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# Dengue Outbreak and Response — Puerto Rico, 2024

Fhallon Ware-Gilmore, PhD[1]; Dania M. Rodriguez, PhD[2]; Kyle Ryff, MPH[3]; Jomil M. Torres, MS[4]; Miladys Perez Velez, MPH[4]; Cristhian T. Torres-Toro, MPH[4]; Gilberto A. Santiago, PhD[2]; Aidsa Rivera, DrPH[2]; Zachary J. Madewell, PhD[2]; Yashira Maldonado, MS[2]; Iris Cardona-Gerena, MD[4]; Grayson C. Brown, PhD[5]; Laura E. Adams, DVM[2]; Gabriela Paz-Bailey, MD, PhD[2]; Melissa Marzán-Rodriguez, DrPH[4]

## Abstract

Dengue, a mosquitoborne viral infection, is a public health threat in Puerto Rico, where multiple dengue virus (DENV) serotypes circulate. Dengue causes an acute febrile illness that can progress to severe disease or death. The last outbreak declared by the Puerto Rico Department of Health occurred during 2013. In January 2024, the number of dengue cases in Puerto Rico surpassed the epidemic threshold and remained elevated, prompting the Puerto Rico Department of Health to declare a public health emergency in March 2024. In collaboration with CDC, a dengue outbreak response was initiated to monitor the outbreak and implement vector-control measures alongside public health campaigns to raise awareness about increasing dengue case numbers and strategies to prevent mosquito bites. During 2024, a total of 6,291 confirmed dengue cases were reported; the highest numbers of cases were reported in the municipalities of San Juan (1,200; 17.3%), Carolina (354; 5.1%), and Rincón (252; 3.6%). DENV serotype 3 predominated, accounting for 59.2% of cases with known serotype. Approximately one half of ill patients (52.3%) required hospitalization, with the highest percentages of hospitalizations (33.9%) and severe dengue cases (28.4%) occurring among persons aged 10–19 years. Overall, severe dengue was identified in 4.2% of cases, with 11 reported fatalities (0.2%). Transmission remains elevated in multiple regions, underscoring the need for tailored public health measures, including vaccination among eligible populations, vector management, community outreach, and provider education to facilitate improved outcomes. To reduce the risk for mosquito bites, residents of and visitors to Puerto Rico should consider using repellents, wearing protective clothing, and staying in places with door and window screens.

## Introduction

Dengue is a mosquitoborne viral infection primarily transmitted by *Aedes aegypti* mosquitoes. Dengue is caused by four distinct dengue virus (DENV) serotypes (DENV-1–4), and manifestations range from asymptomatic infection to severe disease (*1*). Signs and symptoms typically appear 3–10 days after exposure and include fever, muscle and joint pain, retro-orbital pain, rash, nausea, and vomiting. Although no antiviral treatment is available, early recognition of warning signs of severe dengue, a life-threatening complication of dengue, proper triage, supportive care, and follow-up are crucial to reducing morbidity and mortality (*2*). The Dengvaxia dengue vaccine (Sanofi-Pasteur)* is recommended for persons aged 9–16 years who live in areas of the United States with endemic dengue and who have had a confirmed previous dengue

* https://www.fda.gov/media/124379/download

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infection; vaccination provides protection against symptomatic disease and hospitalization from dengue.[†]

Approximately 13 million dengue cases were reported to the Pan American Health Organization from North, Central, and South America in 2024 (*3*). DENV transmission is frequent in Puerto Rico, with seasonal peaks occurring July–November and outbreaks every 3–7 years (*4*). The dengue outbreak in 2024 marks Puerto Rico's first since 2013, denoting an unusually long 11-year gap. This extended interval was likely influenced by temporary cross-protective immunity to dengue after the Zika outbreak in 2016 followed by reduced travel and exposure during the COVID-19 pandemic.

In March 2024, the Puerto Rico Department of Health (PRDH) declared a public health emergency when dengue cases exceeded the epidemic threshold, defined as the point at which weekly cases surpass levels historically associated with epidemics, based on 30 years of surveillance data (*5*,*6*). This report describes a dengue outbreak response conducted in collaboration with CDC to monitor the outbreak and implement vector-control measures and public health campaigns to raise awareness about increasing dengue case numbers and strategies to prevent mosquito bites.

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## Investigation and Findings

### Data Sources and Analysis

Dengue cases were classified based on the Council of State and Territorial Epidemiologists case definition (*7*). Serum specimens from persons suspected to have dengue were tested using reverse transcription–polymerase chain reaction (RT-PCR) for DENV and by enzyme-linked immunosorbent assay for the presence of nonstructural protein 1 (NS1) or immunoglobulin M (IgM); positive test results from commercial laboratories were reported to PRDH. To enhance case tracking and reporting, PRDH upgraded the existing arboviral case investigation system to a new platform that integrates data streams from commercial laboratories. Disease incidence (dengue cases per 100,000 population, using 2020 U.S. Census Bureau data) was assessed using temporal trends, geographic distribution in high-incidence areas, age- and serotype-specific incidence, and evaluations of hospitalizations and severe outcomes. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[§]

[§] 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.

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### Epidemiologic Surveillance

In 2024, a total of 6,291 dengue cases (191.4 per 100,000 population) were reported in Puerto Rico. Cases remained above the epidemic threshold throughout 2024 and were particularly high after the start of the rainy season in May (Figure 1). The highest number of cases was reported in October (884); the peak number of weekly cases reached 226 during week 40 (October). Active transmission remained above the epidemic threshold through January 2025.

Although dengue cases were reported across the island, the highest case counts were concentrated in the San Juan metropolitan area: 1,200 cases (17.3%) were reported in San Juan, followed by Carolina (254; 5.1%), Rincón (252; 3.6%), Lares (240; 3.5%), and Bayamón (233; 3.4%) (Figure 2). The highest incidences were reported in Rincón (1,659.3 per 100,000), followed by Maricao (925.3), Lares (853.9), and Orocovis (765.1).

### Demographic Characteristics of Dengue Patients

Of the 6,291 total cases, 3,364 (53.5%) were among males (Table). Persons aged 10–19 years accounted for the largest number and percentage of cases (1,845; 29.3%), followed by adults aged 20–29 years (1,034; 16.4%). The median patient age was 24 years (range = 2.3 months–99 years).

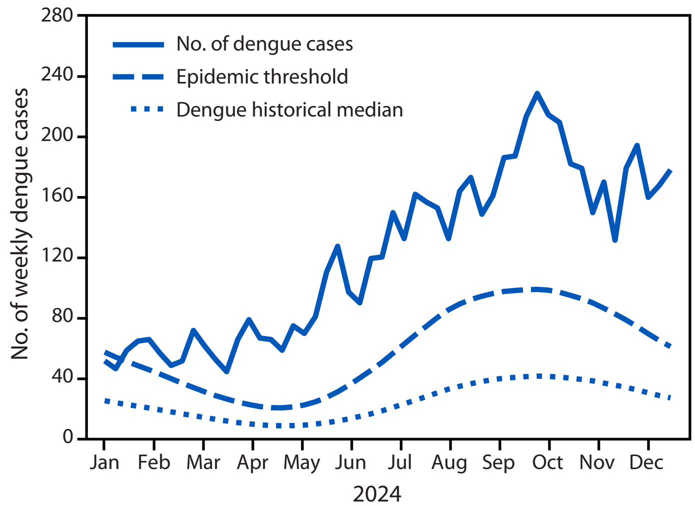
### Illness Characteristics and Outcomes

Among the 3,289 (52.3%) dengue patients who required hospitalization, the highest number and percentage occurred among persons aged 10–19 years (1,115 hospitalizations; 33.9%), followed by adults aged 20–29 years (492; 15.0%). Severe dengue, a condition characterized by life-threatening complications including shock, bleeding, and organ failure, was confirmed in 264 patients (4.2% of total cases), with the highest number and percentage among persons aged 10–19 years (75; 28.4%), followed by adults aged 20–29 years (54; 20.5%). Eleven deaths were reported (0.2% of total cases), with the highest number among persons aged ≥70 years (four deaths; 36.4%), followed by two deaths each among persons aged 50–59 years and 60–69 years (18.2% each).

### Virologic Surveillance

Virologic surveillance identified DENV-3 as the predominant circulating serotype, accounting for 2,926 (59.2%) of all reported cases positive by RT-PCR (4,942 cases), followed by DENV-1 (1,367; 27.7%). Phylogenetic analyses found that the three serotypes circulating during the outbreak (DENV-1, DENV-2, and DENV-3) were different variants from those previously present in Puerto Rico and had been introduced to the island during 2019–2023.

**FIGURE 1. Number of weekly dengue cases, historical median,* and the epidemic threshold† — Puerto Rico, 2024**




* The median weekly number of cases since 1986.
† The weekly dengue epidemic threshold is defined as the 75th percentile of a negative binomial regression model fit to ≥30 years of historical, probable, and confirmed dengue case data in Puerto Rico. This 75th percentile threshold aligns best with historical epidemic classifications, and roughly corresponds to expected epidemics every 4 years.

## Public Health Response

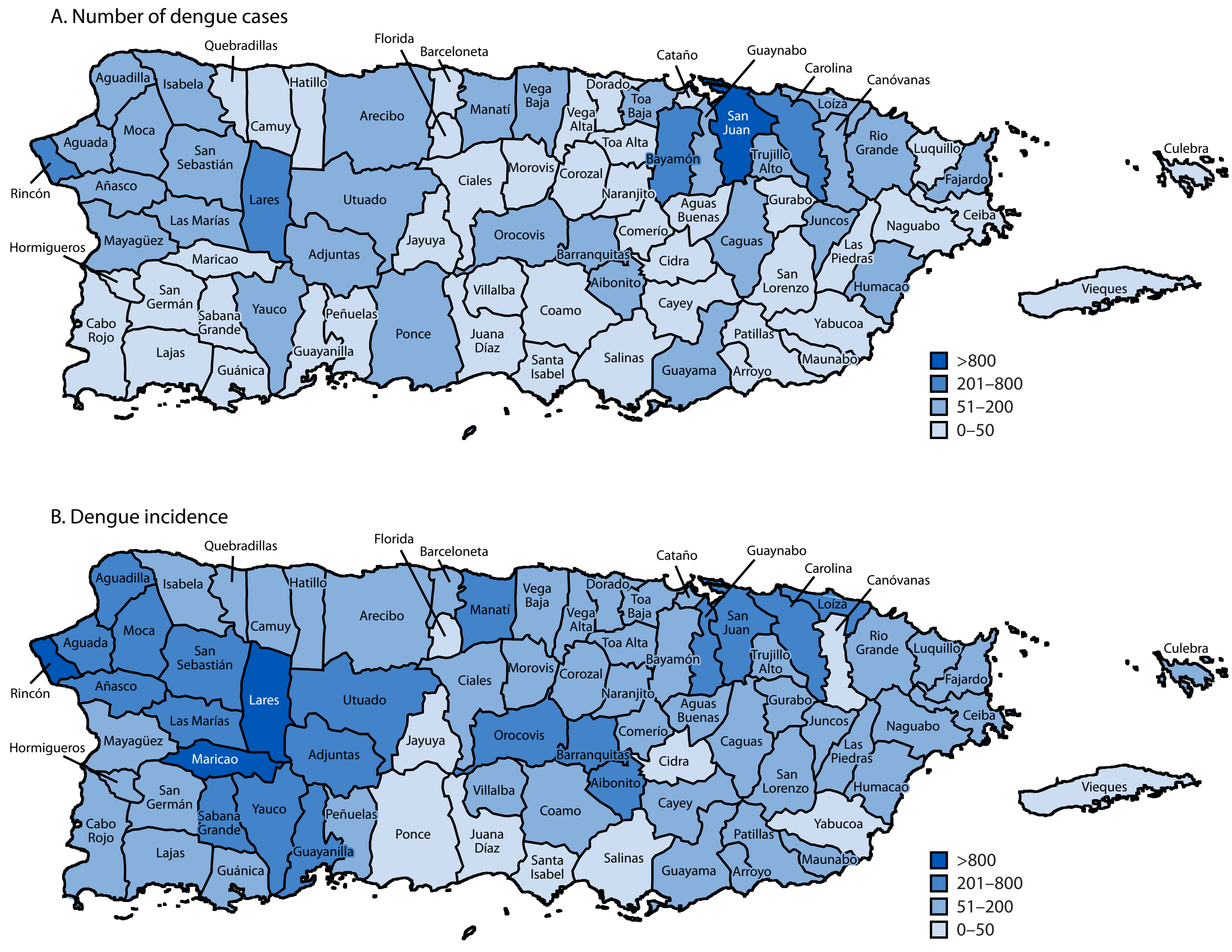
### Enhancing Surveillance

To increase outbreak awareness and improve dengue case recognition among health care providers, PRDH and CDC have conducted 3,030 education and prevention events, reaching approximately 167,000 persons across all eight health regions. These efforts include health fairs, virtual conferences, and community outreach, supported by municipal epidemiologists, central-level educators, and community outreach specialists.

In October 2023, PRDH developed a mandatory dengue training course for medical professionals to raise awareness of dengue and prepare for future outbreaks on the island. Efforts to implement and expand training intensified during the 2024 outbreak, and by November, approximately 10,800 health care providers completed the course through in-person sessions and webinars.

To improve case tracking and reporting, PRDH upgraded the existing arboviral case investigation system to a new, comprehensive database, improving data accuracy and management. CDC and PRDH collaborated to expand dengue testing capacity by providing guidance to commercial laboratories, enabling broader access for patients and more rapid diagnostic testing by working with existing specimen transport and reporting systems at commercial laboratories. In addition, PRDH established a free dengue testing center for patients with a medical order, offering an acute dengue panel with RT-PCR and

**FIGURE 2. Number of dengue cases (A) and dengue incidence per 100,000 population* (B), by municipality — Puerto Rico, 2024**




* Based on 2020 U.S. Census Bureau data.

IgM testing. PRDH also intensified surveillance activities by conducting interviews with all persons with confirmed dengue to collect comprehensive case data, including detailed exposure history and symptom progression. PRDH conducted weekly coordination meetings with CDC, the Puerto Rico Vector Control Unit (PRVCU), and other partners to review trends, update protocols, coordinate messaging and outreach, direct vector control efforts, and refine overall response strategies.

## Mosquito Surveillance and Control Activities

To support mosquito surveillance and control activities, PRVCU and PRDH Environmental Health staff members collaborated with PRDH epidemiologists to perform mosquito trapping. During January–November 2024, PRVCU captured 234,713 *A. aegypti* mosquitoes across Puerto Rico using autocidal gravid ovitraps. A total of 28,932 mosquito pools were tested using RT-PCR, which identified 316 (1.1%) positive pools. The highest number of positive DENV detections in mosquito pools was recorded in San Juan (250 of 7,985; 3.1%), followed by Bayamón (56 of 18,787; 0.3%), Carolina (nine of 1,865; 0.5%), and Rincón (one of 295; 0.3%). These findings indicated active transmission of DENV-1 (8% of positive pools), DENV-2 (41%), and DENV-3 (51%).

In coordination with PRDH and CDC, PRVCU implemented vector control measures, including wide-area larviciding, mass trapping, adulticidal methods (e.g., space sprays

**TABLE. Characteristics of dengue cases — Puerto Rico, 2024**

| Characteristic | No. (col. %) | | | |
|---|---|---|---|---|
| | Total dengue cases | Hospitalized dengue patients | Severe dengue* cases | Fatal dengue cases |
| **Total** | **6,291 (100)** | **3,289 (52.3)** | **264 (4.2)** | **11 (0.2)** |
| **Age group, yrs** | | | | |
| <1 | **26 (0.4)** | 20 (0.6) | 0 (—) | 0 (—) |
| 1–9 | **518 (8.2)** | 242 (7.4) | 11 (4.2) | 0 (—) |
| 10–19 | **1,845 (29.3)** | 1,115 (33.9) | 75 (28.4) | 1 (9.1) |
| 20–29 | **1,034 (16.4)** | 492 (15.0) | 54 (20.5) | 1 (9.1) |
| 30–39 | **766 (12.2)** | 348 (10.6) | 38 (14.4) | 1 (9.1) |
| 40–49 | **643 (10.2)** | 306 (9.3) | 22 (8.3) | 0 (—) |
| 50–59 | **585 (9.3)** | 276 (8.4) | 20 (7.6) | 2 (18.2) |
| 60–69 | **454 (7.2)** | 253 (7.7) | 27 (10.2) | 2 (18.2) |
| ≥70 | **420 (6.7)** | 237 (7.2) | 17 (6.4) | 4 (36.4) |
| **Sex** | | | | |
| Female | **2,926 (46.5)** | 1,505 (45.8) | 123 (46.6) | 4 (36.4) |
| Male | **3,364 (53.5)** | 1,784 (54.2) | 141 (53.4) | 7 (63.6) |
| Unknown | **1 (<1)** | 0 (—) | 0 (—) | 0 (—) |
| **Laboratory testing** | | | | |
| RT-PCR positive | **4,942 (78.6)** | 2,910 (88.5) | 233 (88.3) | 8 (72.2) |
| NS1 positive-only | **293 (4.7)** | 105 (3.2) | 7 (2.7) | 0 (—) |
| IgM positive-only | **1,056 (16.8)** | 274 (8.3) | 24 (9.1) | 3 (27.3) |
| **DENV serotype among RT-PCR–positive cases (n = 4,942)** | | | | |
| DENV-1 | **1,367 (27.7)** | 766 (26.3) | 73 (31.3) | 0 (—) |
| DENV-2 | **636 (12.9)** | 433 (14.9) | 40 (17.2) | 1 (12.5) |
| DENV-3 | **2,926 (59.2)** | 1,709 (58.7) | 120 (51.5) | 7 (87.5) |
| DENV-4 | **1 (<1)** | 0 (—) | 0 (—) | 0 (—) |
| Serotype unavailable | **12 (0.2)** | 2 (0.1) | 0 (—) | 0 (—) |

**Abbreviations:** DENV = dengue virus; IgM = immunoglobulin M; NS1 = nonstructural protein 1; RT-PCR = reverse transcription–polymerase chain reaction.
* https://ndc.services.cdc.gov/case-definitions/dengue-virus-infections-2015

targeting mosquitoes in flight and residual sprays creating long-lasting barriers on surfaces to kill resting mosquitoes), and yard inspections to identify and remove mosquito breeding sites to reduce DENV transmission. In addition, PRDH Environmental Health staff members conducted weekly sanitation surveys, and the U.S. Department of Agriculture provided guidance on appropriate pesticide use in high-risk areas, such as locations with ongoing identification of dengue cases, despite other interventions, and those with significant mosquito insecticide resistance. In September 2024, PRDH established an Integrated Vector Management advisory committee with the purpose of providing vector control recommendations to the Secretary of Health. These recommendations included insecticide rotation and periodic evaluation of insecticides to promote use of effective insecticides and limit emergence of insecticide resistance.

## Public Outreach

By December 2024, response efforts from PRDH, CDC, and PRVCU had reached approximately 160,000 persons through various educational and community engagement initiatives across Puerto Rico. These efforts included 215 activities in priority communities (i.e., areas with high dengue incidence and a history of dengue outbreaks) aimed at raising awareness about dengue prevention, and 328 activities at educational institutions, where dengue-related training and materials were provided. In addition, 1,624 health fairs and community outreach events were held to engage the broader public, and 108 health care facilities were visited to share information on clinical management and prevention strategies. To further support these interventions, 56,809 educational kits were distributed to residents of and visitors to Puerto Rico, equipping participants with valuable resources to aid in dengue prevention efforts. Campaigns such as "*Haz la diferencia y ciérrale la puerta al dengue*" ("Make a difference and close the door to dengue") were widely promoted across social media[¶] and radio, encouraging residents to actively participate in removing standing water where mosquitoes can lay eggs, using mosquito repellents to avoid bites, and installing or repairing screens on doors and windows to prevent mosquito entry.

As part of the public outreach, PRDH and CDC focused on implementation of vaccination with Dengvaxia in populations for whom its use is recommended. Prevaccination dengue screening was established in three clinical laboratory networks. The number of clinics offering the vaccine increased from six to 23 during 2024. However, because of reduced demand for

¶ https://www.salud.pr.gov/dengue; https://www.salud.pr.gov/CMS/146

Dengvaxia in the global market, production of the vaccine has been discontinued by the manufacturer, and available doses will expire in 2026. Currently no other dengue vaccines are approved for use in the United States.**

## Discussion

The current dengue outbreak in Puerto Rico is the first since 2013, marking an unusually long (11-year) gap between outbreaks, likely affected by a combination of temporary cross-protective immunity during the Zika outbreak and reduced travel and exposure during the COVID-19 pandemic. The outbreak also began atypically during the low transmission season and intensified into the high season, with case numbers peaking in October and remaining elevated through December 2024. This pattern raises concerns for the potential for high transmission continuing into the next dengue season. The outbreak's persistence beyond typical seasonal patterns also suggests potential shifts in transmission dynamics, possibly influenced by changes in immunity levels within the population. Persons living in or traveling to Puerto Rico should use Environmental Protection Agency–approved repellents, wear protective clothing, and stay in places with door and window screens. In addition, health care providers should maintain a high suspicion for dengue among persons with fever and potential exposure to mosquitoes in Puerto Rico.

DENV-3, the predominant serotype in this outbreak, accounted for 59.2% of cases with a known serotype, and 58.7% of hospitalizations among cases with known serotype. Its high prevalence might explain the elevated hospitalization rates because DENV-3 is linked to more severe disease (*8*). However, surveillance system changes could also have played a role in the high observed hospitalization rates. For example, to enhance dengue outbreak preparedness, beginning in 2023, PRDH strengthened dengue case management and monitoring in an effort to record more complete information about outcomes. Part of this effort included conducting interviews with all persons suspected to have dengue.

The highest dengue incidence was observed in younger age groups, particularly those aged 10–19 years, highlighting the need for focused outreach and prevention efforts for children and adolescents. In contrast, most fatal cases have occurred among older adults, particularly those aged ≥50 years, underscoring the importance of prioritizing clinical resources for this population. Geographically, although the highest case counts were in the San Juan municipality, the highest dengue incidence occurred in Rincón, Lares, and Maricao, which are all municipalities outside of the metropolitan areas in central and western Puerto Rico.


**Summary**

What is already known about this topic?

Dengue, a mosquitoborne disease that can lead to severe illness or death, is endemic in tropical and subtropical regions worldwide. The most recent outbreak in Puerto Rico occurred in 2013.

What is added by this report?

During 2024, Puerto Rico reported 6,291 dengue cases and surpassed the epidemic threshold, prompting declaration of a local public health emergency. Approximately one half of patients (52.3%) were hospitalized, 264 (4.2%) had severe dengue cases, and 11 (0.2%) persons died. Persons aged 10–19 years accounted for 28.4% of severe cases.

What are the implications for public health practice?

Improved case recognition and clinical management facilitate improved outcomes. To reduce mosquito bite risk, residents of and visitors to Puerto Rico should consider using repellents, wearing protective clothing, and staying in places with door and window screens.


### Implications for Public Health Practice

The ongoing dengue outbreak underscores the increasing risk of dengue in Puerto Rico and across the Caribbean, Central America, and South America, as the region reported record-breaking case numbers in 2024 (*9*,*10*). The collaborative surveillance and response efforts of PRDH, PRVCU, and CDC, along with targeted outreach in high-risk areas, aimed to equip communities with the knowledge and resources to take proactive measures in preventing dengue transmission. However, more effective tools for dengue control and prevention, including safe and effective dengue vaccines for all age groups and scalable vector control methods, are urgently needed to protect populations at risk in countries with endemic disease and travelers from areas without endemic dengue. Maintaining strong dengue surveillance, improving clinical management, and fostering community awareness will be crucial in mitigating outbreak effects and strengthening public health preparedness and response for future dengue seasons.

** https://www.cdc.gov/dengue/hcp/vaccine/index.html

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Corresponding author: Fhallon Ware-Gilmore, uqt7@cdc.gov.

[1]Epidemic Intelligence Service, CDC; [2]Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases, CDC, Puerto Rico; [3]Career Epidemiology Field Officer Program, CDC; [4]Puerto Rico Department of Health; [5]Puerto Rico Vector Control Unit.


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# Highly Pathogenic Avian Influenza A(H5N1) Virus Infection of Indoor Domestic Cats Within Dairy Industry Worker Households — Michigan, May 2024

Ramya Naraharisetti, PhD[1,2]; Meghan Weinberg, PhD[2]; Becky Stoddard[3]; Mary Grace Stobierski, DVM[2]; Kimberly A. Dodd, DVM[4]; Nora Wineland, DVM[5]; Mathew Beal, DVM[4]; Jennifer Morse, MD[3]; Samantha Hatter, DVM[4]; Dodd Sledge, DVM[4]; Katelynn Youatt, DVM[4]; Joseph Coyle, MPH[2]; Jevon McFadden, MD[2,6]; Timothy M. Uyeki, MD[7]; Lizette O. Durand, VMD, PhD[7]

## Abstract

Highly pathogenic avian influenza (HPAI) A(H5N1) virus, clade 2.3.4.4b, genotype B3.13 infection has been documented in cats on U.S. dairy cattle farms. In May 2024, the detection of HPAI A(H5N1) virus infection in two cats that were reported to be exclusively indoor, and that had respiratory and neurologic illness in different households, prompted an investigation by the Michigan Department of Health and Human Services and Mid-Michigan District Health Department (MDHHS/MMDHD). The cats' owners and household members were interviewed and offered testing for influenza A(H5) virus. The owner of one cat worked on a dairy farm but declined A(H5) testing; three other household members received negative A(H5) test results. The owner of the other cat lived alone and worked on multiple dairy farms transporting unpasteurized milk; this worker also reported getting splashed in the face and eyes by unpasteurized milk but declined A(H5) testing. Both workers were employed in a county known by MDHHS/MMDHD to have HPAI A(H5N1)virus, clade 2.3.4.4b, genotype B3.13–positive dairy cattle. In states with confirmed HPAI A(H5N1) in livestock, veterinary care can be aided if veterinarians obtain household members' occupational information, especially when evaluating cats with signs of respiratory or neurologic illness. If occupational exposure to HPAI A(H5N1)-infected livestock is identified among cat owners, and their companion cats are suspected to have HPAI A(H5N1) virus infection, it is important that veterinarians contact state and federal public health and animal health officials to collaborate on joint One Health investigations and testing to protect human and animal health.

## Investigation and Results

### Identification of First Case and Public Health Notification

In May 2024, the index cat (cat 1A, one of three cats in household 1), aged 5 years, exclusively indoor, spayed female domestic shorthair, experienced decreased appetite, lack of grooming, disorientation, and lethargy, followed by progressive neurologic deterioration. On the second day of illness, the cat was evaluated at a local veterinary clinic; on the fourth day, the cat was referred to the Michigan State University (MSU) Veterinary Medical Center (VMC), a tertiary care facility with advanced diagnostic and treatment capabilities where, because of rapid disease progression, cat 1A was euthanized. Because the cat's owner had known occupational exposure to dairy cattle, and because highly pathogenic avian influenza (HPAI) A(H5N1) virus was known to be circulating in dairy cattle on Michigan dairy farms, upon approval from the state veterinarian, cat 1A's remains were submitted to MSU's veterinary diagnostic laboratory (VDL) for necropsy. Brain and nasal swabs tested by reverse transcription–polymerase chain reaction (RT-PCR) were positive for influenza A(H5) virus.* Genetic sequencing results identified HPAI A(H5N1) virus, clade 2.3.4.4b, genotype B3.13. The U.S. Department of Agriculture's National Veterinary Services Laboratories (NVSL) confirmed the sequencing results; the virus was indistinguishable from viruses circulating in Michigan dairy cattle† (*1*). This identification of HPAI A(H5N1) virus infection in a domestic house cat resulted in initiation of a public health investigation by the Michigan Department of Health and Human Services and Mid-Michigan District Health Department (MDHHS/MMDHD). This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.§

### Investigation and Public Health Response — Household 1

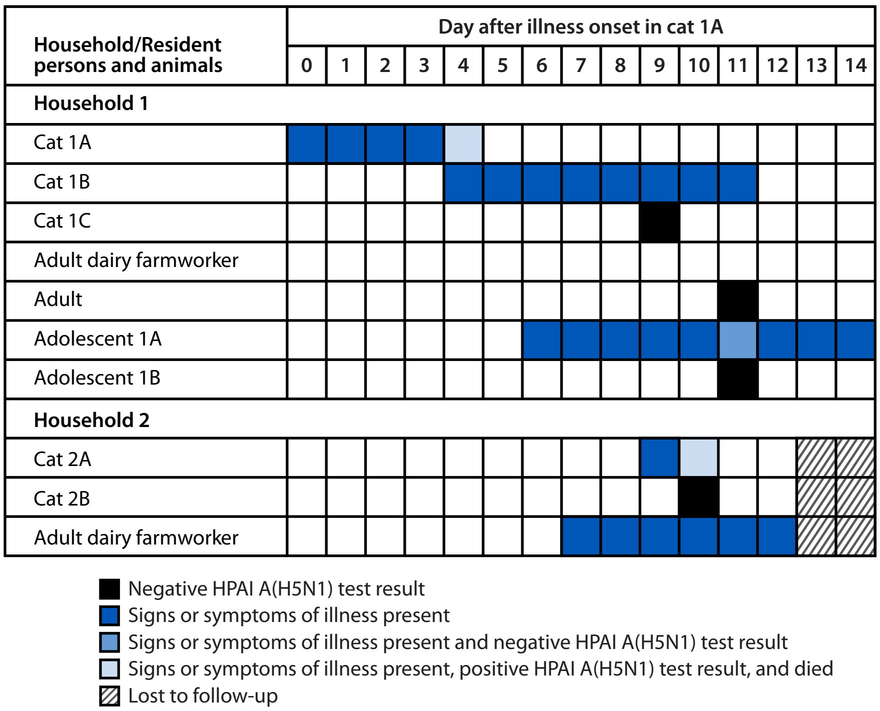
Cat 1A lived in a household with two adults, one of whom worked on a dairy farm in a county known to have HPAI A(H5N1)–positive dairy cattle; two adolescents (adolescents 1A and 1B); and two other exclusively indoor cats (cats 1B and 1C) (Figure). Cat 1B was reported to have signs of watery, purulent eye discharge, increased respirations, and decreased appetite 4 days after onset of illness in cat 1A. MSU VMC

* Testing for avian influenza virus in cat specimens was performed using matrix PCR; subsequent testing for avian influenza virus H5 was done by PCR. No other testing was reported.

† All human specimens in this investigation (except one specimen from an MSU veterinary staff member who received testing only for influenza A) were tested with the Biofire FilmArray Torch System (https://www.biomerieux.com/us/en/our-offer/clinical-products/biofire-torch-system.html), which includes a panel of pathogens including adenovirus, coronaviruses (229E, HKU1, NL63, and OC43), SARS-CoV-2, human metapneumovirus, human rhinovirus/enterovirus, influenza A and B, parainfluenza (viruses 1–4), respiratory syncytial virus, *Bordetella pertussis*, *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, and *Bordetella parapertussis*.

§ 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.

**FIGURE. Testing, signs, and symptoms in cats*,† and household members§,¶ of domestic indoor cats infected with highly pathogenic avian influenza A(H5N1) virus, clade 2.3.4.4b genotype B3.13 (N = 2) — Michigan, 2024**




**Abbreviation:** HPAI = highly pathogenic avian influenza.
* Reported by veterinary staff members.
† Sequencing of isolated influenza A virus identified virus HPAI A(H5N1) clade 2.3.4.4b genotype B3.13 in cat 1A.
§ Adult dairy farmworkers in households 1 and 2 received no laboratory testing.
¶ Adolescent 1A received a positive laboratory test result for rhinovirus/enterovirus (assay does not differentiate) on a multiplex polymerase chain reaction BioFire FilmArray Respiratory Panel (https://www.biofiredx.com/products/the-filmarray-panels/#respiratory) at the Michigan Department of Health and Human Services.

requested that the owner obtain a swab from cat 1B because the cat was too ill to be taken into the clinic, but specimens were not submitted by the owner. Cat 1B's illness signs were reported to have resolved 11 days after cat 1A's illness onset. Cat 1C had no signs of illness when it arrived at MSU VMC and received negative test results for influenza A 11 days after cat 1A's illness onset. No other indoor or outdoor pets were reported. All four household members had daily contact with all three cats in the home. Although the dairy farm where the adult household member worked was not known to be affected by HPAI A(H5N1) virus, it was located near other affected farms.¶ This dairy farmworker did not work directly with animals but worked on the dairy farm premises. The worker reported removing work clothes and boots outside when returning to the household; these items were then brought to a location in the home that was not accessible to the cats. The cats and household members did not consume unpasteurized milk or milk products.**

Physical examination of cat 1A by veterinary staff members was notable for signs of severe neurologic disease (obtundation, abnormality of cranial nerves, and abnormal motor function in all four limbs), anorexia, and lethargy. The cat initially had signs of ataxia, decreased appetite, swollen right jaw, abnormal gait, and hiding behavior. Some improvement and return of appetite occurred on day 3, 1 day after the cat received subcutaneous antibiotics. However, on day 4, it could not hold up its head, had an unsteady gait, and displayed all initial signs again; the cat was euthanized on day 4.

Nasopharyngeal and oropharyngeal swab specimens were collected from three household 1 members (the non farmworker adult and the two adolescents) 11 days after onset of illness in cat 1A; specimens were sent to MDHHS, where they tested negative for influenza A viruses by RT-PCR. The dairy farmworker declined influenza testing. Only one of the three persons tested (adolescent 1A, who had no comorbidities) experienced signs or symptoms of illness (cough, sore throat, headache, and myalgia), which began 6 days after illness onset in cat 1A). The household 1 members who received testing received a 10-day course of twice-daily oral oseltamivir as postexposure prophylaxis (PEP) at the time of testing; the dairy farmworker declined testing and PEP.†† Adolescent 1B reported a "dry croupy" cough 6 days after onset of illness in cat 1A that was attributed to severe allergies. Communication with public health representatives ended before final resolution of adolescent 1B's symptoms was reported. Only adolescent 1A received any positive laboratory test result; this test was for rhinovirus/enterovirus on a multiplex PCR BioFire Film Array Respiratory Panel at MDHHS. Cat 1A's owner, the dairy farmworker, had

¶ Although the farm's manager denied the presence of ill animals at the farm, the household member who worked on the dairy farm reported many of the barn cats on the premises had recently died.

** The owners in both households were not asked whether their pets ate raw cat food. This report investigates a detection of HPAI A(H5N1) in indoor domestic cats that were presumably exposed through their dairy farmworkers in May 2024, which preceded the recent detection of cats with HPAI A(H5N1) presumably exposed through commercially available contaminated raw pet food in late 2024.

†† Although oseltamivir postexposure prophylaxis of HPAI A(H5N1) is recommended for 5 days, longer duration can be considered if exposure is ongoing.

regular contact with cat 1A and adolescent 1A; the farmworker reported 1 day of vomiting and diarrhea that preceded onset of illness in cat 1A.

### Investigation and Public Health Response — Household 2

Six days after referral of cat 1A to MSU VMC, cat 2A, an exclusively indoor intact male Maine Coon cat aged 6 months from a second household (household 2), was brought by its owner directly to MSU VMC with a 1-day history of progressive neurologic deterioration, anorexia, lethargy, and facial swelling. On initial physical examination of cat 2A, it was found to be obtunded, with abnormalities of cranial nerve function, abnormal motor function, puffiness of the eyes and nose, and minimal movement; the cat died within 24 hours of onset of illness signs.

Cat 2A lived with one additional indoor cat (cat 2B) and its owner, a dairy farmworker. Nasal swabs from cat 2A tested by RT-PCR at MSU VDL, 1 day after onset of cat 2A's illness signs and upon initial examination, were positive for influenza A viruses and were confirmed as HPAI A(H5N1) virus, clade 2.3.4.4b, genotype B3.13 at the United States Department of Agriculture's NVSL. Cat 2B did not show any signs of illness, and nasal swabs tested negative for influenza A viruses. Cat 2A's owner transported unpasteurized milk from various farms in a Michigan county that included farms with dairy cattle confirmed to be infected with HPAI A(H5N1) virus and lived in the same county where cat 1A's owner lived. Cat 2A's owner did not wear personal protective equipment (PPE) while handling raw milk; reported frequent milk splash exposures to the face, eyes, and clothing; and did not remove work clothing before entering the home when returning from work. Cat 2A's owner reported that cat 2A would roll in the owner's work clothes, whereas cat 2B did not exhibit this behavior. Cat 2A's owner experienced eye irritation that began 2 days before the onset of illness signs in cat 2A but reported no other symptoms. The owner did not receive testing for influenza and declined oseltamivir and further contact with public health officials, stating fear of losing employment as a consequence of communicating with public health officials and implicating farms that provided milk.

### Screening and Testing of Veterinary Staff Members

Veterinary staff members who handled the infected cats at the local veterinary practice or MSU VMC were contacted and enrolled by public health authorities for 10 days of symptom monitoring after their last exposure to the cats. Overall, 24 veterinary staff members, including one veterinarian, five nurses, three technicians, five assistants, two caregivers, three interns, and five students, were potentially exposed to the two ill cats; 18 (75%) were contacted and monitored, but because of their limited exposure, they were not offered PEP.[§§] PPE protocols are in place for all patients managed in MSU VMC's isolation unit, where the cats were treated and in laboratory units where specimens were tested. For HPAI A(H5N1), recommended PPE include a Tyvek suit, boot covers, nitrile gloves, a surgical head cover, and a face mask. Veterinary staff members were reported to likely wear surgical masks for the initial encounter of cat 1A and N95 masks thereafter. Varying levels of PPE use were reported by veterinary staff members, which ranged from only using gloves to following full protocol. Laboratory staff members wear either powered air-purifying respirators or N95 respirators. Among seven persons who reported signs or symptoms after exposure to the ill cats, including four who reported nasal congestion and three who reported headache, five agreed to testing; all received negative influenza A RT-PCR test results.

## Discussion

HPAI A(H5N1) virus, clade 2.3.4.4b, has been detected in wild birds, poultry, and wildlife in the United States since 2022, and in commercial U.S. dairy cattle since 2024 (*2–4*). In the ongoing U.S. outbreak of HPAI A(H5N1) in dairy cattle, serious illness, including neurologic signs, and death from HPAI A(H5N1) virus infection in cats that are frequent inhabitants of farms have been attributed to consumption of unpasteurized milk from infected dairy cattle, wild birds, or raw poultry products[¶¶] (*4–6*). Continued epizootic circulation of HPAI A(H5N1) virus increases the potential for emergence of mutations that might increase risk for mammalian adaptation and transmission to and among humans, and this finding has been documented in the case of domestic cats (*7*). Isolated, sporadic instances of cow-to-human transmission of HPAI A(H5N1) virus, clade 2.3. 4.4b, genotype B3.13 have occurred in California, Colorado, Michigan, and Texas (*1*,*8*). Presumed cat-to-human transmission of low pathogenic avian influenza A(H7N2) virus in an animal shelter in 2016 suggests that exposure to cats infected with HPAI A(H5N1) virus might also pose a transmission risk to humans (*9*).

Although reported cases of infection of indoor cats with HPAI A(H5N1) viruses are rare, such cats might pose a risk for human infection. The source of HPAI A(H5N1) virus

§§ The household contacts had a much more intense and longer exposure to the cats than did veterinary staff members and were provided antivirals as prophylaxis, not as treatment.

¶¶ Commercially available raw poultry cat food has been reported to test positive for HPAI A(H5N1) virus since this investigation concluded (http://publichealth.lacounty.gov/vet/docs/AHAN/AHAN_H5BirdFluDomesticCats_ConfirmedInRawPetFood_RawMilk_01132025.pdf). However, the genotype of clade 2.3.4.4b HPAI A(H5N1) virus identified in the cats in this investigation is different from the genotype that was identified in the commercially available cat food outbreak.

**Summary**

What is already known about this topic?

Outdoor cats on U.S. dairy farms have been infected with highly pathogenic avian influenza (HPAI) A(H5N1) virus; infection has not been reported in indoor cats.

What is added by this report?

HPAI A(H5N1) virus was detected in two indoor domestic cats with respiratory and neurologic illness that lived in homes of dairy workers but had no known direct exposure to HPAI A(H5N1)–affected farms. Both dairy workers declined testing; other household members received negative test results for influenza A.

What are the implications for public health practice?

Veterinarians in states with confirmed HPAI A(H5N1) in livestock should consider obtaining household occupational information, testing for influenza A viruses, and wearing personal protective equipment when evaluating companion cats with respiratory or neurologic illness. Suspected cases should be reported to public and animal health officials.

infection in these two cats is unknown; however, the cats' owners worked on dairy farms and potentially had occupational exposures to HPAI A(H5N1)–positive dairy cattle or contaminated products or environments. Further research is necessary to evaluate the risk of fomite transmission and other types of transmission routes of HPAI A(H5N1) virus to cats. The two dairy workers described in this report did not use recommended PPE before their illnesses and could have been exposed to HPAI A(H5N1) virus. However, because neither dairy worker received testing for A(H5), whether cat 1A's owner's gastrointestinal symptoms or cat 2A's owner's ocular symptoms were because of HPAI A(H5N1) virus infection or a different etiology is unknown.

### Implications for Public Health Practice

Given the potential for fomite contamination, farmworkers are encouraged to consider removing clothing and footwear and to rinse off any animal byproduct residue (including milk and feces) before entering households.*** Veterinarians evaluating companion cats with signs of respiratory or neurologic illness in areas with HPAI A(H5N1) virus circulating in cattle or poultry or other animals are recommended to wear PPE when examining these animals or collecting specimens for influenza testing and to obtain occupational information from household members to help prevent unprotected exposures and guide coordinated One Health††† (i.e., human, animal, and environmental) public health investigations of potential animal-to-human spread of HPAI A(H5N1) virus.

*** https://www.cdc.gov/bird-flu/prevention/farm-workers.html

††† https://www.cdc.gov/one-health/about/index.html

Implementation of standard precautions for zoonotic disease prevention and CDC guidance for veterinarians at veterinary clinics can help limit the number of staff members exposed to sick animals potentially infected with pathogens, including HPAI A(H5N1) virus. Further, given the widespread outbreak in animals, including poultry and wild birds, throughout the United States, anyone who has occupational or recreational exposure should wear the recommended PPE when interacting with any potentially infected animals.§§§

§§§ https://www.cdc.gov/bird-flu/hcp/animals/index.html

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Corresponding author: Ramya Naraharisetti, urc4@cdc.gov.

[1]Epidemic Intelligence Service, CDC; [2]Bureau of Infectious Disease Prevention, Michigan Department of Health and Human Services; [3]Mid-Michigan District Health Department, Stanton, Michigan; [4]Michigan State University College of Veterinary Medicine, East Lansing, Michigan; [5]Michigan Department of Agriculture and Rural Development; [6]Division of State and Local Readiness, Office of Readiness and Response, CDC; [7]Influenza Division, National Center for Immunization and Respiratory Diseases, CDC.

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# *Notes from the Field*

## Genomic and Wastewater Surveillance Data to Guide a Hepatitis A Outbreak Response — Los Angeles County, March 2024–June 2024

Jordan B. Braunfeld, MD[1]; Bonnie L. Dao, MPH[2]; Justin Buendia, PhD[2]; Raiza Amiling, MPH[2]; Cierra LeBlanc, MPH[3]; Mirna P. Jewell, MPH[2]; Hannah Henry, MPH[4]; Giorgio Cosentino[4]; Prabhu Gounder, MD[2]

In April 2024, the Los Angeles County (LAC) Department of Public Health (DPH) identified three cases of hepatitis A virus (HAV) infection among persons experiencing homelessness (PEH) through routine surveillance,* compared with one case identified among PEH during the preceding 6 months. HAV is a highly infectious fecal-oral transmitted virus that infects the liver. Most infected persons recover without sequelae, but it can rarely cause liver failure and death. Inadequate access to hygiene and sanitation services is a risk factor for HAV infection. Traditional case-based surveillance for HAV is challenging because persons with HAV are infectious for ≤2 weeks before symptom onset, and approximately 30% of infected persons do not experience symptoms. Further, health care providers might not suspect HAV infection because the early symptoms of HAV infection can be nonspecific (e.g., fever, nausea, abdominal pain, and diarrhea), and 30% of symptomatic cases will not develop jaundice to indicate hepatitis. Genomic and wastewater surveillance data helped confirm an outbreak and guide response activities by illustrating the magnitude of HAV transmission potentially undetected by case-based surveillance.

### Investigation and Outcomes

LAC DPH conducts routine hepatitis A surveillance among approximately 10 million residents in 86 of 88 cities in the county.† Clinical laboratories are mandated to report positive HAV immunoglublin (Ig) M antibody (IgM anti-HAV) test results to DPH. All IgM anti-HAV–positive reports are investigated by medical records review and patient interviews to ascertain patient risk factors for HAV infection, identify close contacts for postexposure prophylaxis, and obtain specimens for molecular confirmation and phylogenetic analysis by the California DPH Viral and Rickettsial Disease Laboratory (*1*,*2*).

Wastewater surveillance for HAV in LAC began in September 2023 at two wastewater treatment plants§ (*3*,*4*). Plant A provides services for approximately 4 million residents, including the City of Los Angeles, and plant B for approximately 3.5 million residents.

During March 12–April 18, 2024, three HAV infections were detected among PEH through routine surveillance of patients presenting with compatible clinical signs and symptoms and laboratory findings (compared with one case among PEH during the preceding 6 months). These three cases had a matching and previously unreported HAV subgenotype IA strain¶ (*5*), indicating a potential common chain of transmission. A concurrent rise in HAV wastewater concentrations at plant A (Figure), which services the area where the patients lived, prompted concern for additional HAV cases not detected by surveillance and supported LAC DPH's decision to develop an outbreak case definition** and implement enhanced case-finding measures.††

During April 26–June 25, eight additional outbreak-associated cases were identified (Figure). Among the 11 patients, specimens were available for sequencing from 10, and the HAV nucleotide regions sequenced were genetically indistinguishable. Among the 11 patients, six reported experiencing homelessness and illicit drug use, four reported experiencing homelessness only, and one reported neither experiencing homelessness nor illicit drug use. Nine of the 11 patients had symptoms consistent with hepatitis, and six were hospitalized. Among nine patients whose location during their infectious period was known, seven lived in the City of Los Angeles.

The maximum HAV wastewater concentrations in plants A and B in April, when seven cases (including nonoutbreak-associated cases) were reported, were three and seven times higher, respectively, than maximum concentrations recorded during September 2023–March 2024 (the baseline period, when 2–5 cases per month were reported among all LAC residents).

* https://www.cdc.gov/nndss/about/index.html

† http://publichealth.lacounty.gov/acd/procs/b73/DiseaseChapters/B73HepA.pdf

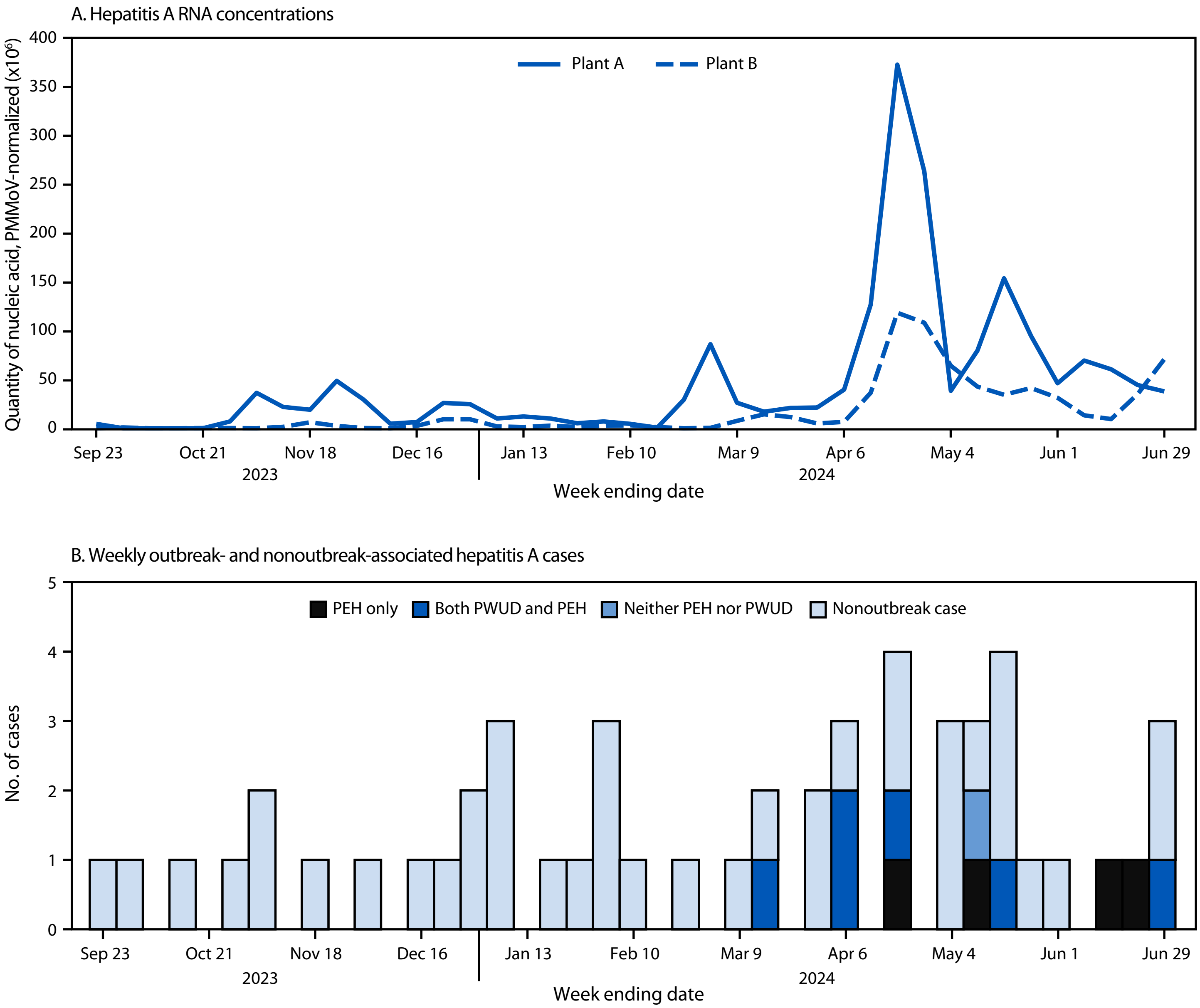
§ Wastewater testing is performed by Verily, which measures HAV RNA concentrations by using droplet digital polymerase chain reaction. Samples are taken an average of three times weekly from each plant.

¶ HAVNET strain CADPH24000422, determined through sequencing of 460 nucleotide region of the VP1/2A junction, according to HAVNET typing protocol.

** Outbreak inclusion criteria: positive anti-HAV IgM test result detected after March 1, 2024, in a person with evidence of hepatitis (alanine aminotransferase >200), who lived in LAC during the incubation or infectious period, and meets at least one of the following additional criteria: 1) experiencing homelessness or using illicit drugs ≤12 months before illness onset, 2) reports close contact with a PEH or person who uses illicit drugs during incubation period, or 3) has received positive test results for the outbreak-associated HAV subgenotype IA strain.

†† Enhanced case-finding efforts were enacted to identify hospitalized PEH before discharge to congregate settings or the streets where they might transmit the virus to others or be difficult to locate for interview or additional specimen collection. This included notices and presentations to health care providers across the county to immediately report suspected HAV infections in PEH, daily review of electronic laboratory-reported IgM anti-HAV tests, and a query of National Syndromic Surveillance Program data for mention of PEH for cross-reference to laboratory reports.

**FIGURE. Hepatitis A RNA concentrations* measured at two wastewater treatment plants (A) and weekly outbreak-associated (N = 11)† and nonoutbreak-associated hepatitis A case counts (N = 40)§ (B) — Los Angeles County, California, September 2023–June 2024**




**Abbreviations:** ALT = alanine aminotransferase; HAV = hepatitis A virus; IgM = immunoglobulin M; PEH = person experiencing homelessness; PMMoV = pepper mild mottle virus; PWUD = person who uses illicit drugs.

* Wastewater RNA concentrations are calculated as a 10-day trimmed average of RNA measurements normalized to PMMoV concentrations.

† Outbreak inclusion criteria: positive anti-HAV IgM test result detected after March 1, 2024, in a person with evidence of hepatitis (ALT>200), who lived in Los Angeles County during the incubation or infectious period, and meets at least one of the following additional criteria: 1) experiencing homelessness or using illicit drugs ≤12 months before illness onset, 2) reports close contact with a PEH or PWUD during incubation period, or 3) has received positive test results for the outbreak-associated HAV subgenotype IA strain.

§ Date of case determined as the earliest date among the following: 1) symptom or jaundice onset date, 2) specimen collection date, 3) reported date, and 4) date elevated enzymes reported.

Subsequent maximum HAV wastewater concentrations during May and June were lower than those during April. This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[§§]

## Preliminary Conclusions and Actions

Compared with rises in wastewater concentration observed when HAV cases were detected during the baseline period, the rise in wastewater concentration from two wastewater plants in April 2023 was disproportionately high. This increase provided evidence for unreported transmission among a population that faces substantial structural and social barriers to accessing care.

Wastewater surveillance can be useful for detecting increases in HAV activity. However, declines in wastewater concentrations must be interpreted with caution because wastewater testing can only detect persons who become infectious and shed virus within a plant service area that is under surveillance. Persons who are exposed to HAV but become infectious in a different wastewater plant service area that does not test for HAV will not be detected by wastewater surveillance. Therefore, wastewater surveillance data must be interpreted in combination with case-based surveillance data.

Genomic and wastewater testing data supported DPH's decision to initiate a broad community response to mitigate the outbreak. The response included mobile outreach events to offer hepatitis A vaccination to persons at higher risk for infection, county-wide public health alerts and other communications to raise awareness among clinical and homeless service providers, and increased environmental health inspections of shelters in the outbreak area. Although outbreak-associated hepatitis A cases continue to occur, recent decreases in wastewater HAV concentrations indicate that transmission might be declining.

[§§] 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.

Corresponding author: Jordan B. Braunfeld, uqt1@cdc.gov.

[1]Epidemic Intelligence Service, CDC; [2]Los Angeles County Department of Public Health, Los Angeles, California; [3]Council of State and Territorial Epidemiologists, Atlanta, Georgia; [4]California Department of Public Health.

**Summary**

What is already known about this topic?

Routine hepatitis A virus (HAV) infection surveillance cannot detect patients who don't seek clinical care, receive testing, or whose cases are not reported.

What is added by this report?

During March 12–April 18, 2024, three HAV cases were identified among persons experiencing homelessness who had a matching HAV subgenotype, indicating a potential common transmission chain. A concurrent approximately seven-times increase in HAV wastewater concentrations above baseline, when a similar number of cases were reported, demonstrated the potential for wastewater testing to detect unreported HAV transmission.

What are the implications for public health practice?

Genomic analysis and wastewater testing can complement traditional case-based surveillance to identify and better characterize HAV outbreaks.

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. Prabhu Gounder reports attendance at a June 2024 wastewater conference funded by Zymo corporation. Hannah Henry reports support from the California Department of Public Health. No other potential conflicts of interest were disclosed.

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# Notes from the Field

## Elevated Atmospheric Lead Levels During the Los Angeles Urban Fires — California, January 2025

Haroula D. Baliaka[1]; Ryan X. Ward[1]; Roya Bahreini[2]; Ann M. Dillner[3]; Armistead G. Russell[4]; John H. Seinfeld[1]; Richard C. Flagan[1]; Paul O. Wennberg[1]; Nga L. Ng[4]

On January 7, 2025, the Eaton Canyon and Palisades fires blazed across the Los Angeles region, driven by exceptionally dry conditions and Santa Ana wind gusts approaching 100 mph (161 kph). The fires spread rapidly into densely populated neighborhoods along the wildland-urban interface, destroying approximately 16,000 structures. As of February 10, 2025, a total of 29 deaths had been identified.* In addition to the deaths and destruction of property, wildfires emit a complex mixture of air pollutants and contribute to elevated concentrations of fine particulate matter ($PM_{2.5}$; particulate matter with a diameter <2.5 $\mu$m), degrading air quality many miles downwind. Exposure to wildfire $PM_{2.5}$ has been linked to adverse health effects including increased asthma cases, respiratory symptoms, aggravated respiratory diseases, and increased overall mortality (*1–3*). Unlike conventional wildfires that primarily burn natural fuels (e.g., grasslands or forests), the Eaton Canyon and Palisades fires ignited significant portions of the built environment, in which painted surfaces, pipes, vehicles, plastics, electronic equipment, and the structures themselves became the fuel. This widespread combustion of synthetic materials has increased concerns about the toxicity of $PM_{2.5}$, because a large proportion of the structures affected by the fires were built before 1978, when use of leaded paint was still common. This report focused on measuring airborne $PM_{2.5}$ lead during the Los Angeles urban fires.

### Investigation and Outcomes

The Atmospheric Science and Chemistry mEasurement NeTwork (ASCENT)† is a new, nationwide, multi-institutional initiative funded by the National Science Foundation, to provide continuous measurements of $PM_{2.5}$ chemical components (organics, inorganics, metals, and black carbon) across 12 sites in the United States, including seven urban and five remote or rural areas.§ All ASCENT sites were operating and sampling ambient air as of May 2024.

The Los Angeles ASCENT site in Pico Rivera, approximately 14 miles (23 kilometers) south of the Eaton Canyon fire, has been operating since July 2023. During and immediately after the Los Angeles fires, southward winds transported the fire plume to the ASCENT site. Hourly $PM_{2.5}$ lead measurements recorded during and after the fires were reviewed to assess their contribution to atmospheric lead levels. Because this analysis consists of a review of routinely collected environmental data and does not include human subjects, human subjects review was not required by the authors' institutions.

During January 2–6, 2025, the average $PM_{2.5}$ lead concentration recorded at the Los Angeles ASCENT site was 0.00068 $\mu g/m^3$. From January 8 to January 11, $PM_{2.5}$ lead concentration increased approximately 110 times with an average concentration of 0.077 $\mu g/m^3$ (Figure). Recorded $PM_{2.5}$ lead concentration peaked at approximately 0.5 $\mu g/m^3$ on January 9. By the evening of January 11, $PM_{2.5}$ lead concentration had returned to levels similar to those before the fire. The presence of heavy metals such as lead is not unusual in urban fire emissions, particularly in California, where legacy pollutants from older infrastructure, industrial sources, and soils can be remobilized during fires (*2*,*4*). For example, during the 2018 Camp fire, monitors recorded ambient $PM_{2.5}$ lead concentrations that averaged 0.13 $\mu g/m^3$ during a period of 17 hours (*2*).

Few data illustrate the health effects of lead from inhalation compared with other exposure routes. The ASCENT real-time measurements of airborne lead and other chemical constituents in $PM_{2.5}$ provide valuable $PM_{2.5}$ chemical composition data that can be combined with health data to examine health effects of individual smoke components from the Los Angeles fires.

### Preliminary Conclusions and Actions

Lead is a toxic air contaminant that is distributed in multiple human tissues and accumulates in teeth and bones; it affects nearly every organ system, posing significant health risks, particularly for children, who are more vulnerable to its neurodevelopmental effects (*2*,*3*,*5*). Regulatory efforts, especially the U.S. Clean Air Act of 1970, have resulted in a sharp decline in airborne lead levels during the past 45 years.¶ The current National Ambient Air Quality Standard for lead in total suspended particles over a 3-month rolling average is 0.15 $\mu g/m^3$.** Measures including removing lead from gasoline

* https://www.fire.ca.gov/incidents/ (Accessed February 10, 2025).

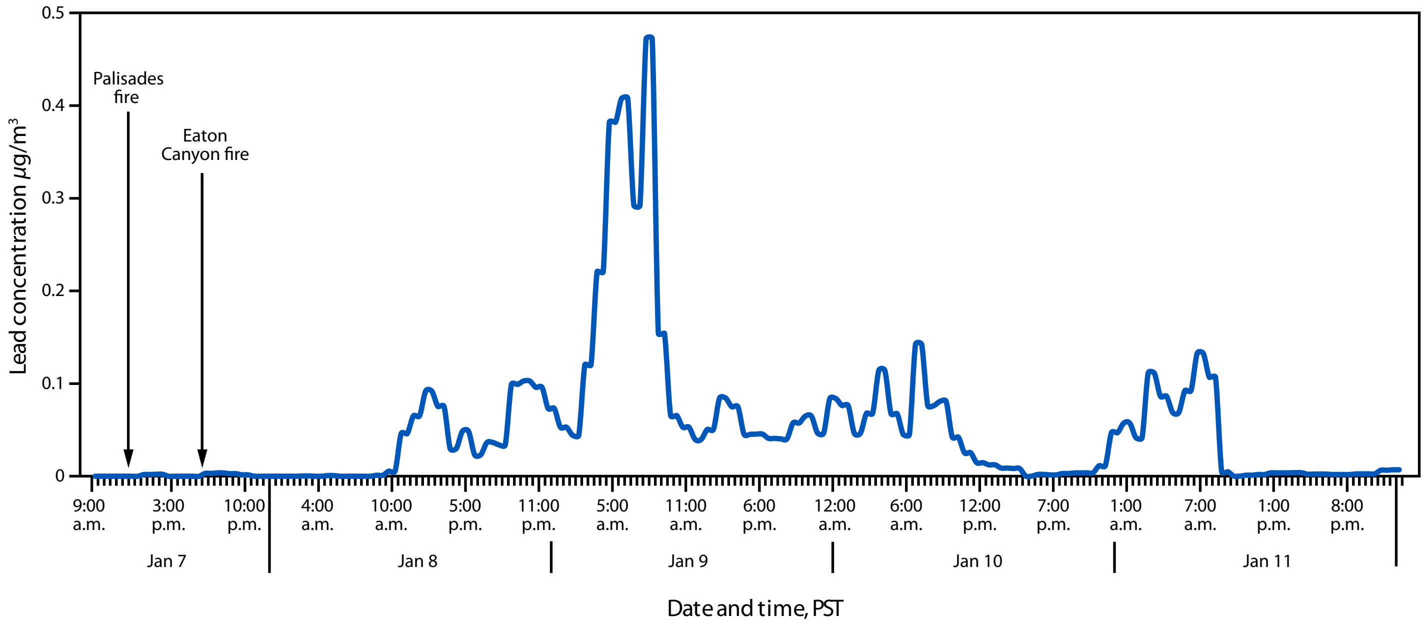
† https://ascent.research.gatech.edu/

§ The seven urban areas are Atlanta, Georgia; Denver, Colorado; Houston, Texas; Los Angeles, California; New York, New York; Pittsburgh, Pennsylvania, and Riverside, California. The five remote or rural areas include Alaska, Cheeka Peak/Makah in Washington, and the Great Smoky Mountains, Joshua Tree, and Yellowstone National Parks.

¶ https://www.epa.gov/laws-regulations/summary-clean-air-act

** https://www.epa.gov/lead-air-pollution/national-ambient-air-quality-standards-naaqs-lead-pb

**FIGURE. Hourly lead concentrations*,† of particulate matter <2.5 μm in diameter at the Los Angeles Atmospheric Science and Chemistry mEasurement NeTwork site relative to the start of the Palisades and Eaton Canyon fires — Pico Rivera, California, January 7–12, 2025**




* μg/m[3].
† The National Ambient Air Quality Standard for lead in total suspended particles over a 3-month rolling average is 0.15 μg/m[3].

and leaded pipes and the banning or limiting of lead in consumer products, such as residential paint, have led to a 97% decrease in airborne lead concentrations in the United States since 1980 (*5*). However, unlike chronic lead exposure, which has been widely studied, the health effects of brief, elevated lead exposures, such as those described in this report, are not well understood. Additional health research is needed, because airborne lead levels alone do not necessarily indicate exposure.

$PM_{2.5}$ is not a single entity but comprises a complex mixture of chemical components with dynamic size distributions, temporal and spatial variations, and toxicity. Whereas the health effects of $PM_{2.5}$ exposure are well documented, studies assessing which sources, chemical compounds, and sizes of particles contribute to health effects are lacking. ASCENT fills in this gap by providing high time-resolution and chemical composition measurements of $PM_{2.5}$ across dynamic size ranges with advanced air quality measurement technologies. The new availability of real-time measurements of the many chemical constituents in $PM_{2.5}$, and time-resolved particle size distributions in diverse U.S. locations, has the capacity to improve understanding of health effects associated with particulate matter exposure and contribute to building a foundation for protecting public health.

**Summary**

What is already known about this topic?

Smoke is a complex mixture of gases and airborne particulate matter; urban fires and conventional wildfires emit different air pollutants. The Atmospheric Science and Chemistry mEasurement NeTwork (ASCENT), a new, advanced air quality measurement network, provides real-time measurements of the chemical constituents in fine particulate matter ($PM_{2.5}$).

What is added by this report?

During the January 2025 Los Angeles fires, ASCENT recorded an approximate 110-fold increase in $PM_{2.5}$ lead levels compared with values from the previous few days.

What are the implications for public health practice?

Urban fires emit air pollutants that pose risks different from those of conventional wildfires. It is important for epidemiologic studies to consider $PM_{2.5}$ composition when assessing the impacts of urban fire smoke exposure. Health officials should communicate protective measures to the public (monitor air quality forecasts and follow guidance by local emergency management officials).

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Corresponding authors: Haroula D. Baliaka, haroula@caltech.edu and Nga L. Ng, ng@chbe.gatech.edu.

[1]California Institute of Technology, Pasadena, California; [2]University of Riverside, Riverside California; [3]University of California Davis, Davis, California; [4]Georgia Institute of Technology, Atlanta, Georgia.


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