U.S. Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 73 / No. 25
June 27, 2024

Treatment for Opioid Use Disorder: Population Estimates — United States, 2022

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Abstract

In 2022, 81,806 opioid-involved overdose deaths were reported in the United States, more than in any previous year. Medications for opioid use disorder (OUD), particularly buprenorphine and methadone, substantially reduce overdose-related and overall mortality. However, only a small proportion of persons with OUD receive these medications. Data from the 2022 National Survey on Drug Use and Health were applied to a cascade of care framework to estimate and characterize U.S. adult populations who need OUD treatment, receive any OUD treatment, and receive medications for OUD. In 2022, 3.7% of U.S. adults aged ≥18 years needed OUD treatment. Among these, only 25.1% received medications for OUD. Most adults who needed OUD treatment either did not perceive that they needed it (42.7%) or received OUD treatment without medications for OUD (30.0%). Compared with non-Hispanic Black or African American and Hispanic or Latino adults, higher percentages of non-Hispanic White adults received any OUD treatment. Higher percentages of men and adults aged 35–49 years received medications for OUD than did women and younger or older adults. Expanded communication about the effectiveness of medications for OUD is needed. Increased efforts to engage persons with OUD in treatment that includes medications are essential. Clinicians and other treatment providers should offer or arrange evidence-based treatment, including medications, for patients with OUD. Pharmacists and payors can work to make these medications available without delays.

Introduction

In 2022, more opioid-involved overdose deaths (81,806) were reported in the United States than in any previous year.* Medications for opioid use disorder (OUD) include buprenorphine, methadone, and extended-release naltrexone. These medications, especially buprenorphine and methadone, substantially reduce overdose-related and overall mortality but are markedly underused (*1*,*2*). Using an OUD cascade of care framework adapted from HIV care delivery improvement efforts (*2*), National Survey on Drug Use and Health (NSDUH) data were used to estimate and characterize U.S. adult populations who 1) need OUD treatment, 2) perceive a need for OUD treatment, 3) receive any OUD treatment, and 4) receive medications for OUD.

Methods

Data Source

NSDUH collects substance use and substance use disorder (SUD) treatment information through in-person and web-based interviews among a nationally representative sample of civilian, noninstitutionalized persons aged ≥12 years in the United States.† Data from 56,610 adults aged ≥18 years (weighted interview response rate = 48.0%) participating in

* https://www.cdc.gov/nchs/data/databriefs/db491-tables.pdf

† https://www.samhsa.gov/data/report/nsduh-2022-methodological-resource-book-mrb

Continuing Education examination available at https://www.cdc.gov/mmwr/mmwr_continuingEducation.html

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the 2022 NSDUH were analyzed to estimate numbers and percentages of adults who needed OUD treatment, perceived a need for OUD treatment, received any OUD treatment, and received medications for OUD in the past year.

Definitions

The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5)[§] describes OUD as "a problematic pattern of opioid use leading to clinically significant impairment or distress." Needing OUD treatment was defined as meeting DSM-5 criteria for mild or moderate OUD (two to five symptoms) or severe OUD (six or more symptoms) or receiving OUD treatment during the preceding year. Persons receiving OUD treatment without meeting OUD criteria in the preceding year were assumed to have had an active OUD (i.e., to have had symptoms meeting criteria for OUD) in the past and to have successfully treated OUD with continued treatment. Respondents needing but not reporting OUD treatment in the previous year were asked whether they sought or thought they should receive OUD treatment; affirmative responses were coded as perceiving need for treatment. Receipt of OUD treatment was defined as receiving treatment for OUD or receiving treatment for an unspecified SUD along with reporting opioid use, with the assumption that the unspecified SUD was OUD. Receipt of medications for OUD was defined as taking medication in the past year prescribed to help reduce or stop opioid use (e.g., buprenorphine, methadone, or naltrexone).

Statistical Analysis

Weighted prevalence estimates and 95% CIs were calculated overall and by sociodemographic-, health-, and substance-related characteristics. Log-linear chi-square tests of independence assessed overall differences between subgroups, followed by pairwise comparisons using *t*-tests. Analyses were conducted using SAS-callable SUDAAN (version 11.0; RTI International) to account for NSDUH's complex design and sampling weights. This activity was reviewed by CDC, deemed not research, and conducted consistent with applicable federal law and CDC policy.[¶]

Results

In 2022, an estimated 3.7% of U.S. adults (9,367,000) needed OUD treatment (Figure) (Table). Among these, 55.2% (5,167,000) received OUD treatment, and 25.1% (2,353,000) received medications for OUD (Figure). Most adults who needed OUD treatment either did not perceive that they needed it (42.7%) or received treatment that did not include medications for OUD (30.0%) (Figure).

[§] https://dsm.psychiatryonline.org/doi/book/10.1176/appi.books.9780890425596

[¶] 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 *MMWR* series of publications is published by the Office of Science, U.S. Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30329-4027.

Suggested citation: [Author names; first three, then et al., if more than six.] [Report title]. MMWR Morb Mortal Wkly Rep 2024;73:[inclusive page numbers].

Need for OUD Treatment

The percentage of adults aged 18–25 years who needed OUD treatment (2.2%) was lower than that among older age groups (range = 3.7%–4.3%) (Table). Groups in which a high percentage of persons needed OUD treatment included those who did not attend college (4.9%), were not employed (5.2%), or had ever been arrested and booked (9.7%). Need for OUD treatment increased with poverty level: it was lowest (2.5%) among those with income ≥200% of the federal poverty level [FPL], increasing to 5.0% among those with income 100%–199% of FPL, and was highest (7.5%) among persons with income <100% of FPL. The percentage of adults who needed OUD treatment was elevated among those who, during the previous year, had any mental illness (9.0%), used illicit drugs other than opioids** (7.6%) or marijuana (7.0%), misused stimulants†† (20.7%) or opioids§§ (35.9%), or had a nonopioid SUD (10.4%).

** Illicit drug use other than opioid use includes the use of cocaine, hallucinogens, inhalants, marijuana, or methamphetamine, or misuse of prescription tranquilizers, sedatives, or stimulants.
†† Stimulant misuse includes the use of cocaine or methamphetamine or use of prescription stimulants in any way not directed by a health care professional.
§§ Opioid misuse includes use of heroin or use of prescription pain relievers in any way not directed by a health care professional.

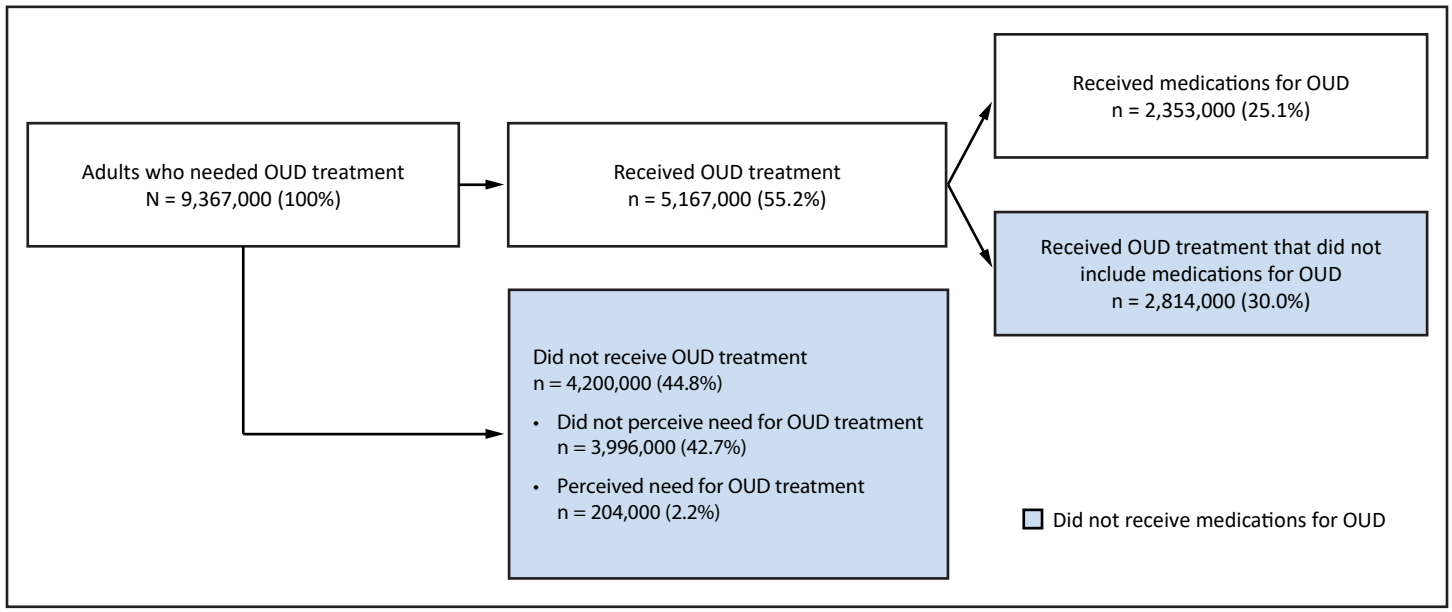
OUD Treatment

The percentage of adults needing OUD treatment who received treatment was lower among those aged ≥50 years (44.9%) than among younger age groups (range = 58.9%–67.8%) (Table). The percentage of adults who received treatment was higher among non-Hispanic White (White) adults (60.3%) than among non-Hispanic Black or African American (Black) (43.8%) or Hispanic or Latino (Hispanic) (45.7%) adults and among adults with severe OUD (53.0%) than among those with mild or moderate OUD (20.5%). Compared with other adults, the percentage who received OUD treatment was higher among those who were employed (63.1%), had ever been arrested and booked (66.3%), or had used illicit drugs other than opioids (61.2%).

Receipt of Medications for OUD

Among adults who needed and received any OUD treatment, fewer than one half (45.5%) received medications for OUD. The percentage of adults who received medications for OUD was higher among those who were employed (52.5%), were ever arrested and booked (63.0%), used illicit drugs other than opioids (52.9%), used marijuana (53.1%), misused stimulants (59.4%), misused opioids (61.7%), or had

FIGURE. Estimated opioid use disorder treatment among adults aged ≥18 years — National Survey on Drug Use and Health, United States, 2022*



Abbreviation: OUD = opioid use disorder.
* Needing OUD treatment was defined as meeting *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* criteria for OUD or receiving OUD treatment during the past year. Receiving OUD treatment was defined as receiving treatment for opioid use or receiving treatment for an unspecified substance along with reporting opioid use in the past year. Receiving medications for OUD was defined as having used medication in the past year prescribed to help reduce or stop opioid use. Examples of medications shown to respondents included methadone, buprenorphine or buprenorphine-naloxone, injectable buprenorphine, buprenorphine implants, naltrexone pills, and injectable naltrexone. Adults were classified as perceiving need for OUD treatment if they responded affirmatively to questions about whether they thought they should receive or sought drug use treatment in the past year. Numbers are weighted estimates rounded to the nearest thousand. Percentages are numbers (n or N) divided by the overall N (9,367,000) of adults who needed OUD treatment. Percentages are rounded to the nearest tenth and might not sum to 100% because of rounding.

TABLE. Estimated number* and percentage of adults aged ≥18 years who during the past year needed opioid use disorder treatment,† received opioid use disorder treatment,§ or received medication for opioid use disorder¶ — National Survey on Drug Use and Health, United States, 2022

Characteristic	Needed OUD treatment†		Received OUD treatment among adults classified as needing OUD treatment§		Received medication for OUD among adults who received OUD treatment¶	
	Estimated weighted no.* (95% CI)	% (95% CI)	Estimated weighted no.* (95% CI)	% (95% CI)	Estimated weighted no.* (95% CI)	% (95% CI)
Total	**9,367 (8,603–10,196)**	**3.7 (3.4–4.0)**	**5,167 (4,756–5,571)**	**55.2 (50.8–59.5)**	**2,353 (2,077–2,634)**	**45.5 (40.2–51.0)**
Sex						
Female	4,623 (4,144–5,154)	3.5 (3.2–3.9)	2,461 (2,207–2,711)	53.2 (47.7–58.6)	971 (813–1,139)	39.5 (33.0–46.3)**
Male	4,744 (4,160–5,407)	3.8 (3.3–4.3)	2,706 (2,384–3,016)	57.0 (50.2–63.6)	1,381 (1,156–1,605)	51.0 (42.7–59.3)**
Age group, yrs						
18–25	770 (663–894)	2.2 (1.9–2.6)††	453 (391–512)	58.9 (50.8–66.5)	90 (62–128)	19.9 (13.7–28.1)§§
26–34	1,534 (1,292–1,818)	3.8 (3.2–4.5)	1,039 (887–1,171)	67.8 (57.8–76.3)	458 (365–555)	44.1 (35.1–53.4)§§
35–49	2,692 (2,359–3,069)	4.3 (3.8–4.9)	1,713 (1,538–1,875)	63.6 (57.1–69.7)	1,171 (1,055–1,275)	68.4 (61.6–74.5)††
≥50	4,371 (3,769–5,065)	3.7 (3.2–4.3)	1,962 (1,645–2,288)	44.9 (37.6–52.3)††	633 (442–860)	32.3 (22.5–43.8)
Race and ethnicity¶¶						
Black or African American	1,381 (1,116–1,704)	4.5 (3.6–5.5)	605 (463–756)	43.8 (33.5–54.7)	NR***	NR***
White	5,811 (5,233–6,450)	3.7 (3.3–4.1)	3,503 (3,216–3,779)	60.3 (55.3–65.0)††	1,725 (1,510–1,940)	49.2 (43.1–55.4)
Hispanic or Latino	1,337 (1,051–1,698)	3.0 (2.4–3.8)	611 (464–764)	45.7 (34.7–57.2)	NR***	NR***
Other or multiple races	838 (601–1,164)	3.7 (2.6–5.1)	NR***	NR***	NR***	NR***
Education						
Any college	4,764 (4,228–5,366)	2.9 (2.6–3.3)**	2,463 (2,167–2,756)	51.7 (45.5–57.8)	1,061 (887–1,242)	43.1 (36.0–50.4)
No college	4,603 (4,064–5,209)	4.9 (4.3–5.6)**	2,704 (2,424–2,973)	58.8 (52.7–64.6)	1,292 (1,088–1,498)	47.8 (40.2–55.4)
Employment status						
Employed full time or part time	3,884 (3,426–4,402)	2.6 (2.3–2.9)**	2,450 (2,191–2,691)	63.1 (56.4–69.3)**	1,287 (1,087–1,483)	52.5 (44.4–60.5)**
Unemployed or other employment†††	5,483 (4,903–6,126)	5.2 (4.7–5.8)**	2,717 (2,405–3,029)	49.6 (43.9–55.3)**	1,066 (886–1,257)	39.2 (32.6–46.3)**
Ever arrested and booked						
Yes	3,620 (3,166–4,130)	9.7 (8.5–11.0)**	2,400 (2,134–2,639)	66.3 (59.0–72.9)**	1,512 (1,316–1,691)	63.0 (54.8–70.5)**
No	5,440 (4,856–6,093)	2.5 (2.3–2.8)**	2,570 (2,273–2,871)	47.2 (41.8–52.8)**	781 (628–953)	30.4 (24.4–37.1)**
Poverty level§§§						
<100% of the federal poverty level	2,708 (2,335–3,134)	7.5 (6.5–8.7)**	1,530 (1,306–1,744)	56.5 (48.3–64.4)	674 (529–826)	44.1 (34.6–54.0)
100%–199% of the federal poverty level	2,487 (2,125–2,908)	5.0 (4.3–5.8)**	1,540 (1,349–1,718)	61.9 (54.2–69.1)	714 (570–862)	46.4 (37.0–56.0)
≥200% of the federal poverty level	4,172 (3,658–4,756)	2.5 (2.1–2.8)**	2,097 (1,821–2,372)	50.3 (43.6–56.9)	964 (791–1,142)	46.0 (37.7–54.5)
U.S. Census Bureau region¶¶¶						
Midwest	2,045 (1,727–2,419)	3.9 (3.3–4.6)	1,084 (892–1,272)	53.0 (43.6–62.2)	478 (370–592)	44.1 (34.2–54.6)
Northeast	1,620 (1,310–2,000)	3.6 (2.9–4.4)	1,020 (851–1,172)	63.0 (52.5–72.3)	523 (404–640)	51.2 (39.6–62.7)
South	3,745 (3,277–4,278)	3.8 (3.3–4.4)	2,083 (1,836–2,322)	55.6 (49.0–62.0)	1,024 (849–1,201)	49.2 (40.8–57.7)
West	1,956 (1,626–2,352)	3.2 (2.7–3.9)	980 (792–1,167)	50.1 (40.5–59.6)	327 (229–442)	33.4 (23.4–45.1)
Core-based statistical area****						
Metropolitan statistical area	7,789 (7,094–8,550)	3.5 (3.2–3.8)**	4,225 (3,848–4,596)	54.2 (49.4–59.0)	1,975 (1,721–2,233)	46.7 (40.7–52.8)
Micropolitan statistical area or outside core-based statistical area	1,578 (1,305–1,904)	4.7 (3.9–5.7)**	942 (789–1,084)	59.7 (50.0–68.7)	377 (278–487)	40.1 (29.5–51.7)
Overall self-rated health						
Excellent or very good	2,333 (1,956–2,781)	1.7 (1.4–2.1)**	1,544 (1,336–1,728)	66.2 (57.3–74.1)††††	790 (623–954)	51.1 (40.3–61.8)
Good	3,600 (3,138–4,125)	4.4 (3.8–5.0)**	2,019 (1,769–2,260)	56.1 (49.1–62.8)	899 (741–1,063)	44.5 (36.7–52.7)
Fair or poor	3,434 (2,984–3,945)	8.8 (7.7–10.2)**	1,604 (1,349–1,864)	46.7 (39.3–54.3)††††	664 (527–810)	41.4 (32.8–50.5)
Any mental illness in past year§§§§						
Yes	5,348 (4,844–5,900)	9.0 (8.2–10.0)**	2,957 (2,656–3,251)	55.3 (49.7–60.8)	1,362 (1,154–1,575)	46.1 (39.0–53.3)
No	4,019 (3,525–4,580)	2.0 (1.8–2.3)**	2,210 (1,944–2,469)	55.0 (48.4–61.5)	991 (814–1,173)	44.8 (36.8–53.1)
Used illicit drugs other than opioids in past year¶¶¶¶						
Yes	4,827 (4,275–5,445)	7.6 (6.7–8.6)**	2,955 (2,630–3,261)	61.2 (54.5–67.6)**	1,562 (1,347–1,774)	52.9 (45.6–60.0)**
No	4,540 (4,026–5,117)	2.4 (2.1–2.7)**	2,212 (1,949–2,476)	48.7 (42.9–54.6)**	790 (636–960)	35.7 (28.8–43.4)**
Binge drinking in past month***						
Yes	2,366 (1,986–2,815)	3.9 (3.3–4.7)	1,366 (1,148–1,573)	57.7 (48.5–66.5)	585 (442–737)	42.8 (32.4–53.9)
No	7,001 (6,320–7,751)	3.6 (3.2–4.0)	3,801 (3,443–4,152)	54.3 (49.2–59.3)	1,768 (1,539–2,000)	46.5 (40.5–52.6)
Used marijuana in past year						
Yes	4,108 (3,596–4,686)	7.0 (6.1–7.9)**	2,534 (2,223–2,824)	61.7 (54.1–68.7)**	1,344 (1,144–1,541)	53.1 (45.1–60.8)**
No	5,259 (4,709–5,871)	2.7 (2.4–3.0)**	2,633 (2,347–2,918)	50.1 (44.6–55.5)**	1,008 (837–1,191)	38.3 (31.8–45.2)**

See table footnotes on the next page.

TABLE. (*Continued*) Estimated number* and percentage of adults aged ≥18 years who during the past year needed opioid use disorder treatment,† received opioid use disorder treatment,§ or received medication for opioid use disorder¶ — National Survey on Drug Use and Health, United States, 2022

Characteristic	Needed OUD treatment†		Received OUD treatment among adults classified as needing OUD treatment§		Received medication for OUD among adults who received OUD treatment¶	
	Estimated weighted no.* (95% CI)	% (95% CI)	Estimated weighted no.* (95% CI)	% (95% CI)	Estimated weighted no.* (95% CI)	% (95% CI)
Misused central nervous system stimulants in past year†††††						
Yes	2,057 (1,750–2,402)	20.7 (17.6–24.2)**	1,248 (1,042–1,438)	60.7 (50.6–69.9)	741 (603–869)	59.4 (48.3–69.6)**
No	7,310 (6,644–8,041)	3.0 (2.7–3.3)**	3,919 (3,564–4,268)	53.6 (48.8–58.4)	1,611 (1,373–1,861)	41.1 (35.0–47.5)**
Type of opioid use in past year (among past-year users)§§§§§						
Misused	3,059 (2,735–3,400)	35.9 (32.1–39.9)**	1,562 (1,353–1,771)	51.1 (44.2–57.9)	964 (838–1,080)	61.7 (53.6–69.1)**
Used but did not misuse	5,850 (5,671–7,014)	9.4 (8.4–10.4)**	3,169 (2,831–3,500)	54.2 (48.4–59.8)	1,135 (937–1,348)	35.8 (29.6–42.5)**
Substance use disorder other than OUD in past year¶¶¶¶						
Yes	4,551 (4,047–5,110)	10.4 (9.3–11.7)**	2,565 (2,280–2,841)	56.4 (50.1–62.4)	1,328 (1,126–1,528)	51.8 (43.9–59.6)**
No	4,816 (4,298–5,394)	2.3 (2.0–2.5)**	2,602 (2,331–2,868)	54.0 (48.4–59.5)	1,025 (851–1,209)	39.4 (32.7–46.5)**
OUD severity******						
Severe	1,384 (1,115–1,717)	100††††††	734 (587–878)	53.0 (42.4–63.4)**	593 (522–644)	80.7 (71.1–87.7)**
Mild or moderate	4,467 (3,925–5,084)	100††††††	917 (729–1,140)	20.5 (16.3–25.5)**	509 (405–608)	55.5 (44.1–66.3)**
Did not meet criteria for an active OUD in past year	3,515 (3,082–4,009)	1.4 (1.2–1.6)	3,515 (3,141–3,906)	100**,§§§§§§	1,251 (1,029–1,492)	35.6 (29.3–42.4)**

Abbreviations: DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; DSM-5 = *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*; NR = not reported; OUD = opioid use disorder.

* In thousands; estimates are weighted.
† Adults who needed OUD treatment were defined as those who met DSM-5 criteria for OUD or received OUD treatment in the past year.
§ Among adults who needed OUD treatment. Adults were classified as having received OUD treatment in the past year if they met any of the following criteria: 1) received inpatient treatment for opioid use, outpatient treatment for opioid use, or medications for OUD in the past year, 2) received inpatient or outpatient treatment in the past year for a substance that they did not specify in the survey, and had past-year opioid use, or 3) did NOT receive inpatient or outpatient substance use treatment, but received substance use treatment virtually or in a prison or jail for an unspecified substance, and had past-year opioid use.
¶ Among those who needed and received any OUD treatment. Medication for OUD was defined as having been prescribed medication in the past 12 months to cut back or stop the use of opioids.
** Statistical tests indicate differences between all groups at the 0.05 significance level.
†† Statistical tests indicate differences for this group relative to other groups at the 0.05 significance level.
§§ Statistical tests indicate differences between those aged 18–25 and 26–34 years at the 0.05 significance level.
¶¶ Persons of Hispanic or Latino (Hispanic) origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.
*** Estimate was not reported because of low precision.
††† Other employment includes students, persons keeping house or caring for children full time, retired or disabled persons, or other persons not in the labor force.
§§§ Poverty level indicates a person's family income relative to poverty thresholds. The U.S. Census Bureau assigns a poverty threshold for each combination of family size and number of children in the household. The measure excludes persons aged 18–22 years living in a college dorm.
¶¶¶ https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf
**** The core-based statistical areas are classifications for all U.S. counties based on the March 2020 core-based statistical area classification provided by the Office of Management and Budget.
†††† Statistical tests indicate differences between excellent or very good and fair or poor at the 0.05 significance level.
§§§§ Any mental illness aligns with DSM-IV criteria and is defined as having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder. These mental illness estimates are based on a predictive model and are not direct measures of diagnostic status.
¶¶¶¶ Illicit drug use other than opioid use includes the use of cocaine, hallucinogens, inhalants, marijuana, or methamphetamine, or misuse of prescription tranquilizers, sedatives, or stimulants.
***** Defined for females as drinking four or more drinks on the same occasion and for males as drinking five or more drinks on the same occasion on ≥1 day in the past 30 days.
††††† Central nervous system stimulant misuse includes use the use of cocaine or methamphetamine or misuse of prescription stimulants.
§§§§§ Misuse includes use of heroin or use of prescription pain relievers in any way not directed by a health care professional. "Use but not misuse" was defined as using only prescription pain relievers as directed by a health care professional.
¶¶¶¶¶ Includes use disorders for alcohol, cocaine, hallucinogens, inhalants, marijuana, methamphetamine, prescription sedatives, prescription stimulants, or prescription tranquilizers.
****** OUD severity level is determined by the number of individual DSM-5 criteria met for OUD. Mild or moderate OUD means two to five criteria were met. Severe OUD means six or more criteria were met. Persons who did not meet criteria for an active OUD in the past year and received OUD treatment in the past year were assumed to have had an active OUD in the past and to have successfully treated OUD with continued treatment.
†††††† By definition, 100% of adults with OUD or who received OUD treatment were classified as needing OUD treatment.
§§§§§§ By definition, among adults who 1) did not meet the criteria for an active OUD based on past-year symptoms and 2) were classified as needing OUD treatment in the past year; 100% received OUD treatment.

a past-year SUD involving a substance other than opioids (51.8%), than among those without these characteristics or exposures. The percentage who received medications for OUD was higher for men (51.0%) than for women (39.5%), for those aged 35–49 years (68.4%) than for those in other age groups (18–25 = 19.9%; 26–34 = 44.1%; ≥50 = 32.3%), and for those with severe OUD (80.7%) than for those with mild or moderate OUD (55.5%).

Discussion

Among adults needing OUD treatment in 2022, only 25% received medications for OUD; 30% received OUD treatment not including these medications. These findings underscore disparities in treatment and a need to increase use of medications for OUD. Lower percentages of Black and Hispanic adults, who have been particularly affected by increasing overdose deaths (*3*), received any OUD treatment compared with White adults. Among adults who received OUD treatment, lower percentages of women and younger and older adults received medication. Higher proportions of persons with other drug use or misuse or who had ever been arrested and booked received medications for OUD; these findings might reflect greater awareness of treatment need or contact with systems linking persons to OUD treatment. Higher percentages receiving medication among adults with severe OUD might reflect perception or more clinician recognition of treatment need among adults with six or more OUD symptoms. Still, among adults with severe OUD, fewer than one half (80.7% of the 53.0% who received any OUD treatment) received medications for OUD, underscoring the large gap in receipt of evidence-based treatment, even for this highly affected group.

Approximately 43% of adults needing OUD treatment did not perceive that they needed it, consistent with previous findings that large proportions of persons with SUDs did not feel that they needed treatment.[¶¶] Patients taking opioids only as prescribed (who constitute a majority of persons meeting OUD criteria[***]) might be particularly unlikely to perceive a need for OUD treatment, even if they experience OUD symptoms. If clinicians suspect that patients prescribed opioids for pain have OUD on the basis of patient concerns or behaviors, or if patients experience harm from opioids or choose to but are unable to taper opioids, clinicians should discuss their concern with the patient, provide an opportunity for the patient to disclose related concerns or problems, and assess for OUD using DSM-5 criteria (*4*). Nonjudgmental support and harm reduction approaches can establish rapport, build trust, and reduce overdoses and other harms among persons not ready for treatment.[†††]

Several factors limit access to medications for OUD despite strong recommendations for their use (*4*,*5*). Some clinicians prefer an approach that does not include medications, and some hold beliefs equating medications for OUD with illegal substance use (*6*). Methadone for OUD can only be dispensed from a Substance Abuse and Mental Health Services Administration–certified opioid treatment program (OTP); many U.S. counties have no OTP.[§§§] Buprenorphine or naltrexone can be prescribed in any setting, but several barriers exist. Many facilities treating OUD do not offer these medications; some do not accept clients using medications for OUD.[¶¶¶] In addition, large proportions of pharmacies do not stock buprenorphine.[****] Payors, including many state Medicaid programs, have restrictions (such as prior authorization) that can delay dispensing of some buprenorphine formulations (*7*). Fewer than 10% of physicians[††††] obtained the waiver that, until 2023, was required to prescribe buprenorphine for OUD. Primary care physicians have reported barriers to obtaining the waiver and prescribing buprenorphine, including too little experience treating OUD, concern about being inundated with requests for buprenorphine, lack of access to addiction or behavioral health specialists, and acquiring the training required to obtain a waiver (*8*).

Limitations

The findings in this report are subject to at least five limitations. First, the number of persons needing OUD treatment presented in this report are likely underestimates; NSDUH is a household survey, includes persons experiencing homelessness only if they use shelters, and does not include residents of institutional group quarters such as jails. Second, NSDUH response rates in 2021 and 2022 were lower than in previous years, which might increase the potential for nonresponse bias resulting in over- or underestimates. Third, sample size limited some comparisons of OUD treatment across racial and ethnic groups, prohibited comparisons across health insurance coverage, and precluded treatment estimates specific to persons with mild OUD or with moderate OUD. Medications for OUD are strongly recommended, particularly for moderate or severe

[¶¶] https://www.samhsa.gov/data/sites/default/files/reports/rpt29393/2019NSDUHFFRPDFWHTML/2019NSDUHFFR090120.htm
[***] https://www.samhsa.gov/data/report/2021-nsduh-annual-national-report
[†††] https://store.samhsa.gov/product/tip-63-medications-opioid-use-disorder/pep21-02-01-002
[§§§] https://www.everycrsreport.com/files/20190624_R45782_ed39091fadf888655ebd69729c3180c3f7e550f6.pdf
[¶¶¶] https://www.samhsa.gov/data/sites/default/files/reports/rpt35313/2020_NSSATS_FINAL.pdf
[****] https://www.samhsa.gov/sites/default/files/policy-priority-roundtable-buprenorphine-access-pharmacies.pdf
[††††] https://aspe.hhs.gov/sites/default/files/documents/facbce1704035fded1034192d148304d/buprenorphine-practice-guideline-early-impacts.pdf

Summary

What is already known about this topic?

Although medications for opioid use disorder (OUD) substantially reduce mortality, they are underused.

What is added by this report?

In 2022, among the 4% of U.S. adults who needed OUD treatment, only 25% received recommended medications. A larger percentage (30%) received treatment without medications. Higher percentages of White than Black or African American or Hispanic or Latino adults received any treatment. Higher percentages of men than women and of adults aged 35–49 years than other adults received medications.

What are the implications for public health practice?

Expanded communication about the effectiveness of medications for OUD is needed. Clinicians and other treatment providers should offer or arrange evidence-based treatment, including medications for OUD. Pharmacists and payors can support making these medications available without delays.

OUD (*4*,*5*). However, Food and Drug Administration approvals for medications for OUD were based on data for patients with opioid dependence as defined by *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; application to DSM-5–defined mild OUD is less clear (*5*). Understanding specific treatment needs for patients with mild OUD merits further study. Fourth, cross-sectional survey responses were insufficient to ascertain the presence of OUD symptoms before the preceding year. Finally, OUD was a proxy diagnosis based on respondents' answers to questions corresponding to diagnostic criteria; respondents were not asked whether they had ever received a clinical diagnosis of OUD.

Implications for Public Health Practice

The shift from use of heroin to illegally manufactured fentanyl has increased the likelihood that overdoses are fatal (*9*), adding urgency to the need to provide effective care for persons with OUD (*2*). This need is particularly acute for Black and Hispanic adults (*3*,*10*), women, and younger and older adults. Population-level interventions across a variety of settings are needed to link persons to care,[§§§§,¶¶¶¶] initiate medications for OUD,[*****] and support sustained treatment and recovery.

Expanded communication about effectiveness of medications for OUD is needed to reduce nonfatal and fatal overdoses. Increasing awareness among persons who use drugs and their families, friends, and other contacts that medications for OUD are effective is critical.[†††††] Clinicians and treatment providers should offer or arrange evidence-based treatment, including medications for OUD (*4*). As of 2023, a waiver is no longer required to prescribe buprenorphine. All clinicians with a current Drug Enforcement Administration registration including Schedule III authority may prescribe buprenorphine for OUD if permitted by applicable state law.[§§§§§] Guidance (*4*,*5*) and mentoring[¶¶¶¶¶] are available for diagnosis and management of opioid use disorder. Pharmacists and payors can work to make these life-saving medications available without delays.

[§§§§] https://stacks.cdc.gov/view/cdc/119464
[¶¶¶¶] https://www.cdc.gov/overdose-prevention/php/od2a/prevention.html
[*****] https://www.samhsa.gov/sites/default/files/grants/pdf/fy-2024-sor-nofo.pdf
[†††††] https://pcssnow.org/courses/guide-for-families-medications-for-opioid-use-disorder-2/
[§§§§§] www.samhsa.gov/medications-substance-use-disorders/waiver-elimination-mat-act
[¶¶¶¶¶] https://pcssnow.org/mentoring/

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All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. Wilson M. Compton reports ownership of stock in General Electric Company (sold September 2022), 3M companies, and Pfizer, Inc. Yngvild Olsen reports providing medical care to patients with opioid use disorder as an approved, part-time (4 hours per week) external activity to her work at the Substance Abuse and Mental Health Services Administration. No other potential conflicts of interest were reported.

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Persistent Transmission of Circulating Vaccine-Derived Poliovirus — Somalia, January 2017–March 2024

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Abstract

Since the launch of the Global Polio Eradication Initiative in 1988, substantial progress has been made in the interruption of wild poliovirus (WPV) transmission worldwide: global eradication of WPV types 2 and 3 were certified in 2015 and 2019, respectively, and endemic transmission of WPV type 1 continues only in Afghanistan and Pakistan. After the synchronized global withdrawal of all serotype 2 oral poliovirus vaccines (OPVs) in 2016, widespread outbreaks of circulating vaccine-derived poliovirus type 2 (cVDPV2) have occurred, which are linked to areas with low population immunity to poliovirus. Officials in Somalia have detected ongoing cVDPV2 transmission since 2017. Polio vaccination coverage and surveillance data for Somalia were reviewed to assess this persistent transmission. During January 2017–March 2024, officials in Somalia detected 39 cVDPV2 cases in 14 of 20 regions, and transmission has spread to neighboring Ethiopia and Kenya. Since January 2021, 28 supplementary immunization activities (SIAs) targeting cVDPV2 were conducted in Somalia. Some parts of the country are security-compromised and inaccessible for vaccination campaigns. Among 1,921 children with nonpolio acute flaccid paralysis, 231 (12%) had not received OPV doses through routine immunization or SIAs, 95% of whom were from the South-Central region, and 60% of whom lived in inaccessible districts. Enhancing humanitarian negotiation measures in Somalia to enable vaccination of children in security-compromised areas and strengthening campaign quality in accessible areas will help interrupt cVDPV2 transmission.

Introduction

Somalia has experienced decades of civil unrest since the 1991 fall of the central government, resulting in a complex, ongoing humanitarian emergency, population displacement, and health system collapse, especially in the South-Central region (*1*). Somalia's administrative structure comprises 118 districts, 20 regions, and seven federal states, including the Banadir region (which includes the capital, Mogadishu); however, Somaliland operates autonomously in the north (*2*). As of December 2023, insurgents maintained partial or complete control in nearly one half of the 81 South-Central districts, obstructing house-to-house immunization activities for 17% of targeted children. Despite challenges, Somalia interrupted indigenous wild poliovirus (WPV) type 1 (WPV1) transmission in 2002 and stopped two WPV1 outbreaks resulting from importations during 2005–2007 and 2013–2014 (*2*,*3*).

In 2016, following the 2015 eradication of WPV type 2 (WPV2), a global, synchronized switch from the use of trivalent oral poliovirus vaccine (tOPV) (containing Sabin vaccine strain serotypes 1, 2, and 3) to bivalent OPV (bOPV) (containing types 1 and 3) was implemented to mitigate circulating vaccine-derived poliovirus (cVDPV) type 2 (cVDPV2) emergence risks (*3*,*4*). Emergence of cVDPVs (vaccine viruses that have reverted to neurovirulence) can occur after prolonged circulation of vaccine virus in underimmunized communities (*5*,*6*). Somalia's immunization schedule includes 4 doses of bOPV and 2 doses of injectable inactivated poliovirus vaccine (IPV), which contains all three serotypes. Since 2017, national 3-dose OPV coverage in Somalia among infants aged ≤12 months through routine immunization has been estimated at 47%. National coverage with 1 IPV dose has been estimated at 42% since 2018 (*7*). Before the switch to bOPV, Somalia successfully interrupted prolonged (2008–2013) cVDPV2 transmission. In October 2017, Somalia detected cVDPV2 transmission in Banadir, followed by detection of cVDPV type 3 (cVDPV3) 4 months later. This report describes the ongoing activities and challenges in interrupting transmission of cVDPV2 in Somalia from 2017 to the present, highlighting progress and identifying areas requiring focused intervention.

Methods

Review of Somalia Polio Immunization Coverage and Vaccination Campaign Data

Surveillance and supplementary immunization activity (SIA)* data during January 2017–March 2024 were provided by the World Health Organization (WHO) Somalia Country Office (WHO Somalia). Routine 2017–2022 childhood immunization data (reported through June 26, 2023) are from WHO and UNICEF estimates of national immunization coverage reports (*7*). To determine SIA performance quality, administrative data and postcampaign surveys, including lot

* SIAs are mass immunization campaigns intended to supplement the routine immunization systems and generally target children aged <5 years with OPV, regardless of previous vaccination history. In Somalia, SIAs are conducted primarily through house-to-house and site-to-site vaccination modalities.

quality assurance sampling (LQAS)[†] surveys (implemented in accessible areas only), were reviewed. Because a national census has not been conducted in >40 years, target population estimates are based on United Nations' estimates. In 2023, WHO Somalia conducted a village accessibility survey, marking villages that were unreachable during SIAs because of insecurity as inaccessible (WHO Somalia data manager, personal communication, May 15, 2024).

Review of Somalia Polio Surveillance

Acute flaccid paralysis surveillance. Acute flaccid paralysis (AFP) surveillance detects the recent onset of limb weakness among children. WHO performance indicator standards for AFP surveillance sufficiently sensitive to detect a case of polio in outbreak areas include the detection of three or more nonpolio AFP cases[§] per 100,000 children aged <15 years per year and the collection of adequate stool specimens[¶] from ≥80% of persons with AFP. During AFP case investigations, histories recalled by caretakers of the number of poliovirus vaccine doses received by the child are recorded.

Environmental surveillance. Environmental surveillance (ES) for poliovirus in Somalia is conducted via systematic sewage sampling at 17 sites in 11 administrative regions in six states. Genomic sequence analyses of the region coding the viral capsid protein (VP1) were reviewed to determine genetic relationships among polioviruses identified in ES samples and stool specimens from AFP patients. These activities were reviewed by CDC, deemed not research, and conducted consistent with applicable federal law and CDC policy.[**]

[†] LQAS is a survey method to determine the quality of vaccination activities after SIAs in predefined areas (lots), such as health districts and involves dividing the population into lots to determine vaccination status. If the number of unvaccinated children in the sample exceeds three, the lot fails (i.e., at a pass threshold of ≥90%), and mop-up activities (i.e., search and vaccination of children recently missed) are recommended. If the 90% threshold is met, the lot is classified as having passed.

[§] Nonpolio AFP cases are discarded as polio cases because they do not have laboratory or other evidence of poliovirus as the cause of the paralysis. The standard WHO performance indicator nonpolio AFP target for sufficiently sensitive surveillance to detect a case of polio for countries with outbreaks or endemic transmission is three or more cases per 100,000 children aged <15 years per year. https://polioeradication.org/wp-content/uploads/2020/02/Polio-surveillance-status-report-2019.pdf

[¶] Adequate stool specimens are defined as two stool specimens of sufficient quality for laboratory analysis (i.e., arriving in good condition at a WHO-accredited laboratory with reverse cold chain maintained, without leakage or desiccation, and with proper documentation), collected ≥24 hours apart, both within 14 days of paralysis onset. The global standard surveillance performance indicator target is collection of adequate stool specimens from 80% or more of AFP cases.

[**] 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

Immunization Activities and Coverage

During the reporting period, 28 SIAs using OPV type 2 (OPV2) or IPV were conducted, including seven national immunization days, 12 subnational immunization days, and nine smaller, targeted campaigns.[††] Twelve SIAs occurred in 2021, six in 2022, eight in 2023, and two in early 2024. Vaccines used included monovalent Sabin-strain OPV2 (mOPV2) (15 SIAs), novel OPV2 (nOPV2, further attenuated version of Sabin mOPV2 with enhanced genetic stability) (eight), tOPV (three), and IPV (two). During 2017–2020, 17 bOPV campaigns were conducted.

Among 1,921 children aged 6–59 months with nonpolio AFP reported during January 2017–March 2024, caretakers reported that 730 children (38%) had received ≥3 OPV doses through routine immunization, and that 538 (28%) had received ≥1 IPV dose; 1,364 (71%) children had received ≥3 OPV doses during SIAs. Overall, 231 (12%) children with nonpolio AFP were reported to have received no OPV doses through routine immunization or SIAs (i.e., zero-dose children); among these children, 219 (95%) were from districts in the South-Central region and 139 (60%) whose accessibility status was recorded were from inaccessible districts. As of December 2023, an estimated 472,743 children (representing 17% of children in Somalia aged <5 years) remain unreached for vaccination in the South-Central region because of security reasons (Figure 1).

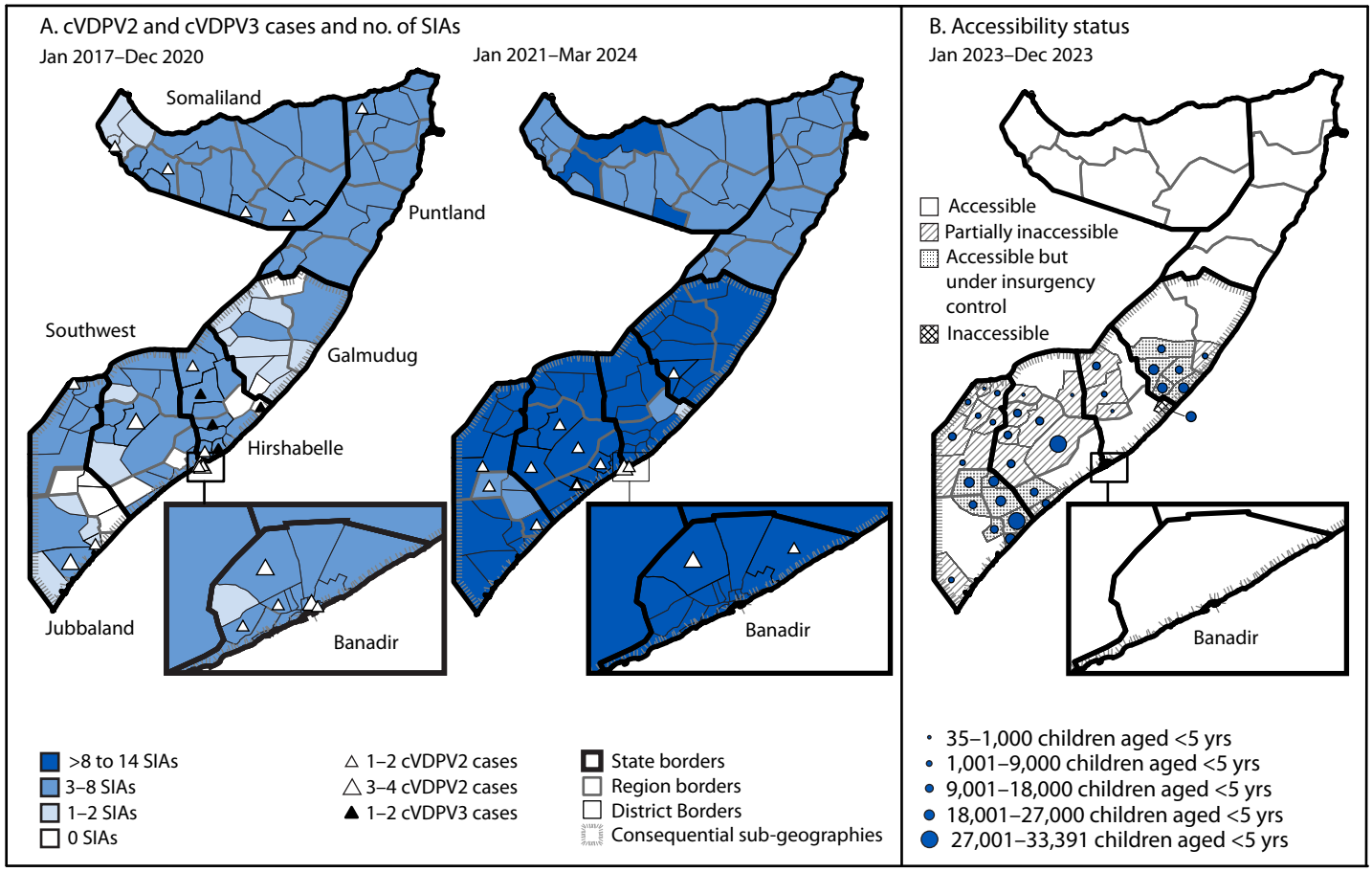
AFP Surveillance

As of March 2024, the Somalia AFP surveillance system comprised 983 active surveillance sites and included a total of 796 village polio volunteers situated in all regions; 71% of these volunteers are in districts in the South-Central region. During 2017–2024, Somalia's national nonpolio AFP rate consistently reached or exceeded three cases per 100,000 persons aged <15 years per year (annual range during 2021–2024 = 3.8–5.2). However, Banadir, the state reporting the highest number of cVDPV2 cases, consistently missed this target (range = 1.8–2.9) (Table).

The 80% stool specimen adequacy target was met each year during 2017–2023 (annual range = 92.4%–99.1%) and in each state except Galmudug (72.2%) in the first quarter of 2024. However, the proportion of stool specimens that arrived at

[††] Two fractional IPV campaigns (a dose-sparing strategy that uses one fifth of a standard IPV dose, administered intradermally), one measles-polio integrated campaign, one case-response campaign, and five short-interval additional dose OPV campaigns (<14 days between doses).

FIGURE 1. Reported cases* of polio caused by circulating vaccine-derived poliovirus type 2 and type 3, number of oral polio vaccine campaigns conducted, per district and period (A), and accessibility status (B)† among children aged <5 years — Somalia, January 2017–March 2024§



Source: WHO Geographic Information System Center for Health Administrative Boundaries, WHO Somalia population under 5-year estimates, accessibility status and reported cVDPV cases.
Abbreviations: cVDPV = circulating vaccine-derived poliovirus; cVDPV2 = cVDPV type 2; cVDPV3 = cVDPV type 3; SIA = supplementary immunization activity; WHO = World Health Organization.
* Total cVDPV2 cases by period: January 2017–March 2024 = 39; 2017–2020 = 23 (including one cVDPV2/cVDPV3 coinfection); January 2021–March 2024 = 16.
† Children with poliovirus vaccine partially accessible are those from districts where parts of the district are under insurgency control, and no SIAs are conducted in those areas. Children with poliovirus vaccine accessible but under insurgency control are those from districts under complete control of insurgents but SIA operations are reportedly conducted with no verification or monitoring mechanisms in place. Children with poliovirus vaccine inaccessible are those from districts under full control of insurgents and no SIA operations are conducted.
§ Data as of May 16, 2024.

the WHO-accredited laboratory in Kenya within the recommended 3 days after collection decreased from 44% in 2017 to 9% in 2022 and 2023.

Environmental Surveillance

During January 2017–March 2024, a total of 73 cVDPV2 isolates were detected across four of the six states with ES sites; Banadir state accounted for 66 (90%) detections. Collection sites in Somalia increased from four in 2017 to 17 in 2023.

Epidemiology of cVDPV Cases

cVDPV2 cases. During 2017–2024, 39 cVDPV2 cases were reported from all seven states, including 34 (87%) from districts in the South-Central region§§ (Figure 2) (Supplementary

§§ Among 39 cVDPV2 cases reported during 2017–2024, 34 from the South-Central Region included those in the following districts: Banadir state: 12, South-West: nine (Bay [seven] and Lower Shabelle [two]), Jubbaland: eight (Gedo [two], Lower Juba [four], and Middle Juba [two]), Somaliland: four (Awdal [one], Galbeed [one], Sool [one], and Togdher [one]), Hirshabelle state: three (Hiran [two] and Middle Shabelle [one]), Galmudug: two (Galgadud), and Puntland: one (Bari).

TABLE. Acute flaccid paralysis surveillance performance indicators and administrative coverage, by state — Somalia, January 2021–March 2024*

Country/State	AFP surveillance performance indicators								Administrative coverage† % vaccinated			
	2021		2022		2023		2024§					
	No. of AFP cases (% with adequate stool specimens¶)	NPAFP rate**	No. of AFP cases (% with adequate stool specimens¶)	NPAFP rate**	No. of AFP cases (% with adequate stool specimens¶)	NPAFP rate**	No. of AFP cases (% with adequate stool specimens¶)	NPAFP rate**	2021	2022	2023	2024
Somalia	**350 (93)**	**4.1**	**355 (96)**	**3.8**	**431 (92)**	**4.6**	**143 (88)**	**5.9**	**93**	**96**	**96**	**92**
Banadir	21 (95)	1.8	35 (97)	2.2	35 (80)	2.4	12 (92)	3.5	98	97	99	94
Galmudug	36 (92)	8.1	23 (100)	4.0	41 (93)	7.0	18 (72)	11.4	97	98	97	93
Hirshabelle	34 (94)	5.3	29 (97)	4.0	31 (94)	4.3	13 (85)	6.1	98	99	100	94
Jubbaland	60 (93)	5.2	50 (94)	4.2	69 (94)	5.9	29 (93)	9.3	92	94	93	91
Puntland	34 (97)	2.4	45 (100)	3.2	48 (96)	3.4	18 (94)	5.1	93	98	108	—††
Somaliland	109 (94)	6.7	103 (95)	5.9	124 (94)	6.9	36 (86)	7.8	92	91	89	—††
Southwest	56 (89)	2.8	70 (94)	3.2	83 (90)	3.7	17 (94)	3.0	93	96	95	91

Abbreviations: AFP = acute flaccid paralysis; NPAFP = nonpolio acute flaccid paralysis.

* Data as of May 16, 2024.

† Proportion of targeted children aged <5 years who received a dose of poliovirus vaccine during a supplemental immunization activity.

§ NPAFP rate annualized from AFP surveillance data through March 2024.

¶ Adequate stool specimens are defined as two stool specimens of sufficient quality for laboratory analysis, collected ≥24 hours apart, both within 14 days of paralysis onset, and arriving in good condition at a World Health Organization–accredited laboratory with reverse cold chain maintained, without leakage or desiccation, and with proper documentation.

** Cases per 100,000 persons aged <15 years. The surveillance performance indicator target is three or more NPAFP cases per 100,000 persons aged <15 years per year. The NPAFP rate was not calculated for regions with <100,000 persons aged <15 years. https://polioeradication.org/wp-content/uploads/2020/02/Polio-surveillance-status-report-2019.pdf

†† No administrative coverage data reported for 2024 to date.

Table, https://stacks.cdc.gov/view/cdc/157501) (Village accessibility survey, WHO Somalia, unpublished data, 2024). The remaining five cases were reported from Somaliland (four) and Puntland (one) during 2019–2020. Overall, the mean age of patients was 36 months (range = 3–108 months) and 49% were female. Among the 39 cVDPV2 patients, 20 (51%) reportedly had received zero routine immunization or SIA OPV doses.

cVDPV3 cases. In 2018, states Hirshabelle and Jubbaland reported five and two cVDPV3 cases, respectively (Figure 2). Among these cases, three patients had received no routine immunization or SIA OPV doses, and four had received >3 SIA doses. No cVDPV3 has been isolated since September 2018.

Genomic Sequence Analysis of cVDPV Isolates

In 2017, genomic sequence analysis of circulating cVDPV2 strains indicated protracted circulation of the SOM-BAN-1 cVDPV2 emergence occurred ≥3 years before detection. The most recent case in this emergence group was detected in Jubbaland in March 2024. During January 2021–March 2024, 17 (59%) of 29 isolates were detected in Banadir, including 10 of 16 orphan viruses,¶¶ which indicates substantial gaps in surveillance.

¶¶ Orphan viruses are ≥1.5% divergent from their closest genetic match (i.e., ≤98.5% identity) and can indicate gaps in AFP surveillance based on the Global Polio Laboratory Network analyses of genetic divergence of the 900-nucleotide VP1 capsid protein coding region of poliovirus isolates.

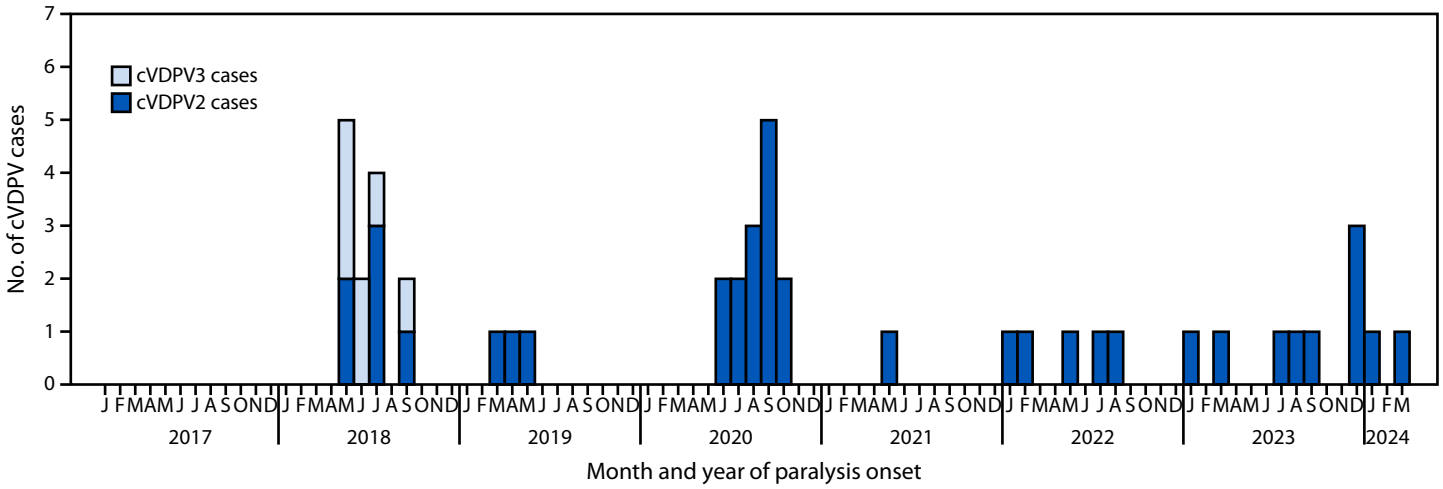
In December 2023, a second cVDPV2 emergence (SOM-BAY-1) was identified in southern Somalia and was most recently detected in January 2024. In addition, a cVDPV2 isolated from an ES sample collected in Banadir in May 2022 was from the Yemen cVDPV2 emergence group YEM-TAI-1; no further detections have occurred in Somalia to date.

Discussion

Since 2017, 39 cVDPV2 cases have been detected in 14 of Somalia's 20 regions. Many children in regions with ongoing poliovirus transmission have been inaccessible for more than a decade. An estimated 472,743 unreachable children in Somalia's South-Central Region in the 2023 village-level inaccessibility survey represent approximately one in six (17%) children aged <5 years in Somalia. Along with chronically low routine immunization coverage, the quality of SIAs has also been compromised, even in accessible areas. Despite numerous SIAs responding to cVPDV2 transmission, caretakers of approximately one half of patients reported that the child had received no OPV doses.

Under new leadership, the Somalia polio team has undertaken several initiatives, including improving health worker training, expanding transit vaccination to reach mobile populations, enhancing SIA monitoring and postcampaign assessment, and working with humanitarian negotiators to gain temporary access to security-compromised areas. The

FIGURE 2. Number of circulating vaccine-derived poliovirus type 2 and type 3 cases, by month — Somalia, January 2017–March 2024*,†



Abbreviations: cVDPV2 = circulating vaccine-derived poliovirus type 2; cVDPV3 = circulating vaccine-derived poliovirus type 3; bOPV = bivalent oral poliovirus vaccine (OPV); mOPV2 = monovalent OPV type 2; NID = national immunization day; OPV = oral poliovirus vaccine; nOPV2 = novel OPV type 2; SNID = subnational immunization day; tOPV = trivalent OPV.

* OPV campaigns were conducted as follows: three bOPV NIDs were conducted during 2017 (February, April, and December); three during 2018 (May, July, October, and November); two during 2019 (March and November); and three during 2020 (March, August, and December). Two mOPV2 NIDs were conducted during 2021 (June and July) and two in 2022 (March and June). Two nOPV2 NIDs were conducted during 2023 (August and November). One bOPV SNID was conducted during 2019 (April). One mOPV2 SNIDs was conducted during 2017 (December); four during 2018 (January, July, August, and September); four during 2019 (May, June, August, and September); two during 2020 (September and October); three in 2021 (February, March, and October); and three in 2022 (February, August, and October). One tOPV SNID was conducted during 2022 (November) and one in 2023 (February). Three nOPV2 SNIDs were conducted during 2023 (May, June, and July), and two during 2024 (February and March).

† Data as of May 16, 2024.

Prime Minister of Somalia will lead a recently established Task Force on Polio Eradication and Immunization. The recent introduction of trained third-party monitors and enhanced postcampaign analysis under the new leadership in 2023 has led to a more realistic portrayal of LQAS outcomes. The decline in the percentage of districts passing LQAS assessments, from 87% in 2021 to 55% in November 2023, likely signals improved accuracy of SIA monitoring quality, indicating that inaccessibility is only one of multiple factors preventing children from being immunized. Comprehensively addressing SIA preparedness challenges and campaign implementation bottlenecks, strengthening surveillance and cross-border measures, and prioritizing humanitarian negotiation activities are critical to improving SIA implementation and interrupting cVDPV2 transmission.

Limitations

The findings in this report are subject to at least five limitations. First, SIA data were incomplete for certain years. Second, uncertainty regarding inaccessibility limits accurate assessment of both surveillance and immunization activities. Third, receipt of OPV doses reported by caretakers might be subject to recall bias that could result in over- or underestimating coverage. Fourth, data on SIA OPV doses for persons with nonpolio AFP does not distinguish OPV2 from bOPV and might obscure specific patterns of immunity linked to each vaccine type. Finally, in the absence of a recent census, estimating accurate population data for target groups in Somalia remains challenging.

Summary

What is already known about this topic?

Circulating vaccine-derived polioviruses (cVDPVs), associated with oral polio vaccines, can cause paralysis among persons in areas with low population immunity to polioviruses. In Somalia, cVDPV type 2 (cVDPV2) transmission has been ongoing since 2017, highlighting considerable challenges in controlling transmission.

What is added by this report?

Since the 2016 global withdrawal of type 2 oral poliovirus vaccine, cVDPV2 has continued to circulate in Somalia, with 39 cases documented across multiple regions during 2017–2024. Despite extensive immunization activities, children in large portions of the country remain inaccessible, particularly in the South-Central region.

What are the implications for public health practice?

Focusing on innovative strategies to vaccinate children in inaccessible areas, addressing operational challenges, and ensuring quality immunization campaigns in accessible regions are critical to interrupting cVDPV2 transmission in Somalia.

Implications for Public Health Practice

Interrupting cVDPV transmission in Somalia is critical to keeping the Horn of Africa polio-free and interrupting cVDPV2 transmission worldwide. Strategies to achieve this goal include focusing on innovative approaches to vaccinate children in inaccessible areas, addressing operational challenges, and ensuring quality immunization campaigns in accessible regions.

Acknowledgments

Mebrahtu Mahtsentu Gebrekidan, World Health Organization Somalia; Adam Bjork, Steven Wassilak, Global Immunization Division, Global Health Center, CDC; Jeff Higgins, Tess Palmer, Geospatial Research, Analysis and Services Program, Agency for Toxic Substances and Disease Registry, CDC. Assegid Kebede, The Task Force for Global Health, Inc.

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Notes from the Field

Multidisciplinary Approach to Investigating *Brucella canis* Exposures — South Carolina, September 2023

Tori S. Moore, DVM[1,2]; Ashlyn Lancaster, MPH[2]; Julia Nelson, MSPH[2]; Jennifer Sanders[2]; Marnie Johnson, MSN[2]; Amanda Moore[3]; Marco Tori, MD[2,4]

Brucella canis, a rarely diagnosed bacterial zoonotic organism that causes brucellosis in domestic and wild dogs, is considered an emerging zoonotic threat with worldwide distribution (*1*). *B. canis* infections in dogs and humans are likely underreported because symptoms are nonspecific, the organism is difficult to detect, and diagnostic tests vary widely in accuracy and reliability (*1–3*). Humans and animals can become infected through contact with contaminated canine body fluids and aborted materials. Symptoms in dogs generally include infertility and abortions; however, infected dogs might also be asymptomatic. Signs and symptoms in humans are nonspecific and include fever, joint pain, and fatigue; however, illness can be debilitating, including endocarditis, splenomegaly, or neurologic symptoms. No serologic tests for *B. canis* are approved for human diagnosis, making case identification challenging.

On September 27, 2023, South Carolina's Department of Health and Environmental Control was notified by a local veterinarian that multiple persons had been exposed to a pregnant stray dog that had received a preliminary diagnosis of *B. canis* by indirect fluorescent antibody (IFA) testing after aborting her puppies. Epidemiologists and public health veterinarians investigated to confirm the animal's diagnosis, identify additional human and animal exposures, and guide human treatment decisions. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.*

Investigation and Outcomes

On August 14, a stray dog wandered onto the property of a family of four that included two children and a dog. The family fostered the dog for 2 weeks, and on August 28, the dog was adopted by a family of five that included an infant and a toddler, as well as two dogs and two ferrets. On September 18, the dog was taken to a veterinarian after the owners observed vaginal discharge. The owners were informed the dog was pregnant; she aborted seven puppies on September 23, at which time the veterinarian submitted a *B. canis* IFA screening test. The dog was discharged the following day and kept isolated at home while awaiting results. On September 27, the *B. canis* IFA screening test result was reported as positive.

Members of the foster and adoptive families and the veterinary clinic were interviewed by local epidemiologists to evaluate animal and human exposure risk. A total of 17 persons and five animals were exposed to the dog, including the foster family (and their dog), the adoptive family (and their two dogs and two ferrets), and eight veterinary clinic staff members.

On October 2, South Carolina's Public Health Laboratory confirmed *B. canis* infection in the stray dog from culture and polymerase chain reaction testing of vaginal secretions; because of the poor prognosis (*2*) and the risk for zoonotic transmission, the dog was euthanized. The adoptive family's two household dogs, that had contact with the infected dog while she was symptomatic, were screened using IFA testing; both received negative results. The adoptive family declined recommended 8-week follow-up testing for the household dogs (*2*). Three members of the adoptive family had directly handled aborted materials and puppies without personal protective equipment (PPE); because of these high-risk exposures, they received postexposure prophylaxis using a regimen extrapolated from existing brucellosis protocols† and were monitored for symptoms for 24 weeks (*4*). All other exposed persons and animals, including the foster family and their dog, had lower-risk exposures, including collecting specimens while using PPE, feeding, petting, and walking the dog outside or, in the case of the ferrets, casual household contact. They were instructed to monitor for symptoms. At 24 weeks, no exposed persons reported symptoms in themselves or their pets.

Preliminary Conclusions and Actions

This investigation, including collaboration between local veterinarians and pet owners, epidemiologists and public health veterinarians, physicians, and laboratorians, confirmed the diagnosis of *B. canis* in a stray dog and exposures of humans and pets. A multidisciplinary team of public health professionals collaborated to evaluate risk, direct animal testing, and recommend treatment. Since a serologic test for diagnosis in humans is not available, symptom monitoring for exposed persons and administering postexposure prophylaxis for persons with high-risk exposures was recommended.

Veterinarians should consider *B. canis* in a dog experiencing abortion or infertility. Testing should be performed to confirm clinical suspicion of *B. canis* in dogs (*2*). Molecular or rapid

* 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.

† Three weeks of doxycycline and rifampin.

Summary

What is already known about this topic?

Brucella canis can be transmitted from dogs to humans through contaminated canine body fluids. No approved serologic tests for humans exist, making case identification challenging. Because cases are underreported, information on *B. canis* investigations is limited.

What is added by this report?

A pregnant stray dog exposed nine members of two households, eight veterinary clinic staff members, and five household pets before receiving a confirmed brucellosis diagnosis. A multidisciplinary approach to investigation and monitoring was implemented to identify exposures and recommend prophylaxis for humans. No secondary cases occurred.

What are the implications for public health practice?

Risk communication and testing of dogs clinically suspected to be infected with *B. canis* are critical for reducing spread of *B. canis* among dogs and to humans.

agglutination tests for dogs can assist in reducing spread of *B. canis* among dogs and guide treatment for exposed persons. Stray dogs or dogs housed in breeding kennels warrant a higher index of suspicion because of increased prevalence of brucellosis in these animal populations (*1*,*2*). Because no vaccine is available to prevent *B. canis* infection in dogs or humans, use of appropriate PPE by veterinary staff members examining dogs during delivery or dogs that are experiencing abortion is critical (*2*,*4*). Communication of the risk to pet owners and veterinary staff members is essential for reducing risk. Veterinarians should be familiar with the disease reporting requirements for brucellosis in their state or territory.

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All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

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ISSN: 0149-2195 (Print)