided within 24 hours of birth, in conjunction with hepatitis B birth dose vaccination, might be of additional benefit for infants whose mothers are HBsAg-positive, particularly if they have high levels of HBV DNA (https://www.who.int/publications/i/item/9789240090903). Data are from Towards the Elimination of HIV, Syphilis, Hepatitis B, and Chagas disease in the Americas, EMTCT Plus Initiative 2010–2021, Annex Tables 1 and 4 (https://www.paho.org/en/documents/fact-sheet-emtct-plus-initiative-2011-2021-towards-elimination-hiv-syphilis-hepatitis-b) or through direct consultation with countries in 2020.

¶¶ Subnational HBsAg serosurveys targeting high-risk areas that enrolled representative samples of children or vaccine-eligible cohorts illustrate the impact of vaccination against hepatitis B are as follows. Canada: https://pubmed.ncbi.nlm.nih.gov/28736196; Colombia: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10200037; https://www.sciencedirect.com/science/article/pii/S0264410X17315463?via%3Dihub; https://pubmed.ncbi.nlm.nih.gov/28780978/; and Peru: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7410281/pdf/pone.0236993.pdf; https://rpmesp.ins.gob.pe/index.php/rpmesp/article/view/4696/3681; https://www.medigraphic.com/pdfs/salpubmex/sal-2020/sal203b.pdf

*** Nationally representative HBsAg serosurveys are as follows. Haiti: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6609174; Mexico: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6422518/pdf/khvi-15-02-1533617.pdf; and the United States: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10069827; https://pubmed.ncbi.nlm.nih.gov/26251317

Summary

What is already known about this topic?

In 2022, 5 million persons in the World Health Organization Region of the Americas (AMR) had chronic hepatitis B virus (HBV) infection, the leading cause of hepatocellular carcinoma and cirrhosis. Hepatitis B birth dose (HepB-BD) vaccination followed by 2–3 additional doses (HepB3) during infancy can prevent chronic infection.

What is added by this report?

All 51 AMR countries provide HepB3; 67% also provide HepB-BD. Mathematical models suggest that hepatitis B prevalence among children has met the global and regional impact target of ≤0.1% in 14 countries and regionally. HepB3 coverage decreased by ≥10 percentage points in 2022 compared with 2012 in 15 countries; 17 countries do not yet provide HepB-BD.

What are the implications for public health practice?

Declines in HepB3 coverage and the absence of HepB-BD in 17 countries' routine immunization schedules threaten the elimination of mother-to-child transmission of HBV infection throughout AMR. Efforts to introduce HepB-BD and maintain high HepB3 and HepB-BD coverage are needed.

PAHO has endorsed a process for validating achievement of the elimination of MTCT of HBV infection (*6*), and regional and national validation committees have been established. Because countries are evaluated for the elimination of MTCT of HBV infection, representative seroprevalence data documenting the prevalence of chronic HBV infection in children are needed. Innovative approaches, such as the integration of HBsAg testing into other surveys or sampling focused on geographic areas with documented high risk for HBV infection such as the two-phase method for verifying the elimination of MTCT of HBV infection used in Colombia (*7*), might facilitate the collection of essential data.

Despite regional progress, an estimated 34,000 children aged ≤5 years in the Americas had chronic HBV infection in 2022 (*8*). Few countries are consistently achieving the ≥90% HepB3 global coverage target. Declines in HepB3 coverage during 2012–2022 threaten progress toward elimination of chronic HBV infection in children. These declines have been attributed to inadequate sustainable financing and reductions in social mobilization for vaccination, increasing vaccination hesitancy, insecurity linked to civil unrest, lack of easy access to health services for some populations, and recently, the COVID-19 pandemic and consequent health service disruptions[¶¶,***,†††,§§§,¶¶¶] (*9*,*10*). To overcome these constraints and improve HepB3 vaccination coverage, PAHO is working with countries to implement the recommendations in the 2021 Reinvigorating Immunization as a Public Good for Universal Health resolution[****] and the new Regional Immunization Action Plan 2030.[††††]

Although most children born in AMR live in countries with routine HepB-BD, 17 countries, particularly in the Caribbean and Latin Caribbean subregions (13 of the 17), have not introduced universal birth dose vaccination (*3*). In countries with HepB-BD, efforts to address disparities in coverage and access and to ensure timely administration will protect infants at risk for HBV infection (*1*). Most births in the region occur at health facilities; thus, implementation of policies such as standing orders for newborn HepB-BD vaccination before discharge of mother and child, paired with education of pregnant women and maternal and child health care staff members about the importance of the birth dose, can improve timely administration and coverage.

The region continues to expand efforts to achieve the elimination of MTCT of HBV infection by integrating antenatal viral testing, antiviral treatment during pregnancy when indicated, and provision of HBIG for HBV-exposed newborns into the established platforms providing interventions for the elimination of MTCT of HIV and syphilis (*5*). PAHO's Strategic Fund is tasked with improving access to and reducing costs of hepatitis B–relevant health supplies and medicines for the region.[§§§§]

Limitations

The findings in this report are subject to at least two limitations. First, current HepB-BD and HepB3 vaccination schedules and coverage or the elimination of MTCT programmatic indicators were not available for all countries or all years, limiting the completeness of summaries on regional progress on the elimination of MTCT of HBV infection. Second, not all countries have systems that differentiate reporting of timely versus any HepB-BD administration, thus potentially overestimating timely birth dose coverage.

Implications for Public Health Practice

Although progress has been made, declines in HepB3 coverage and the absence of HepB-BD introduction in 17 countries threaten PAHO's progress toward the elimination of MTCT of HBV infection. To advance toward the regional goal of the elimination of MTCT of HBV infection, continued efforts are

¶¶ https://www.paho.org/en/news/20-4-2023-risk-vaccine-preventable-disease-outbreaks-30-year-high-paho-director-says

*** https://www.unicef.org/lac/en/press-releases/1-in-4-children-in-latin-america-and-caribbean-is-missing-out-life-saving-vaccines

††† https://www.ijidonline.com/article/S1201-9712(19)30143-2/pdf

§§§ https://www.connectas.org/the-silent-backslide-of-childhood-vaccination-in-latin-america/

¶¶¶ https://www.paho.org/en/news/27-7-2021-disruption-health-services-during-covid-19-pandemic-threatens-elimination-hepatitis

**** https://www.paho.org/en/documents/ce16814-reinvigorating-immunization-public-good-universal-health

†††† https://www.paho.org/en/events/webinar-regional-immunization-action-plan-americas-2030

§§§§ https://www.paho.org/en/paho-strategic-fund

needed to support HepB-BD introduction and the achievement and maintenance of high HepB-BD and HepB3 coverage.

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Health Monitoring, Testing, and Case Identification Among Persons Exposed to Influenza A(H5N1) — Michigan, 2024

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On March 25, 2024, a Texas dairy farm detected highly pathogenic avian influenza (HPAI) A(H5N1) virus in cows. The outbreak widely spread after interstate cow movement. During March 25–June 17, animals at a total of 102 dairy farms in 12 states, 24 commercial poultry flocks in five states, and multiple backyard flocks tested positive for HPAI A(H5N1) (*1*,*2*). This report describes response activities in Michigan, which led to detection of the second and third human cases related to the 2024 HPAI A(H5N1) outbreak. The activity was reviewed by the Michigan Department of Health and Human Services, deemed not research, and was conducted consistent with applicable federal law, state, and departmental policy.*

Investigation and Outcomes

Infected cows from Texas resulted in introduction of HPAI A(H5N1) virus in a Michigan dairy, detected on March 29. As of May 29, a total of 23 Michigan dairies in 10 counties are known to be affected (*1*). Michigan's first affected commercial poultry facility was confirmed on April 2; currently, seven affected poultry facilities in four counties have been identified (*2*). HPAI A(H5N1) virus has also been detected in a backyard flock, pigeons, foxes, cats, opossums, and a racoon in Michigan. Whole genome sequencing results suggest that, since March 2024, all sequenced isolates have ancestral Texas origins (*3*).

Monitoring of Dairy Workers

Among the 23 affected dairies, 306 persons exposed to affected cows were identified. Lists of exposed persons were obtained by public health officials from 20 (87%) affected dairies. Workers at 12 (60%) of those dairies were enrolled in text-based daily symptom monitoring,† and workers at eight (40%) farms were monitored through a farm point of contact. Because it could be unclear when workers' exposures to cows ended, some workers were monitored for >50 days.

Twenty (6.5%) exposed workers reported symptoms and were tested for influenza A(H5) virus infection. Among persons who received real-time reverse transcription–polymerase chain reaction testing,§ one received a positive test result from a conjunctival swab, similar to the case of HPAI A(H5N1) reported from a dairy worker in Texas (*4*). Before the onset of mild unilateral conjunctivitis, the patient reported direct ocular exposure to raw, unpasteurized milk from an affected cow. A second worker from a different dairy farm experienced respiratory symptoms after close contact with sick cows and received a positive A(H5) virus test result from a nasopharyngeal swab. In both instances, public health officials rapidly collected patient specimens, which tested positive for HPAI A(H5N1). Neither worker was severely ill, neither required hospitalization, and no household or work contacts reported being ill. Both workers wore some personal protective equipment (PPE), but neither wore a mask or respirator.

Monitoring of Poultry Workers

Among seven affected commercial poultry facilities, 857 persons exposed to affected birds were identified. Lists of exposed persons were obtained from all facilities. Workers from four facilities were directly enrolled in text-based daily symptom monitoring, and workers from three facilities were monitored through a farm point of contact who reported results to public health officials. Eighteen (2.1%) symptomatic persons were identified and tested; all test results were negative for influenza A(H5).

Monitoring of Other Exposed Persons

Federal and state employees who responded to affected farms were also observed for symptoms, as were persons with exposure to HPAI A(H5N1) virus–infected animals (domestic or wild) or humans. Overall, 125 such persons were monitored, and 15 (12%) reported symptoms, 14 of whom received negative influenza A(H5) test results.

Preliminary Conclusions and Actions

Among 1,288 Michigan residents who were monitored for signs and symptoms after potential HPAI A(H5N1) virus exposure, 53 (4.1%) reported signs and symptoms, 52 of whom received testing for influenza A(H5). Two dairy workers received positive test results (3.8% of all persons tested, <1% of all monitored dairy workers).

Although the risk for HPAI A(H5N1) virus to the public remains low, novel influenza A viruses such as A(H5N1) have pandemic potential. Therefore, it is critical to notify persons

* 45 CFR part. 46; 5 U.S.C. 301; 42 U.S.C. 289(a); 42 U.S.C. 300v-1(b).
† https://people.health/
§ https://www.cdc.gov/bird-flu/php/severe-potential/?CDC_AAref_Val=https://www.cdc.gov/flu/avianflu/severe-potential.htm

Summary

What is already known about this topic?

Highly pathogenic avian influenza (HPAI) A(H5N1) virus has been detected in wild birds and mammals, poultry, and commercial dairy facilities in the United States. A human case in a Texas dairy worker was reported in April 2024.

What is added by this report?

As of May 23, 2024, Michigan had the largest number of affected dairy and poultry facilities linked to the HPAI A(H5N1) outbreak. Active symptom monitoring and testing of exposed workers led to detection of the second and third known dairy-associated HPAI A(H5N1) cases in 2024.

What are the implications for public health practice?

The current risk to the public from HPAI A(H5N1) viruses is low; however, continued symptom monitoring and testing are critical to characterizing genetic or epidemiological changes that might alter the risk assessment.

with exposure to infected animals, provide education and access to PPE,¶ monitor signs and symptoms, test specimens collected from any exposed person with signs and symptoms, and make antivirals available to symptomatic persons as soon as possible.**

Although the percentage of workers who regularly used PPE is not known, the human cases associated with dairy farms in Texas and Michigan demonstrate the potential value of PPE, including eye and respiratory protection, especially on affected farms (*4*,*5*). The cases identified to date have resulted in mild illness, which might not have been detected without the collaboration of state officials and the engagement of farms and workers. Streamlined, nonintrusive approaches to monitoring, such as the text-message monitoring used in Michigan, might encourage participation and subsequent testing. A One Health†† approach including collaboration with agriculture departments, farms, and workers is crucial to successful public health response.

¶ https://www.cdc.gov/bird-flu/prevention/hpai-interim-recommendations.html

** Antiviral treatment is recommended with oseltamivir as soon as possible for outpatients and hospitalized patients who have suspected, probable, or confirmed cases of human infection with novel influenza A viruses associated with severe human disease. https://www.cdc.gov/bird-flu/hcp/novel-av-treatment-guidance/?CDC_AAref_Val=https://www.cdc.gov/flu/avianflu/novel-av-treatment-guidance.htm

†† One Health is an approach that recognizes the interconnectedness of human, animal, and environmental health. https://www.cdc.gov/one-health/about/index.html

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