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Outbreak of Human Pneumonic Plague with Dog-to-Human and Possible Human-to-Human Transmission — Colorado, June–July 2014

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On July 8, 2014, the Colorado Department of Public Health and Environment (CDPHE) laboratory identified *Yersinia pestis*, the bacterium that causes plague, in a blood specimen collected from a man (patient A) hospitalized with pneumonia. The organism had been previously misidentified as *Pseudomonas luteola* by an automated system in the hospital laboratory. An investigation led by Tri-County Health Department (TCHD) revealed that patient A's dog had died recently with hemoptysis. Three other persons who had contact with the dog, one of whom also had contact with patient A, were ill with fever and respiratory symptoms, including two with radiographic evidence of pneumonia. Specimens from the dog and all three human contacts yielded evidence of acute *Y. pestis* infection. One of the pneumonia cases might have resulted through human-to-human transmission from patient A, which would be the first such event reported in the United States since 1924. This outbreak highlights 1) the need to consider plague in the differential diagnosis of ill domestic animals, including dogs, in areas where plague is endemic; 2) the limitations of automated diagnostic systems for identifying rare bacteria such as *Y. pestis;* and 3) the potential for milder plague illness in patients taking antimicrobial agents. Hospital laboratorians should be aware of the limitations of automated identification systems, and clinicians should suspect plague in patients with clinically compatible symptoms from whom *P. luteola* is isolated.

Investigation and Results

Patient A, a previously healthy middle-aged man, developed fever and cough on June 28. Over the next 24 hours his condition worsened with increasing cough and the production of bloody sputum. He was admitted to a local hospital where he was diagnosed with pneumonia (Figure). Blood cultures collected on June 30 grew a gram-negative rod that was initially identified as *P. luteola* using an automated identification system. Over the next 6 days patient A's respiratory status deteriorated, and he was transferred to another facility where he required intubation. Because of the severity of his illness and previous reports of misidentification of *Y. pestis* as *P. luteola* (*1*,*2*), the isolate was sent to the CDPHE laboratory for further testing. On July 8 the specimen was correctly identified as *Y. pestis*, and patient A received a diagnosis of pneumonic plague. Patient A was treated with broad-spectrum antibiotics, including levofloxacin and streptomycin, and recovered after hospitalization for 23 days.

TCHD initiated an investigation, consisting of interviews with patient A's family, evaluation of potential exposures to the patient, and an environmental assessment to determine the risk for further disease transmission. The investigation revealed

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that patient A's dog, a male American pit bull terrier aged 2 years, became ill with fever, jaw rigidity, drooling, and right forelimb ataxia on June 24 (Table). The dog was kept overnight at a veterinary clinic and humanely euthanized the following day after developing dyspnea and bloody sputum. Patient A had close contact with the dog during euthanasia. Necropsy revealed gastric and pulmonary hemorrhage. Samples tested negative for evidence of rabies virus infection and anticoagulants; histopathologic examination of the tissues was declined by patient A. Following patient A's diagnosis with plague, liver and lung tissues from the dog were tested for *Y. pestis*, and results were positive by both polymerase chain reaction assay and culture. Archived formalin-fixed tissues from the dog were processed for histopathology, revealing severe acute bronchopneumonia with intra-alveolar bacteria. The investigation also identified three other persons who had been in close contact with the ill dog, one of whom who also had contact with patient A. All three subsequently received diagnoses of plague, and all three recovered (Table, Figure).

On June 30, 2 days after patient A became ill, patient B, a female veterinary clinic employee, developed a fever and cough and visited an urgent care facility, where bronchitis was diagnosed. She reported close contact with the ill dog on June 24–25. After her symptoms failed to improve with self-initiated amoxicillin/clavulanic acid, patient B visited an emergency department on July 5, received a diagnosis of pneumonia, and was treated with azithromycin, with improvement over the next several days. After notification on July 10 of her exposure to plague, she visited a health care provider and was treated with oral levofloxacin. A polymerase chain reaction test on a sputum specimen was positive for *Y. pestis*. Subsequent testing of paired acute and convalescent serum specimens demonstrated a fourfold increase in antibody titers to *Y. pestis*, indicative of recent infection (Table).

Patient C, a female veterinary clinic employee, also had close contact with the dog on June 24–25 and self-initiated a 6-day course of oral doxycycline on June 25. On July 4, she experienced fever, chills, myalgia, and fatigue; symptoms progressed to chest tightness and cough. Following notification of the exposure to plague on July 9, patient C self-initiated a second course of doxycycline and was medically evaluated later that day. Crackles were heard during chest auscultation; however, results of a chest radiograph were normal. A full course of oral doxycycline was continued with resolution of symptoms. Initial and follow-up serum specimens tested positive for antibody to *Y. pestis*, with a greater than fourfold decrease in antibody titers at follow-up 6 months later (Table).

On July 4, patient D, a woman who was a close contact of patient A, experienced chest tightness, dyspnea, and fever. She was evaluated at an emergency department, received a diagnosis of pneumonia, and was treated with oral levofloxacin. Patient D handled the body of the dog on June 25 after it died, at one point getting blood on her hands. She also had extended close contact with patient A on June 29–30 while he was coughing bloody sputum. On July 8, after patient A was identified with pneumonic plague, patient D was hospitalized and treated with

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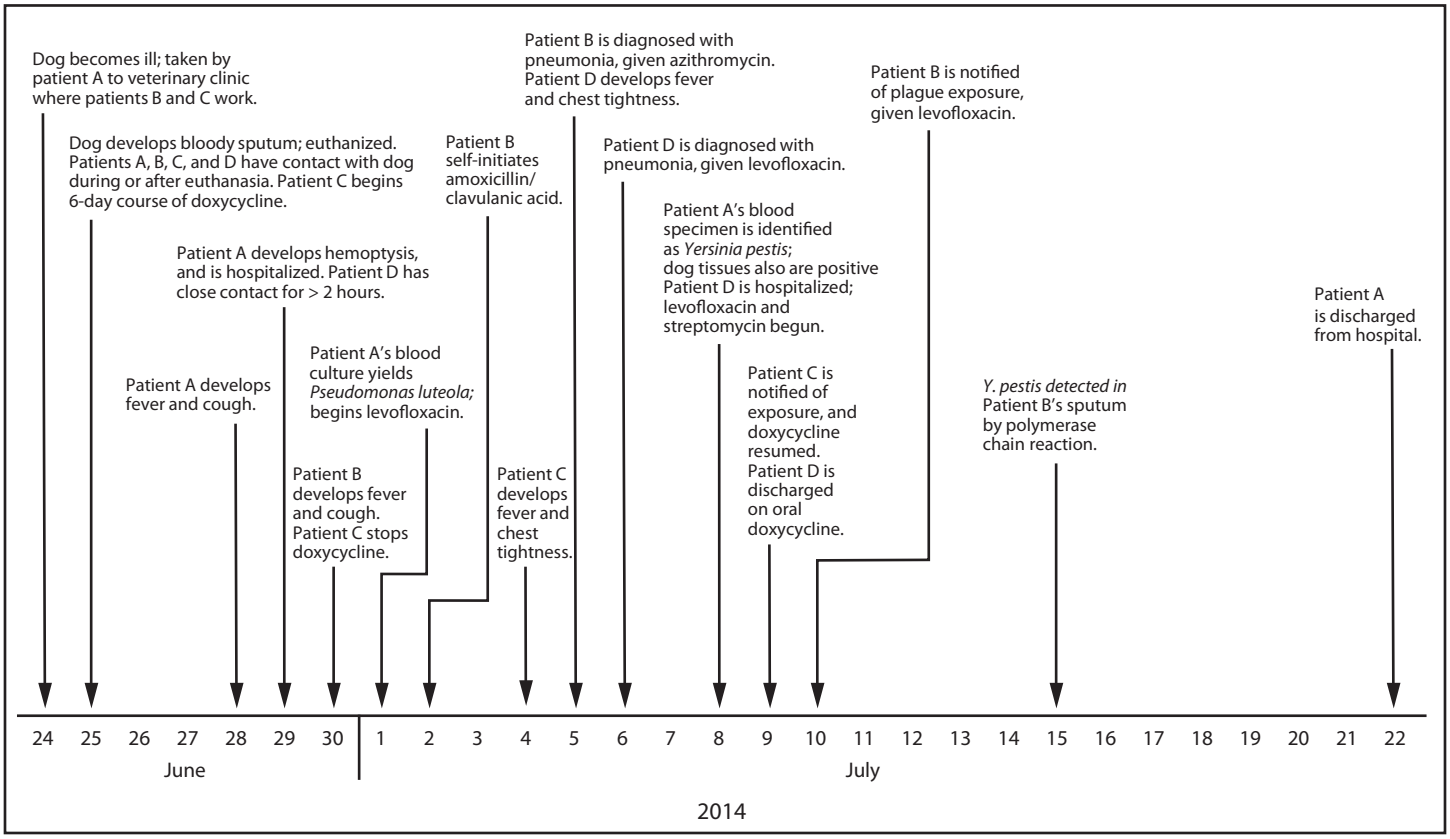
FIGURE. Timeline of diagnoses and treatment for patients identified in a pneumonic plague outbreak — Colorado, 2014



levofloxacin and streptomycin. Paired acute and convalescent serum specimens for patient D demonstrated a greater than fourfold increase in antibody titers to *Y. pestis* (Table).

Public Health Response

TCHD evaluated potential exposures from each patient and conducted an environmental assessment to determine the risk for further disease transmission. Case status was assigned according to case definitions developed by the Council of State and Territorial Epidemiologists for CDC's National Notifiable Diseases Surveillance System.*

Medical personnel and personal contacts of all four patients were notified of their possible exposure to plague. A total of 114 persons had close contact with the dog or one or more of the human patients: 36 in veterinary settings, 58 in human health care settings, and 20 as close personal contacts. Antimicrobial prophylaxis was recommended for 88 persons interviewed within 7 days of exposure. The remaining 26 were advised to monitor for fever for 7 days and to seek medical attention immediately if symptoms occurred.

On July 9, TCHD surveyed patient A's property for evidence of plague. Live rabbits were observed on the property but no other wildlife. Inactive prairie dog burrows were present; however, it was reported that the prairie dog colony had been intentionally eradicated in October 2013.

CDPHE issued press releases for public awareness and Health Alert Network notifications to health care providers and veterinarians on July 9, 10, and 18. Medical facilities were instructed to use droplet precautions for persons with suspected plague. TCHD staff members distributed information on plague symptoms and transmission risk to homes in the vicinity of the index patient. No further cases have been identified.

Discussion

Plague is a rare but life-threatening zoonosis caused by *Y. pestis.* A median of eight cases of human plague are reported annually in the United States (*3*), primarily among residents of semirural areas in New Mexico, Arizona, Colorado, and California. Normally a pathogen of rodents, *Y. pestis* is transmitted to humans through the bite of infected rodent fleas or direct contact with the tissues or secretions of infected animals. Bubonic plague, characterized by fever and painful regional

* Available at http://wwwn.cdc.gov/NNDSS/script/casedef.aspx?CondYrID=800&DatePub=1/1/1996.

TABLE. Dates of exposure and illness onset and test results for patients identified in a pneumonic plague outbreak — Colorado, June–July 2014

					Laboratory test results										
					Polymerase chain reaction			Culture			Serologic testing				
											Initial			Follow-up	
Patient	Date of exposure (source)	Onset of illness	Chest radiograph findings	Hospitalized	Specimen	Date	+/-	Specimen	Date	+/-	Specimen	Date	Titer	Date	Titer
Dog	Unknown	June 24	PNA	Yes	Liver/lung tissue	June 26	+	Liver/lung tissue	June 26	+	NT	NT	NT	NT	NT
A	June 25	June 28	PNA	Yes	Blood	June 29	+	Blood	June 29	+	NT	NT	NT	NT	NT
B	June 25	June 30	PNA	No	Sputum	July 10	+	Sputum, blood	July 10	-	Blood	July 10	1:64	July 24	1:64
														Jan 12 2015	1:256
C	June 25	July 4	no evidence of PNA	No	Blood	July 9	-	Blood	July 9	-	Blood	July 9	1:32	July 24	1:32
														Jan 12 2015	-
D	June 25 (dog)	July 5	PNA	Yes	Blood	July 6	-	Blood	July 6	-	Blood	July 6	-	July 12	1:32
	June 29 (patient A)													July 23	1:32

Abbreviations: PNA = pneumonia; + = positive test result; - = negative test result; NT = not tested.

lymphadenopathy, results from percutaneous exposure and accounts for approximately 85% of reported cases. Pneumonic plague occurs as either a complication of untreated bubonic plague (10%–13% of all cases) or as a primary pneumonia following inhalation of infectious droplets (2% of all cases) (*4*). Untreated pneumonic plague has a fatality rate of ≥93% and can be spread from person to person through aerosols generated during coughing. A third clinical form, septicemic plague, is characterized by fever and shock without localizing signs or symptoms. Laboratory diagnosis of plague is based on culture or polymerase chain reaction assays of blood, sputum, or lymph node aspirates, or on serology. Effective therapy includes aminoglycosides and doxycycline. In addition, the fluoroquinolones levofloxacin and ciprofloxacin have been approved recently by the Food and Drug Administration based on animal studies.[†] The advent of antimicrobial therapy has reduced overall plague mortality from >60% to approximately 16% (*3,5,6*).

In this outbreak, all four patients had laboratory-confirmed plague, including three patients (A, B, and D) with clinical and radiographic evidence of pneumonia. The fourth patient (C) had an atypical presentation with respiratory symptoms but no radiographic evidence of pneumonia, possibly as a result of partial treatment immediately after exposure. Three patients (A, B and C) became ill shortly after exposure to an ill infected dog. The source of infection for patient D is less certain because she had exposure to both the dog on June 25–26 (an incubation period of 9–10 days) and to patient A on June 29–30 while he had hemoptysis (an incubation period of 5–6 days). The shorter incubation period is more typical of plague and therefore supports human-to-human transmission (*6*). Nevertheless, transmission from the dog cannot be excluded given the animal's role in the other three infections and because incubation periods of up to 10 days have been reported, although rarely (*7*). Primary pneumonic plague is rare in the United States with only 74 cases reported during 1900–2012, and this event represents the largest outbreak and the first instance of possible human-to-human transmission since an outbreak in Los Angeles in 1924 (*3,5*).

Y. pestis infection in dogs generally is either asymptomatic or the cause of only a mild, self-limiting febrile illness (*8*). Dogs can play a role in human infection through transport of rodent fleas into the home (*8,9*). This outbreak began with illness in a pet dog, a previously unrecognized source of plague exposure in the United States. The only previously published case of direct transmission of plague from a dog to a human was reported from China in 2009 (*10*). Although symptomatic plague in dogs is rare, veterinarians should consider the possibility of *Y. pestis* infection in ill dogs with wildlife exposure in areas where plague is endemic.

This outbreak is notable for the several factors that delayed its recognition. First, patient A's bacterial isolate initially was identified as *P. luteola* by an automated blood culture system, and the correct identification of *Y. pestis* was only made 7 days later. This delay resulted in the exposure of numerous medical personnel. Misidentification and a resulting delayed diagnosis have been previously reported, reinforcing the need

[†] Available at http://www.fda.gov/downloads/Drugs/DrugSafety/ucm088619.pdf (levofloxacin) and http://www.fda.gov/downloads/Drugs/DrugSafety/ucm246794.pdf (ciprofloxacin).

What is already known on this topic?

Rapid identification of plague is critical in patients who live in, or who have recently traveled to, regions where plague is endemic, including the western United States. The three most common forms of plague are bubonic, pneumonic, and septicemic, with the majority of cases presenting as bubonic. Although the rarest form of plague (approximately 2% of reported cases), primary pneumonic plague has a high (≥93%) mortality rate when left untreated.

What is added by this report?

The outbreak in Colorado represents the largest outbreak of pneumonic plague in the United States since 1924. The source of the outbreak was a dog with pneumonic plague, an atypical occurrence because dogs infected with *Yersinia pestis* generally are either asymptomatic or exhibit mild self-limiting febrile illness and are not considered a direct source of human infection. Four persons developed plague after exposure to the ill dog; one of the patients also had close contact with the index patient after he developed plague pneumonia, supporting possible human-to-human transmission. Diagnosis in the index case was delayed because of misidentification of a bacterial isolate as *Pseudomonas luteola* by an automated blood culture system. The spectrum of disease in this outbreak was broader than usual for pneumonic plague, with two of the four patients not requiring hospitalization, possibly as a result of self-administration of antibiotics or medical prescription of azithromycin, an antibiotic not recommended for plague.

What are the implications for public health practice?

Plague should be considered in the differential diagnosis of dogs with respiratory illness in areas where plague is endemic. The results of automated blood culture systems should be evaluated critically when rare diseases are suspected. Patients with suspected pneumonic plague should be isolated before laboratory confirmation and treated with appropriate antibiotics. Blood or sputum cultures should be sent to state public health laboratories for confirmation.

for critical evaluation of results from automated systems and education of hospital microbiologists regarding this limitation (*1*,*2*). Among 12 *Y. pestis* isolates obtained from U.S. patients during 2010–2013, at least three (25%) were originally misidentified by automated systems (Division of Vector-borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases, CDC, unpublished data, 2015). Second, the spectrum of disease was broader than usual for pneumonic plague (*7*), with two of the four patients not requiring hospitalization. The clinical course of the milder cases might have been modified by self-administration of antibiotics or medical prescription of azithromycin, an antibiotic not recommended for plague. Pneumonia is the only form of plague with the potential for human-to-human transmission. Delayed recognition because of inaccurate laboratory test results and atypical clinical presentations can lead to high numbers of potential exposures to health care workers, laboratory workers, and other close contacts.

Although human plague is rare in North America, it remains a public health concern in the western United States where *Y. pestis* circulates among wild rodent populations. The risk for plague can be minimized by avoidance of possibly infected rodents (e.g., prairie dogs) and their fleas. All suspected or confirmed plague cases and rodent die-offs in areas where plague is endemic should be reported immediately to public health officials so that exposures can be minimized to prevent additional transmission. Once plague is suspected, appropriate precautions and treatment should be initiated immediately, and clinical specimens should be collected and tested as soon as possible. Early recognition of plague, especially the pneumonic form, is critical to effective clinical management and a timely public health response. Veterinarians should consider plague in the differential diagnosis of ill domestic animals, including dogs, in areas where plague is endemic.

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Laboratory-Acquired Vaccinia Virus Infection in a Recently Immunized Person — Massachusetts, 2013

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On November 26, 2013, the CDC poxvirus laboratory was notified by the Boston Public Health Commission (BPHC) of an inadvertent inoculation of a recently vaccinated (ACAM2000 smallpox vaccine) laboratory worker with wild type vaccinia virus (VACV) Western Reserve. A joint investigation by CDC and BPHC confirmed orthopoxvirus infection in the worker, who had reported a needle stick in his thumb while inoculating a mouse with VACV. He experienced a non-tender, red rash on his arm, diagnosed at a local emergency department as cellulitis. He subsequently developed a necrotic lesion on his thumb, diagnosed as VACV infection. Three weeks after the injury, the thumb lesion was surgically debrided and at 2 months post-injury, the skin lesion had resolved. The investigation confirmed that the infection was the first reported VACV infection in the United States in a laboratory worker vaccinated according to the Advisory Committee on Immunization Practices (ACIP) recommendations. The incident prompted the academic institution to outline biosafety measures for working with biologic agents, such as biosafety training of laboratory personnel, vaccination (if appropriate), and steps in incident reporting. Though vaccination has been shown to be an effective measure in protecting personnel in the laboratory setting, this case report underscores the importance of proper safety measures and incident reporting (*1*,*2*).

Case Report

On November 23, 2013, a man aged 27 years who was a laboratory worker at an academic institution went to a local emergency department with a non-tender, erythematous rash on the skin over his left biceps and extending to the antecubital fossa (Figure 1a). He reported a needle stick in his left thumb had occurred on November 17 while he was inoculating a mouse by scarification with VACV. He had no fever, chills, or other systemic or neurologic symptoms. An ultrasound of his left thumb revealed a small collection of fluid at the puncture site. No culture was performed. Cellulitis was diagnosed in the patient, and he was admitted to the hospital and given cefazolin intravenously, 1 g every 6 hours for 18 hours. He was discharged on November 24 with a prescription for cephalexin, 500 mg orally four times a day for 10 days. A dressing was placed over the wound, and he was instructed to change the dressing three times a day and dispose of the contents in a biohazard container provided by the hospital. He was also instructed to report the next day to the occupational health clinic at the institution where he worked.

On November 25, the patient went to the institution's occupational health clinic with a necrotic lesion on the volar surface of the left thumb and erythema over the left biceps extending to the volar forearm. A necrotic VACV infection was diagnosed, and the patient was advised to continue cephalexin. As required by BPHC research laboratory regulations, occupational health notified BPHC, which notified the Massachusetts Department of Public Health and CDC. BPHC initiated an investigation and reinforced infection control measures, including instruction on keeping the wound covered and proper disposal of dressings.

An evaluation on November 26 revealed that the necrotic lesion on the thumb persisted (Figure 1b), but erythema of the arm was less pronounced. A blood specimen was sent to the CDC for serological and molecular testing. By November 27, the lesion appeared stable and the erythema had resolved.

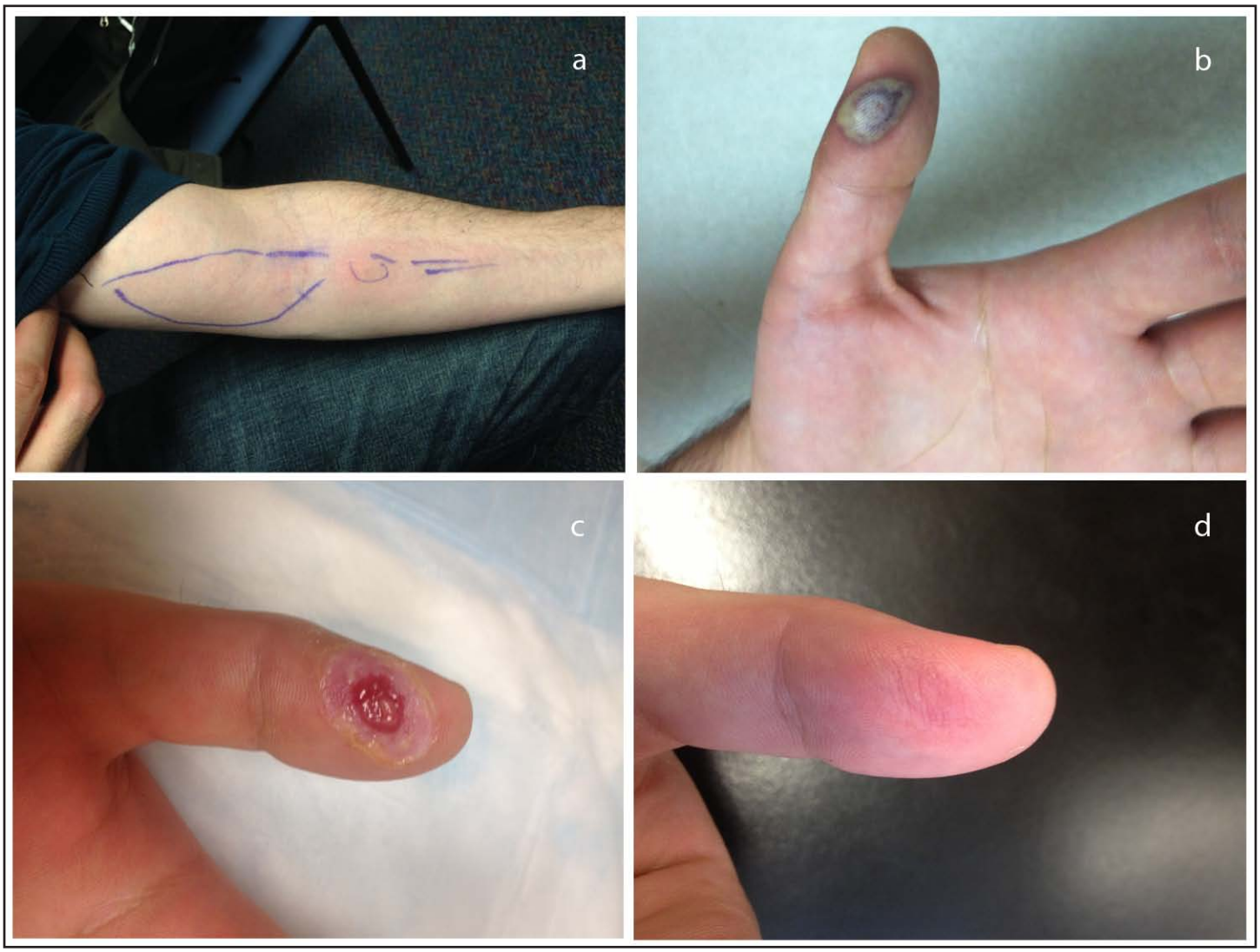
On December 10, 23 days after the injury, the lesion was surgically debrided (Figure 1c) and a specimen was submitted for diagnostic testing at Hinton State Laboratory Institute and CDC. Orthopoxvirus infection was confirmed at both laboratories using polymerase chain reaction (*3*). VACV was isolated using tissue culture at CDC (*4*). Serology completed by CDC revealed high levels of orthopoxvirus immunoglobulin G (Figure 2) (*5*). By January 9, 2014, the skin lesion had resolved (Figure 1d), and the patient was asymptomatic.

Exposure History and Laboratory Safety Evaluation

Investigation by BPHC found that on November 17, 2013, the patient sustained a needle-stick injury on his left thumb while recapping a 25-gauge needle. The needle had been used to scarify mice with non-recombinant wild type VACV Western Reserve type 1354. The experiment involved applying 10 μL of 10^5 plaque-forming units/μL of trypsinized virus stock on mouse skin and using an empty needle to inoculate by scarification.

Mice were anesthetized during the procedure, and the experiment was performed in a Class II biosafety cabinet. The patient

FIGURE 1. Progression* of vaccinia virus (VACV) infection in VACV-immunized laboratory worker inadvertently inoculated with VACV — Massachusetts, 2013

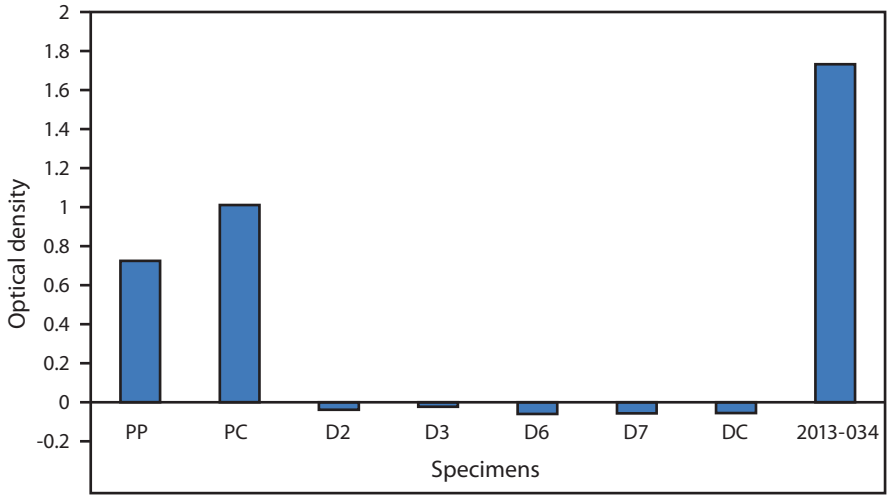


* a) erythema along left bicep 6 days post-inoculation, b) lesion on left thumb 9 days post-inoculation, c) lesion on left thumb after surgical debridement 23 days post-inoculation, d) left thumb exhibiting complete resolution of infection >3 weeks after surgical debridement.

reported that as he performed the scarification procedure on the anesthetized mouse, a mouse in an adjacent cage distracted him. When he attempted to recap the needle, it penetrated two layers of gloves and punctured the volar surface of his left thumb. He immediately sprayed his gloves with a chlorine dioxide-based sterilant, removed the gloves, degowned, and washed his hand with water and soap for approximately 10 minutes, expressing blood from the injury as he washed his hand. The gloves were examined immediately after the needle-stick. He noticed a visible hole and small amount of blood. An incident report was filed with the project's principal investigator on November 17, the day of the needle-stick injury. The principal investigator subsequently contacted an infectious disease physician, who advised that the patient should go immediately to a hospital emergency department if there were signs of infection.

BPHC staff visited the institution on November 26, 2013, as part of the investigation. The biologic safety officer, laboratory manager, principal investigator, occupational health nurse, and patient were present. BPHC toured the animal facility and the research laboratory noting that both areas were well maintained, with proper biosafety signage, certified biosafety cabinets, disinfectants, and waste containers. The laboratory protocols and the VACV vaccination recommendations for staff were also reviewed by BPHC, which identified the practice of recapping needles as a lapse from standard laboratory procedure.

FIGURE 2. Results of serologic testing for vaccinia virus (VACV) in a VACV-immunized laboratory worker inadvertently inoculated with VACV — Massachusetts, 2013



Abbreviations: PP = immunoglobulin (Ig) G positive pool; PC = IgG positive control; D2, D3, D6, D7, DC = negative controls; 2013-034 = laboratory worker's specimen.

The patient had been working in the laboratory since January 2013 and working with VACV since March 2013. In January 2013, he completed both New Employee Safety Training and Animal Use Orientation, which included animal biosafety. On March 22, he had received individualized, specific VACV training, including work practices and procedures related to working with VACV. Potential routes of exposure, vaccination, monitoring of vaccination response, emergency procedures, and incident reporting were covered in this training. The patient had also met with an animal care supervisor to review the established animal care procedures for the laboratory.

As of January 2014, the laboratory affirmed its intent to use safety syringes and needles in future experiments, and the academic institution outlined measures to be taken to ensure safe use of biologic agents, which included discouraging recapping of needles, reviewing biosafety-level 2 animal inoculation procedures by animal care staff, and providing information pertaining to the availability of safety needles for use in research. The required training for all research principal investigators was revised by the institution to emphasize their responsibilities in incident/injury reporting for staff working with biologic materials under the Institutional Biosafety Committee's purview.

The patient had been vaccinated with the ACAM2000 smallpox vaccine on January 28, 2013 (confirmed by medical record review and physician recall). A new vial of vaccine had been reconstituted that day, just before use. On February 5, 2013, 9 days after vaccination, the patient was evaluated at the occupational health facility where he had received his vaccination. At that time a 0.5-cm white lesion was present at the center of the vaccination site (left deltoid). Wound edges were pink but intact. Scant yellow/green drainage was observed on the dressing. At follow-up a week later, a 0.5-cm brown dry eschar was present at the center of the wound. These findings were consistent with a major cutaneous reaction, or "take," suggesting a successful response to vaccination. The vaccine from this vial was also administered to two other recipients with no reported vaccine failures. Previously, five other researchers in the laboratory had also been offered and accepted vaccination.

Discussion

The ACIP recommends smallpox vaccination for laboratory personnel who directly handle cultures or animals contaminated or infected with non-highly attenuated VACV (*1*). Persons working with non-highly attenuated VACV (e.g., Western Reserve) or non-variola orthopoxviruses are recommended to be revaccinated every 10 years; persons working with more virulent non-variola orthopoxviruses such as monkeypox can consider revaccination every 3 years to ensure adequate protection (*1*). Laboratory-acquired VACV infections have been reported previously (*2*); however, this is the first report of laboratory-acquired VACV infection in a recently vaccinated laboratory worker. Two other cases of laboratory-acquired VACV among vaccinated persons have been reported, but in one case, the person was vaccinated >10 years before exposure, thus not conforming to ACIP recommendations, and the other did not exhibit a vaccine take at the time of vaccination, which was 6 years before exposure (*6*). Vaccination with VACV is administered by scarification of the skin which causes characteristic focal lesions that are indicative of successful vaccination, otherwise known as a major cutaneous reaction, or take (*7*,*8*). Cutaneous reactions at the inoculation area can include a papule, vesicle, ulcer, or crusted lesion surrounded by induration (*8*).

The patient's elevated levels of immunoglobulin G indicate prior exposure by vaccination or infection. However, the level of antibody that protects against VACV infection is unknown and antibody level might not be indicative of protective, neutralizing antibodies against infectivity (*9*). The viral load caused by the patient's needle stick and the significance it played in clinical symptomology are also unknown. Knowing the viral load in the patient might have helped explain why the patient

What is already known on this topic?

Occupational exposures to orthopoxviruses in laboratories can result in infections. The most effective means of prevention are preexposure smallpox vaccination, training, and laboratory safety measures such as proper handling and disposal of needles. In addition, incident reporting and timeliness of seeking medical treatment for inadvertent exposures are critical components of laboratory response plans.

What is added by this report?

In November 2013, a worker in an academic laboratory inadvertently stuck his thumb with a needle being used to inoculate a mouse with wild type vaccinia virus. Despite having been vaccinated with smallpox vaccine less than one year earlier, he developed a rash on his arm and necrotic lesion on his thumb that resolved following treatment. This is the first report of a laboratory worker in the United States vaccinated against vaccinia virus according to Advisory Committee on Immunization Practices guidelines who exhibited infection after an unintentional inoculation. Recommendations to enhance worker safety were made and implemented.

What are the implications for public health practice?

Vaccination alone is insufficient as the sole preventive measure against laboratory-acquired orthopoxvirus infections. It must be complemented with effective biosafety protocols such as education of laboratory personnel, safe laboratory practice, and incident reporting.

experienced symptoms despite having been vaccinated. In addition, vaccination might not offer full immunity but might lessen clinical severity as evidenced by amelioration or absence of takes in re-vaccinees (*9*). Administration of VACV within a few days of exposure to smallpox virus has been shown to reduce symptoms of disease (*1*), so it remains a possibility that this patient's infection was reduced in severity because of preexisting immunity. This underscores the importance of smallpox vaccination among laboratory workers who use VACV in research settings, which is recommended by ACIP to prevent or minimize the effects of unintentional orthopoxvirus infection in a laboratory (*10*). Finally, establishing and reinforcing safe laboratory practices such as proper handling of contaminated needles and use of personal protective equipment is important in reducing the risk of injury and infection. Development, implementation, and training on safety protocols are important preventative steps (*6*). Laboratory personnel should be aware of immediate steps to be taken, including notification of laboratory supervisors, occupational health clinics, and local and state public health departments based on reporting regulations in their localities. These steps can reduce the risk of severe infection and possible transmission to others by direct contact. Contact tracing is not usually recommended because proper infection control techniques reduce risk to others; however, the investigations should focus on infection control, and if there is a concern about exposure to others, contact investigation should be limited to persons who might have had contact with lesion exudates (*2*).

This case report demonstrates the importance of local public health involvement with research laboratories working with organisms that might present a public health risk. Laboratory-acquired VACV infection is not nationally notifiable. However, analysis of information gathered nationally might be useful to develop and monitor best practices. It would also be useful for CDC to be aware of such occurrences to determine if improvements or changes in current recommended protocols need to be made.

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Using Electronic Clinical Quality Measure Reporting for Public Health Surveillance

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By June 2013, three fourths of office-based practicing physicians in the United States had adopted some form of electronic health record (EHR) system (*1*). With greater EHR use, more health data are linked with available patient demographic information in a format that is easily retrievable and collected at the point of care (*2*). This highlights the potential of electronic clinical quality measure (CQM) reporting data for use in monitoring population health for those receiving health care services. To assess this possibility, electronic CQM data that were submitted to the Medicare EHR Incentive Program were analyzed to assess provider progress toward achieving blood pressure control among their patients with hypertension. Approximately 63,000 health care providers reported at least 1 time over 3 years, representing approximately 17 million patients with hypertension. On average, 62% of patients with hypertension had controlled blood pressure. Use of EHR data for public health surveillance could streamline reporting, facilitating more timely and possibly more complete data collection in key areas of public health concern.

Recent adoption of EHR systems was encouraged by monetary incentives for participation and financial penalties for noncompliance under the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 (*3*,*4*). Through the HITECH Act, the Medicare EHR Incentive Program provided financial incentives for the adoption and meaningful use of certified EHR technology (*5*). To receive a meaningful use incentive payment, eligible health care providers must attest that they used their certified EHR system in a way that improved patient safety, care coordination, quality and efficiency of care, and public health reporting, as well as in a way that encouraged patient engagement and protected the privacy and security of sensitive health information (*6*).

The first attestations were reported to the Centers for Medicare & Medicaid Services in 2011. Those attestations were required to include a report of performance on six CQMs, most of which were endorsed by the National Quality Forum (NQF). The aggregate numerators and denominators for these CQMs were required to be calculated by a certified EHR system of the health care provider. CQMs were required so that providers would become familiar with generating population-level quality data from their EHR systems. For this reason, CQMs could be developed in the EHR system by either the vendor or health care practice staff without additional validation, no minimum performance thresholds were established for these measures, and providers could report a value of zero for either the numerator or denominator without penalty. CQMs were reported in aggregate to protect patient privacy and reflect the population of patients seen by the eligible health care provider and for whom data were entered into the EHR. Because these data reflect all patients seen by the provider during a given measure's reporting period, they represent a useful resource for population-level surveillance for key public health concerns for persons receiving care. To avoid missing an incentive payment, eligible providers were required to attest each year after their initial attestation; to avoid penalties in 2015, all Medicare-eligible providers were required to demonstrate meaningful use by 2014.

Providers demonstrating meaningful use had to report on three required CQMs and three additional CQMs selected from a list of optional measures. Several of those optional CQMs were aligned with clinical performance goals of Million Hearts, a U.S. Department of Health and Human Services initiative that was launched in 2012 to prevent 1 million heart attacks and strokes by 2017. One strategy of Million Hearts is to help clinicians and health care systems focus on achieving excellence in a small set of evidence-based CQMs.* To reach the 2017 goal, Million Hearts set a clinical performance target of ≥70% for each of these CQMs. This is first example of electronic CQM data being used to evaluate nationwide progress toward a public health improvement goal.

The number of health care providers reporting Million Hearts CQMs through the incentive program has steadily increased over time, whereas the percentage of Medicare attestations for which the optional measures were chosen has remained relatively constant (Table 1). The highest proportion of eligible health care providers reported the blood pressure control measure (National Quality Forum [NQF] #0018†; 26%–27%), compared with the taking aspirin when appropriate measure (NQF #0068; 3%–4%) and the cholesterol management measure (NQF #0064; 17%–19%). Therefore, only NQF #0018 is discussed in this report.

* Available at http://millionhearts.hhs.gov/aboutmh/cqm_measure_alignment.html.

† Defined as the percentage of patients aged 18–85 years who had a diagnosis of hypertension within the first 6 months of the measurement period, or any period of time before the measurement period, whose blood pressure was adequately controlled (<140/90 mmHg) during the measurement period.

TABLE 1. Number of providers reporting clinical quality measures through the Medicare Electronic Health Record Incentive Program and percentage of attestations for each CQM, by reporting year — United States, 2011–2013

Million Hearts goal	Corresponding CQM	CQM definition	Year	Reporting Medicare providers (no.)	Medicare attestations (%)
Aspirin when appropriate	NQF #0068	Percentage of patients who were discharged alive in past year with AMI, CABG, or PTCA or who had a diagnosis of IVD during measurement year who had documentation of aspirin or other antithrombotic during measurement year	2011	2,067	4
			2012	5,539	3
			2013	8,350	4
Blood pressure control	NQF #0018	Percentage of patients aged 18–85 years with a hypertension diagnosis who had adequate blood pressure control during measurement year	2011	14,968	26
			2012	48,644	26
			2013	62,928	27
Cholesterol management	NQF #0064	Percentage of patients aged 18–75 years with diabetes (type 1 or type 2) who had LDL-C <100 mg/dL	2011	11,094	19
			2012	33,577	18
			2013	40,807	17

Abbreviations: AMI = acute myocardial infarction; CABG = coronary artery bypass graft; CQM = clinical quality measure; IVD = ischemic vascular disease; LDL-C = low-density lipoprotein cholesterol; NQF = National Quality Forum; PTCA = percutaneous transluminal coronary angioplasty.

Approximately 63,000 health care providers reported at least 1 time over 3 years on their progress toward achieving blood pressure control among their patients with hypertension (NQF #0018), representing approximately 17 million patients with hypertension. On average, 62% of patients with hypertension had controlled blood pressure; this percentage remained stable during 2011–2013 at 62%–63% (Table 2). At least one third of all Medicare attesters reporting on this measure controlled the blood pressure of ≥70% their patients with hypertension. Differences were found between early and later adopters in the incentive program (Table 3). Differences across the various attestation cohorts varied slightly; however, the differences were not statistically significant in 2013, when all three groups reported. The early adopters (2011 cohort) had a large proportion of health care providers who were at or above the Million Hearts clinical performance goal, and performance in the 2011 cohort did not change significantly during the 3 years of reporting. The 2012 cohort's performance improved slightly ($p<0.001$) from their first to their second attestation.

TABLE 2. Number of patients with hypertension, percentage of providers who reached the Million Hearts goal,* and percentage of patients with adequately controlled blood pressure,† by reporting year — United States, 2011–2013

Measure§	2011	2012	2013
No. of patients with hypertension (millions)	2	8	17
Providers who reached Million Hearts Goal (%)	41	36	36
Patients with adequately controlled blood pressure (%)			
Mean	63	61	62
First quartile	52	51	53
Median	66	64	65
Third quartile	77	75	75

Abbreviations: CQM = clinical quality measure; NQF = National Quality Forum.
* Controlled the blood pressure of ≥70% of patients with hypertension.
† <140/90 mmHg.
§ Among providers reporting CQM NQF #0018, which is defined as the percentage of patients aged 18–85 years who had a diagnosis of hypertension within the first 6 months of the measurement period, or any period of time before the measurement period, whose blood pressure was adequately controlled (<140/90 mmHg) during the measurement period.

Discussion

The data in this report represent a large sample of both physicians and patients and not only allow for ascertainment of aggregate annual performance on measures of public health concern but also for longitudinal studies based on a large patient population. The performance reported for these measures is similar to the performance measured through the Healthcare Effectiveness Data and Information Set (HEDIS), which reflects blood pressure control (NQF #0018) performance on the basis of health insurance plan reporting (*7*). HEDIS 2012 values ranged from 57% to 69% across the different plans. The values reported through the incentive program CQMs fall within that range. The incentive program CQM reporting includes all patients seen by the provider. As a result, the population and overall performance might be expected to differ from the HEDIS data slightly because the incentive program CQMs might include patients not covered by health insurance or who had inconsistent coverage over the course of a calendar year. Improvements in blood pressure control result from specific actions by clinicians and patients. Efforts to enhance medication adherence, support healthy habits, and provide training for self-monitoring will engage and enable patients to safely achieve and maintain control.

This report has at least seven limitations. First, NQF #0018 relies on the use of *International Classification of Diseases, Ninth Revision, Clinical Modification* code 401, Essential Hypertension, to generate the measure denominator. Therefore, patients who exhibited clinical characteristics of hypertension but did not have an official hypertension diagnosis were not counted, possibly resulting in an overestimate of true blood pressure control in the patient population. In contrast, the

TABLE 3. Percentage of patients with adequately controlled blood pressure,* by attestation cohort year†— United States, 2011–2013

Cohort	2011			2012			2013		
	No. of providers attesting§	Mean score (%)	% at Million Hearts goal¶	No. of providers attesting§	Mean score (%)	% at Million Hearts goal¶	No. of providers attesting§	Mean score (%)	% at Million Hearts goal¶
2011 cohort (early adopters) (N = 57,677)	14,968	63	41	13,811	62	36	14,353	63	39
2012 cohort (N = 138,848)	—	—	—	34,833	61	36	32,769	63	36
2013 cohort (later adopters) (N = 69,141)	—	—	—	—	—	—	15,806	60	33

Abbreviations: CQM = clinical quality measure; NQF = National Quality Forum.

* Among providers reporting CQM NQF #0018, which is defined as the percentage of patients aged 18–85 years who had a diagnosis of hypertension within the first 6 months of the measurement period, or any period of time before the measurement period, whose blood pressure was adequately controlled (<140/90 mmHg) during the measurement period.

† Eligible health care providers were assigned to an attestation cohort based on the first year they attested to meaningful use with the Medicare Incentive Program.

§ Across any 2 years in the program, 16%–18% attrition has occurred; however, most health care providers return to participate in subsequent years. In addition, because NQF #0018 is an optional CQM, health care providers may choose to report on the measure in 1 year and not in another.

¶ Controlled the blood pressure of ≥70% of patients with hypertension.

National Health and Nutrition Examination Survey, considered the gold standard for estimating national rates of blood pressure control among the entire U.S. population, estimated blood pressure control at 52% during 2011–2012 (*8*). Second, participating health care providers might not be representative of non-Medicare, or nonparticipant, provider populations. Third, because providers were able to select from various quality measures, they might have reported on measures for which they had better performance, although no financial incentive to do so was available. Fourth, because these data were reported in aggregate by individual health care providers, certain patients might have been counted twice if they were cared for by multiple providers. Fifth, CQM data were self-reported and might not have been validated by an Office of the National Coordinator for Health Information Technology Authorized Certification Body. To increase data validity, starting in 2014, incentive program CQM reporting must be performed using an EHR that has been certified to calculate that measure (*9*). Sixth, incentive program CQM reporting was based only on the data available in the EHR system of the health care provider. If a patient transitioned to another provider, such as a specialist, the original EHR might not have subsequent, possibly improved, blood pressure values recorded. Increased electronic exchange of health information, in which patient health information is reported back to the primary care provider, might ensure that the primary care provider is aware of such improvements in the patient's health. Finally, CQM data do not include patient-reported blood pressure values. Therefore, if a health care provider was monitoring blood pressure for certain patients using patient-reported data, those patient-reported data were not included Understanding how to use patient-reported data for decision-making is critical as more patients engage in self-monitoring.

What is already known on this topic?

New data sources can be used by public health organizations to streamline population health surveillance, increase the timeliness of data collection, and decrease associated expenses. Health care providers participating in the Centers for Medicare & Medicaid Services Medicare Electronic Health Record (EHR) Incentive Program are reporting electronic clinical quality measures (CQMs) for all patients. These electronic CQMs can be used to monitor various population health issues.

What is added by this report?

Electronic CQMs reported through the Medicare EHR Incentive Program were used to measure whether eligible health care providers met clinical performance goals set by the Million Hearts initiative, an initiative established to prevent 1 million heart attacks and strokes by 2017. Approximately 63,000 health care providers reported at least 1 time during 2011–2013, representing approximately 17 million patients with hypertension. On average, 62% of patients with hypertension had controlled blood pressure. One third of health care providers met the Million Hearts clinical performance goal of controlling the blood pressure ≥70% of their patients with hypertension.

What are the implications for public health practice?

Population health surveillance can be costly, time consuming, and limited, depending on the data source. CQMs reported to the Medicare EHR Incentive Program reflect aggregate data on all patients seen by a health care provider during a given measure's reporting period and therefore represent a substantial proportion of the U.S. population. These data are reported as a function of another federal program and are the result of automated extraction from an EHR, which might streamline the reporting process for the health care provider, resulting in data that are a useful resource in public health surveillance.

Incentive program CQMs are calculated by extracting structured data elements collected in the EHR at the point of care, a process that reduces the amount of data retrieval required for tracking progress. In addition, alignment of CQMs across federal and private sector programs enables clinicians to collect data once and report to selected programs. This analysis demonstrates the potential for electronic CQM reporting to be used for monitoring population health. State and local public health agencies can partner with state, regional, or local health information exchanges; the state primary care association; the state Medicaid program; and health systems to explore the use of existing EHR data for surveillance while still ensuring appropriate safeguards to maintain patient privacy. Federal public health and health care agencies can collaborate to improve the strength and usability of EHR data as appropriate infrastructure at the state and local levels is being built and interoperability standards are being developed. As EHR implementation becomes more widespread, the data collected by these systems will be invaluable for monitoring numerous clinical conditions.

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Community Outbreak of HIV Infection Linked to Injection Drug Use of Oxymorphone — Indiana, 2015

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On April 24, 2015, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

On January 23, 2015, the Indiana State Department of Health (ISDH) began an ongoing investigation of an outbreak of human immunodeficiency virus (HIV) infection, after Indiana disease intervention specialists reported 11 confirmed HIV cases traced to a rural county in southeastern Indiana. Historically, fewer than five cases of HIV infection have been reported annually in this county. The majority of cases were in residents of the same community and were linked to syringe-sharing partners injecting the prescription opioid oxymorphone (a powerful oral semi-synthetic opioid analgesic). As of April 21, ISDH had diagnosed HIV infection in 135 persons (129 with confirmed HIV infection and six with preliminarily positive results from rapid HIV testing that were pending confirmatory testing) in a community of 4,200 persons (*1*).

The age range of the 135 patients is 18–57 years (mean = 35 years; median = 32 years); 74 (54.8%) are male. A small number of pregnant women were diagnosed with HIV infection and started on antiretroviral therapy during pregnancy. As of April 21, no infants had tested positive for HIV. Of the 135 persons with diagnosed HIV infection, 108 (80.0%) have reported injection drug use (IDU), four (3.0%) have reported no IDU, and 23 (17.0%) have not been interviewed to determine IDU status. Among the 108 who have reported IDU, all reported dissolving and injecting tablets of oxymorphone as their drug of choice. Some reported injecting other drugs, including methamphetamine and heroin. Ten (7.4%) female patients have been identified as commercial sex workers. Coinfection with hepatitis C virus has been diagnosed in 114 (84.4%) patients.

The patients were interviewed about syringe-sharing and sex partners, as well as any social contacts who also might have engaged in high risk behaviors. Those interviewed reported an average of nine syringe-sharing partners, sex partners, or other social contacts who might be at risk for HIV infection. Of the 373 contacts named as of April 21, a total of 247 (66.2%) had been located, 230 (61.7%) were tested, and 17 (4.6%) either declined testing or were not able to be tested. Of the 230 contacts who were tested, test results for 109 (47.4%) were HIV positive, and 121 (52.6%) were HIV negative. Of the 128 contacts who have not yet been located, 74 (57.8%) have been identified as syringe-sharing or sex partners, and 54 (42.2%) are social contacts regarded as at high risk for HIV infection.

Injection drug use in this community is a multi-generational activity, with as many as three generations of a family and multiple community members injecting together. IDU practices include crushing and cooking extended-release oxymorphone, most frequently 40 mg tablets not designed to resist crushing or dissolving. Syringes and drug preparation equipment are frequently shared (e.g., the drug is dissolved in nonsterile water and drawn up into an insulin syringe that is usually shared with others). The reported daily numbers of injections ranged from four to 15, with the reported number of injection partners ranging from one to six per injection event.

Like many other rural counties in the United States, the county has substantial unemployment (8.9%), a high proportion of adults who have not completed high school (21.3%), a substantial proportion of the population living in poverty (19%), and limited access to health care (*1*). This county consistently ranks among the lowest in the state for health indicators and life expectancy (*2*).

ISDH worked with the only health care provider in the immediate community, local health officials, law enforcement, community partners, regional health care providers and CDC to launch a comprehensive response to this outbreak. A public health emergency was declared on March 26 by executive order (*3*). The response has included a public education campaign, establishment of an incident command center and a community outreach center, short-term authorization of syringe exchange, and support for comprehensive medical care including HIV and hepatitis C virus care and treatment as well as substance abuse counseling and treatment. State and local health departments and academic partners, with the assistance of CDC, are working to implement and improve the community outreach programs supported by the executive order and to interrupt IDU-related HIV and hepatitis C virus transmission. Contact tracing by state and CDC disease intervention specialists continues to identify those potentially exposed.

This HIV outbreak involves a rural population, historically at low risk for HIV, in which HIV infection spread rapidly within a large network of persons who injected prescription opioids. The Indiana public health response includes implementing programs to contain the spread of HIV and hepatitis C virus,

curb injection drug use, and concurrently build social resilience in the community. The outbreak highlights the vulnerability of many rural, resource-poor populations to drug use, misuse, and addiction, in the context of a high prevalence of unaddressed comorbid conditions (*4*). The outbreak also demonstrates the importance of timely HIV and Hepatitis C surveillance activities and rapid response to interrupt disease transmission. Finally, the outbreak points to the need for expanded mental health and substance use treatment programs in medically underserved rural areas (*5*).

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Announcements

Arthritis Awareness Month — May 2015

May is Arthritis Awareness Month. Arthritis affects an estimated 52.5 million U.S. adults (*1*), is a common comorbidity among those with multiple chronic conditions, and is a leading cause of disability in the United States (*2*).

Although physical activity can help reduce joint pain and disability among those with arthritis, only one in 10 persons with arthritis meet HHS physical activity guidelines of 150 minutes of moderate activity per week (*3*) Walking is a preferred exercise among arthritis patients (*4*) and has been shown to improve arthritis symptoms, physical function (e.g., walking speed), and quality of life (*5*). The importance of walking was underscored in a recent report demonstrating that decreased physical function, as documented by walking speed, was related to both all-cause and cardiovascular disease deaths among adults with hip osteoarthritis (*6*). For those concerned about safely increasing their walking, programs like Walk With Ease (WWE), a 6-week walking program, can help. WWE has been shown to reduce pain and fatigue and increase function, ability, strength, balance, and walking pace among adults with arthritis and is one of several CDC-recommended physical activity interventions (http://www.cdc.gov/arthritis/interventions/physical-activity.html). Increased availability of WWE programs in community settings for adults with arthritis will help them reduce their pain and improve their health.

Information about ways to help manage arthritis is available at http://www.cdc.gov/arthritis. Additional information is available from the Arthritis Foundation (http://www.arthritis.org) and the National Institute of Arthritis and Musculoskeletal and Skin Diseases (http://www.niams.nih.gov).

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Drinking Water Week — May 3–9, 2015

The United States has one of the safest public drinking water supplies in the world (*1*). Tap water not only provides water for daily personal activities such as drinking, bathing, and cooking, but also benefits communities by providing water to serve businesses, schools, and hospitals. A safe supply of water is an important part of overall health. May 3–9, 2015, is Drinking Water Week, an annual observance. This year's theme "What Do You Know About H_2O?" underscores the many ways consumers can learn more about their water (*2*).

Disinfection and treatment practices, as well as the environmental regulation of water pollutants, have substantially improved domestic water quality during the past century and have led to a marked decrease in the incidence of waterborne diseases such as typhoid fever (*3–5*). Despite these improvements, sources of drinking water still can become contaminated and lead to adverse health effects (*6*).

New challenges to the U.S. water supply include deteriorating drinking water infrastructure, the impact of climate change on water availability and quality, chemical contamination of water sources, emerging pathogens, and the development of new ways to obtain and use water.

Drinking Water Week is a time to highlight the importance that providing safe drinking water and protecting and reinvesting in water infrastructure has to U.S. public health.

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Announcements

Lyme Disease Awareness Month — May 2015

Lyme disease is a multisystem disease caused by the spirochete *Borrelia burgdorferi*. The organism is transmitted through the bite of certain species of blacklegged ticks (*Ixodes* spp.). In 2013, state and local health departments reported approximately 35,000 cases of Lyme disease to CDC, making it the fifth most commonly reported nationally notifiable condition (*1*). Research suggests that as many as 300,000 persons in the United States might be diagnosed and treated for Lyme disease each year (*2*). As with other vectorborne diseases, the geographic distribution of Lyme disease is highly regional. Approximately 95% of confirmed Lyme disease cases are reported from 14 states in the upper Midwest, New England, and the mid-Atlantic states (*3*). Infection is most common among children aged 5–15 years and adults aged 40–60 years (*4*).

To assist health care providers in diagnosing and treating Lyme disease and other tickborne diseases, CDC has released the booklet Tickborne Diseases of the United States: A Reference Guide for Health Care Providers (*5*) and a corresponding cellular telephone and tablet application (*6*). In addition, free continuing education credits are available (information available at http://emergency.cdc.gov/coca/calls/2014/callinfo_041014.asp).

Residents and travelers in areas where Lyme disease is common should take preventive measures, especially during May–July when the risk is greatest. To help prevent Lyme disease, CDC recommends avoiding areas with tall grass and brush where ticks are common; applying repellents that contain at least 20%–30% N,N-diethyl-m-toluamide (DEET); wearing clothing treated with 0.5% permethrin; showering soon after coming indoors; and seeking health care promptly if symptoms of Lyme disease develop, including fever, rash, and muscle or joint pain (*7*).

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Announcements

Amyotrophic Lateral Sclerosis (ALS) Awareness Month — May 2015

May is Amyotrophic Lateral Sclerosis (ALS) Awareness Month. ALS, also known as Lou Gehrig's disease, is a progressive, fatal, neurodegenerative disorder of the upper and lower motor neurons. The etiology of ALS is not well understood, and no cure exists. Persons with ALS usually die within 2–5 years of diagnosis.

In October 2010, the Agency for Toxic Substances and Disease Registry (ATSDR) launched the congressionally mandated National ALS Registry (https://wwwn.cdc.gov/als/Default.aspx) to collect and analyze data regarding persons with ALS in the United States. The goals are to determine the incidence and prevalence of ALS, characterize the demographics of those living with ALS, and examine potential risk factors for the disease. ATSDR released the first National ALS Registry report in July 2014 for persons living with ALS in the United States during October 19, 2010–December 31, 2011 (*1*). Findings in this report indicated that approximately 12,000 people were identified with ALS during this period, or approximately four in every 100,000 persons. ALS is more common in whites, males, non-Hispanics, and persons aged 60–69 years. These findings are consistent with well-established European ALS registries and small epidemiologic studies that have been conducted in the United States.

ALS, like most noninfectious diseases, is not a notifiable disease in the United States. To collect data on cases, the registry uses data from existing national databases, including the Centers for Medicare and Medicaid Services and the U.S. Department of Veterans Affairs, as well as information provided by persons with ALS through the secure online system. Online registrants also can take brief surveys regarding potential risk factors for the disease (e.g., occupational, military, smoking, alcohol, and residential histories).

ATSDR is collaborating with the ALS Association (http://www.alsa.org), Muscular Dystrophy Association (http://www.als-mda.org), Les Turner ALS Foundation (http://www.lesturnerals.org), and other organizations to make all persons with ALS and their families aware of the opportunity to register in the National ALS Registry. Additional features have been added to enhance the registry for patients and researchers, including state and metropolitan area–based ALS surveillance to assist in evaluating the completeness of the registry and to provide local incidence and prevalence data, a research notification system to inform persons with ALS about new research studies, a biorepository study to evaluate the feasibility of collecting biospecimens from enrollees, and mobile apps to help find the nearest ALS clinics and support groups.

Reference

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World Asthma Day — May 5, 2015

May 5, 2015, marks the 17th annual observance of World Asthma Day and the kickoff to Asthma Awareness Month. Asthma is one of the most common chronic diseases in the United States. One in 14 Americans lives with asthma,* experiencing repeated episodes of wheezing, breathlessness, chest tightness, and coughing.

Although asthma cannot be cured, it is possible to manage asthma successfully to reduce and prevent asthma attacks, or episodes. Successful asthma management includes knowing the warning signs of an attack, avoiding things that can trigger an attack, and following the advice of a health care provider.

Members of the public can join experts from CDC and the U.S. Environmental Protection Agency on Tuesday, May 5, at 2:00 p.m. Eastern, for a TwitterChat about asthma, common asthma triggers, and how to create an asthma action plan. To join the moderated conversation, follow @CDCEnvironment on Twitter and use the hashtag *#AsthmaChat2015* in chat messages. No registration is required.

More information about CDC's National Asthma Control Program and its public and private partners is available at http://www.cdc.gov/asthma.

* Additional information is available at http://www.cdc.gov/asthma/most_recent_data.htm.

Announcements

Global Road Safety Week — May 4–10, 2015

The United Nations Road Safety Collaboration has declared May 4–10, 2015, as the third United Nations Global Road Safety Week (GRSW). With the theme #SaveKidsLives, this year's GRSW is dedicated to children, focusing on their safety on the world's roads, actions that better ensure this, and the promotion for inclusion of safe and sustainable transport in the U.N.'s post-2015 development agenda (*1*).

The #SaveKidsLives campaign was launched in November 2014. With input from children and road safety experts around the world, the United Nations Road Safety Collaboration created the Child Declaration for Road Safety, calling on world leaders to include road safety in the global development agenda and outlining what can be done to increase road safety. The campaign invites all persons to read the declaration, sign it, and deliver it to those in charge of road safety in their countries and communities during GRSW (*2*). WHO also released a report, Ten Strategies for Keeping Children Safe on the Road, to guide stakeholders in their prevention and promotion efforts (*3*).

During this year's GRSW, a regional congress focused on child road safety in the Americas will be held in Costa Rica. The congress will bring together key leaders from government agencies, non-governmental organizations, and the private sector to build capacity, share best practices, and create a consensus document on next steps for collaboration in the region.*

The U.N.'s GRSW is part of the organization's larger Decade of Action for Road Safety 2011–2020 activities, aimed at saving five million lives on the road by the year 2020 (*4*). Connect with CDC's Injury Center on Twitter at @CDCInjury to get safety tips leading up to and during Global Road Safety Week. Look for opportunities to get involved with groups in your community, such as the Safe Kids Coalition in the United States.†

Additional information about GRSW and the United Nations Decade of Action for Road Safety, as well as ideas on how to get involved in promoting road safety for children is available from the World Health Organization.§

The CDC is a partner in the global and U.S. efforts to improve road safety and prevent traffic injuries. More information and resources are available on CDC's website.§

* Additional information available at http://www.childroadsafetycongress.org.

† Additional information available at http://www.safekids.org/coalitions.

§ Additional information available at http://www.cdc.gov/features/globalroadsafety and http://www.cdc.gov/motorvehiclesafety.

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Errata

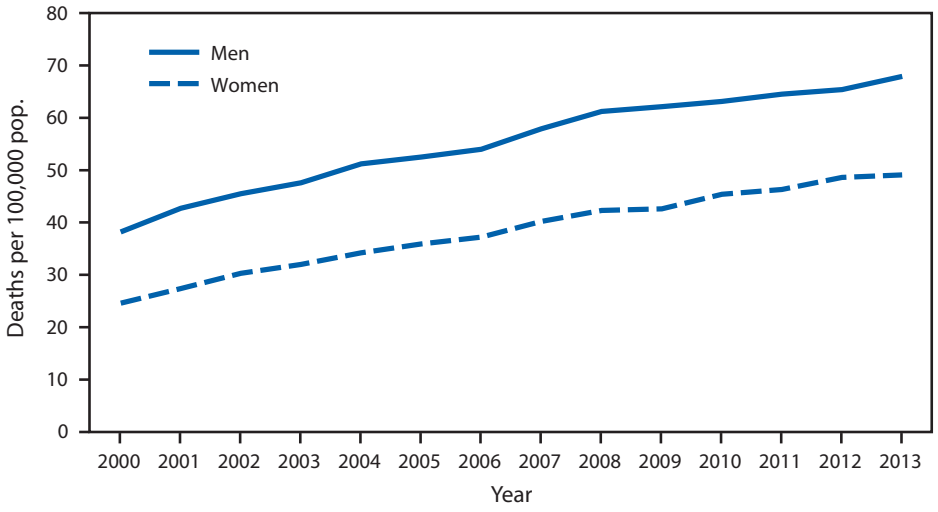
Vol. 64, No. 15

In the announcement "World Malaria Day — April 25, 2015" on page 425, errors occurred in the second sentence. The sentence should read as follows: "During 2000–2013, the scale-up of effective malaria prevention and control interventions saved an estimated 4.2 million lives, with 92% of those being children aged <5 years, and decreased malaria mortality by 47% globally and 54% in the African Region (*1*)."

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Death Rates* from Unintentional Falls† Among Adults Aged ≥65 Years, by Sex — United States, 2000–2013



* Rates are age-adjusted using the 2000 U.S. standard population.
† Deaths from unintentional falls are identified using International Classification of Diseases, Tenth Revision (ICD-10) underlying cause of death codes W00–W19. There were 10,273 deaths in 2000 and 25,464 in 2013 from unintentional falls among adults aged ≥65.

During 2000–2013, age-adjusted death rates from unintentional falls increased steadily for both men and women aged ≥65 years, with consistently higher rates observed among men. During this period, death rates from falls increased from 38.2 per 100,000 population in 2000 to 67.9 in 2013 among men and from 24.6 to 49.1 among women.

Source: National Vital Statistics System mortality data. Available at http://www.cdc.gov/nchs/deaths.htm.

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The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format. To receive an electronic copy each week, visit *MMWR*'s free subscription page at *http://www.cdc.gov/mmwr/mmwrsubscribe.html*. Paper copy subscriptions are available through the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone 202-512-1800.

Readers who have difficulty accessing this PDF file may access the HTML file at *http://www.cdc.gov/mmwr/index2015.html*. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Executive Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30329-4027 or to mmwrq@cdc.gov.

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