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Progress Toward Global Eradication of Dracunculiasis — January 2012–June 2013

Dracunculiasis (Guinea worm disease) is caused by *Dracunculus medinensis*, a parasitic worm. Approximately 1 year after infection from contaminated drinking water, the worm emerges through the skin of the infected person, usually on the lower limb. Pain and secondary bacterial infection can cause temporary or permanent disability that disrupts work and schooling. In 1986, the World Health Assembly (WHA) called for dracunculiasis elimination (*1*), and the global Guinea Worm Eradication Program, supported by The Carter Center, World Health Organization (WHO), United Nations Children's Fund (UNICEF), CDC, and other partners, began assisting ministries of health of dracunculiasis-endemic countries in meeting this goal. At that time, an estimated 3.5 million cases occurred each year in 20 countries in Africa and Asia (*1,2*). This report updates published (*3–5*) and unpublished surveillance data reported by ministries of health and describes progress toward dracunculiasis eradication. A total of 542 cases were reported in 2012, compared with 1,058 in 2011. The disease remains endemic in four countries in 2013, but the overall rate of reduction in cases has accelerated compared with the first 6 months of 2012. In the month of January 2013, no cases were reported worldwide for the first time since the eradication program began in 1986. Failures in surveillance and containment, lack of clean drinking water, insecurity in Mali and parts of South Sudan, and an unusual epidemiologic pattern in Chad are the main remaining challenges to dracunculiasis eradication.

Because the lifecycle of *D. medinensis* is complex, its transmission can be interrupted using several strategies (*4*). Dracunculiasis can be prevented by 1) educating residents in dracunculiasis-endemic communities, and particularly persons from whom worms are emerging, to avoid immersing affected body parts in sources of drinking water; 2) filtering potentially contaminated drinking water through a cloth filter; 3) treating potentially contaminated surface water with the insecticide temephos (Abate); and 4) providing safe drinking water from bore-hole or hand-dug wells (*6*). Containment of transmission,* achieved through 1) voluntary isolation of each patient to prevent contamination of drinking water sources, 2) provision of first aid, 3) manual extraction of the worm, and 4) application of occlusive bandages, complements the four main interventions.

Countries enter the WHO precertification stage of eradication after completing 1 full calendar year without reporting any indigenous cases (i.e., one incubation period for *D. medinensis*). A case of dracunculiasis is defined as infection occurring in

* Transmission from a patient with dracunculiasis is contained if all of the following conditions are met: 1) the disease is detected <24 hours after worm emergence; 2) the patient has not entered any water source since the worm emerged; 3) a volunteer has managed the patient properly, by cleaning and bandaging the lesion until the worm has been fully removed manually and by providing health education to discourage the patient from contaminating any water source (if two or more emerging worms are present, transmission is not contained until the last worm is removed); and 4) the containment process, including verification of dracunculiasis, is validated by a supervisor within 7 days of emergence of the worm. All of these criteria must be achieved for each emerged worm for the case to be considered contained.

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a person exhibiting a skin lesion or lesions with emergence of one or more Guinea worms. Each infection is counted as a case only once during a calendar year. An imported case is an infection acquired in a place (another country or village within the same country) other than the community where it is detected and reported. Six countries where transmission of dracunculiasis was previously endemic (Cote d'Ivoire, Ghana, Kenya, Niger, Nigeria, and Sudan) are in the precertification stage of eradication.

In each country affected by dracunculiasis, a national eradication program receives monthly reports of cases from each village that has endemic transmission. Reporting rates are calculated by dividing the number of villages with endemic dracunculiasis that report each month by the total number of villages with endemic disease. All villages with endemic dracunculiasis are kept under active surveillance, with daily searches of households for persons with signs and symptoms suggestive of dracunculiasis. These searches are conducted to ensure that detection occurs within 24 hours of worm emergence so that patient management can begin to prevent contamination of water. Villages where endemic transmission of dracunculiasis is interrupted (i.e., zero cases reported for ≥12 consecutive months) also are kept under active surveillance for 3 consecutive years.

WHO certifies a country free from dracunculiasis after that country maintains adequate nationwide surveillance for at least 3 consecutive years and demonstrates that no cases of indigenous dracunculiasis occurred during that period. As of the end of 2011, WHO had certified 192 countries and territories as free from dracunculiasis (*3*); 14 countries remain to be certified.

Substantial progress has been made since 1986 in reducing the annual number of reported dracunculiasis cases. The 1991 and 2004 WHA goals to eradicate dracunculiasis globally by 1995 and 2009, respectively, were not achieved (*6,7*). Nevertheless, considerable progress toward eradication continues to be made. The number of cases of dracunculiasis worldwide reported by countries in which the disease is endemic decreased 49%, from 1,058 cases in 2011 to 542 cases in 2012. In January–June 2013, the 89 cases reported from 28 villages in the four remaining dracunculiasis-endemic countries (Chad, Ethiopia, Mali, and South Sudan) represent reductions of 77% and 45%, respectively, from the 393 cases reported from 51 villages during January–June 2012. Of the 89 cases reported during January–June 2013, 83% were from South Sudan.

Chad was officially declared dracunculiasis-endemic again in 2012 as a result of having an indigenous case[†] for the third consecutive year following discovery of cases in 2010. Chad, Ethiopia, and Mali have each reported slightly more cases in January–June 2013 than in the same period of 2012. Active

[†] An indigenous case is defined as infection occurring in a person exhibiting a skin lesion or lesions with emergence of one or more Guinea worms in a person who had no history of travel outside his or her residential locality during the preceding year.

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surveillance for dracunculiasis conducted by the national eradication program in Mali deteriorated significantly after a coup d'etat in March 2012. Active surveillance in at-risk areas of Chad improved dramatically during the same period, and active surveillance in Ethiopia remained weak outside of one known dracunculiasis-endemic district. CDC has tested 92 specimens from suspected cases in nine countries during January 2012–June 2013, of which 50 were determined to be *D. medinensis*.

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South Sudan. The 10 southern states of the former Sudan became the independent Republic of South Sudan on July 9, 2011. The area of South Sudan reported all of the indigenous dracunculiasis cases notified from the former Sudan since 2002. The South Sudan Guinea Worm Eradication Program (SSGWEP) reported 521 cases in 2012, of which 336 (64%) were contained (Table 1), which was a reduction of 49% from the 1,028 cases reported in 2011. For January–June 2013, SSGWEP reported a provisional total of 74 cases (70% contained) from 52 villages, compared with 389 cases (66% contained) reported from 215 villages in January–June 2012; a reduction of 81% in cases and 76% in the number of villages reporting cases (Table 2). South Sudan reported its first month with zero cases of dracunculiasis in January 2013. Of all cases reported in the first 6 months of 2013, 81% were from only one county, Kapoeta East County, in Eastern Equatoria state.

The peak transmission season in South Sudan now is March–July. In May 2012, the collapse of a key bridge on the only available road for transporting SSGWEP supplies and materials and humanitarian aid to communities in the eastern end of Kapoeta East County added a new challenge to efforts to eradicate dracunculiasis in South Sudan. SSGWEP also faces ongoing challenges in the seasonal movements of persons among villages, gardens, farms, bull cattle camps, milk-cow cattle camps, and grazing areas for smaller livestock such as goats, plus unpredictable population displacements from interethnic cattle rustling raids. The program has continued to intensify interventions (e.g., temephos was used in 85% of dracunculiasis-endemic villages in 2011 and 96% in 2012) and supervision (e.g., 68 national program officers and technical assistants in 2011 and 98 in 2012) as the number of villages in which dracunculiasis is endemic continues to shrink. Unlike the four other currently dracunculiasis-endemic countries, South Sudan does not yet offer a cash reward for reporting a case of dracunculiasis.

Mali. Mali's Guinea Worm Eradication Program reported four indigenous cases in 2012, which, in addition to three cases

TABLE 1. Number of reported dracunculiasis cases, by country and local interventions — worldwide, 2012

Country	Reported cases: Indigenous in 2012	Reported cases: Imported in 2012*	Reported cases: Contained during 2012 (%)	Change in indigenous cases in villages/localities under surveillance during the same period in 2011 and 2012 (%)	Villages under active surveillance in 2012: No.	Reporting monthly (%)	Reporting ≥1 cases	Reporting only imported cases†	Reporting indigenous cases
South Sudan	521	0	(64)	(-49)	6,410	(100)	255	166	89
Mali¶	7	0	(86)	(-42)	121	(88)	3	0	3
Chad	10	0	(40)	(0)	693	(95)	9	0	9
Ethiopia	4	0	(50)	(-50)	77	(100)	4	2	2
Total	**542**	**0**	**(73)**	**(-49)**	**7,301**	**(99)**	**271**	**340**	**103**

See table footnotes below.

TABLE 1. (*Continued*) Number of reported dracunculiasis cases, by country and local interventions — worldwide, 2012

Country	Status of interventions in endemic villages in 2012: Endemic villages 2011–2012	Reporting monthly§ (%)	Filters in all households§ (%)	Using temephos§ (%)	≥1 sources of safe water§ (%)	Provided health education§ (%)
South Sudan	167	(100)	(100)	(96)	(33)	(98)
Mali¶	9	(78)	(78)	(57)	(71)	(78)
Chad	2	(100)	(100)	(100)	(100)	(100)
Ethiopia	3	(100)	(100)	(100)	(67)	(100)
Total	**181**	**(98)**	**(98)**	**(94)**	**(35)**	**(98)**

* Imported from another country.
† Imported from another country or from another in-country disease-endemic village.
§ The denominator is the number of villages/localities where the program applied interventions during 2011–2012.
¶ In 2012, seven cases were attributed to Mali: four indigenous cases reported by Mali's Guinea Worm Eradication Program (GWEP) plus three cases reported by Niger in September 2012 that were exported from Mali. GWEP operations (supervision, surveillance, and interventions) were interrupted in Mali's Kidal, Gao, and Timbuktu regions as a result of a coup d'etat, beginning in April 2012.

TABLE 2. Number of reported indigenous dracunculiasis* cases, by country — worldwide, January 2011–June 2013

Country	2011	2012*	1-yr change (%)	January–June 2012*	January–June 2013	6-mos change (%)	Cases contained during January–June 2013 (%)
South Sudan	1,028	521	(-49)	389	74	(-81)	(70)
Mali†	12	7	(-42)	1	4	(300)	(25)
Chad	10	10	(0)	1	5	(400)	(80)
Ethiopia	6	4	(-33)	2	6	(200)	(50)
Total	**1,056**	**542**	**(-49)**	**393**	**89**	**(-77)**	**(67)**

* In 2012, three cases were imported into Niger from Mali and are included in Mali's total. These persons were residents in Mali the preceding year, and Niger interrupted transmission of Guinea worm disease in 2008. No reports of cases imported from one country to another were reported during January–June 2013.
† Guinea Worm Eradication Program operations (supervision, surveillance, and interventions) were interrupted in Kidal, Gao, and Timbuktu regions as a result of a coup d'etat, beginning in April 2012.

reported by Niger in September 2012 that were exported from Mali, represent a reduction of 42% from the 12 indigenous cases reported in 2011. All three of the exported cases reported in Niger were contained; three of the four cases reported in Mali were contained. Mali reported four cases in January–June 2013, of which only one was contained, compared with one case (contained) reported during January–June 2012. One of the cases (not contained) reported in 2013 was from Mopti Region, and three cases were from Kidal Region.

Mali's peak transmission season is June–October. The program has not been fully operational in three dracunculiasis-endemic northern regions (Gao, Kidal, and Timbuktu) since April 2012, following a coup d'etat. Periodic humanitarian missions by the United Nations have allowed limited surveillance in areas around the town of Kidal, and parts of Gao and Timbuktu regions recently have become accessible to the program. The most recent sampling of knowledge about the cash reward for reporting a case of dracunculiasis found 70%–90% awareness in areas in which dracunculiasis is endemic (2012) and 0%–2% awareness in areas in which it is not endemic (2011).

Ethiopia. Ethiopia reported four cases (two contained) in April, May, August, and December 2012, after 9 consecutive months with no known cases. This was a reduction of 33% from the six indigenous cases reported in 2011. The program reported six cases (50% contained) during January–June 2013, compared with two cases reported during the same period of 2012. Five of the six cases in 2013 involved residents of a hamlet where a worm emergence was associated with an uncontained case in April 2012. The sixth case involved a resident of a village that had not reported a case since 2010.

The peak transmission season in Ethiopia is March–May. The only known dracunculiasis-endemic village in 2012 received a functioning borehole well in May 2013. After discussions during the World Health Assembly in May 2013, follow-up visits to Gambella by the federal minister of health, and a visit by a delegation of representatives from The Carter Center, WHO, and the Bill & Melinda Gates Foundation, the health ministry plans to designate staff devoted full time to eradication of dracunculiasis. The most recent available sampling of reward awareness found 83% awareness in an area in which dracunculiasis is endemic (2011) and 60% awareness in an area in which it is not endemic (2012).

What is already known on this topic?

The number of new cases of dracunculiasis (Guinea worm disease) occurring worldwide each year has decreased from an estimated 3.5 million in 1986, when the World Health Assembly declared global elimination as a goal, to 542 in 2012.

What is added by this report?

The number of dracunculiasis cases reported worldwide in 2012 declined by 49%, compared with 2011, and by 77% from January–June 2012 to January–June 2013. Transmission remains endemic in four countries, with South Sudan accounting for 83% of all reported cases during January–June 2013.

What are the implications for public health practice?

Although earlier target dates for global dracunculiasis eradication were missed, progress is accelerating, and eradication is likely within the next few years if disruption of program operations can be minimized, particularly in northern Mali.

Chad. Chad was officially declared dracunculiasis-endemic again in 2012 after cases of dracunculiasis were confirmed in 3 consecutive years (2010–2012),[§] after a decade with no reported cases (*8*). Chad reported 10 cases (four contained) in nine villages in 2012, compared with 10 cases (four contained) reported from nine villages in 2011, but only two of the 16 villages had cases in both years. Specimens from several cases were confirmed at CDC as *D. medinensis*. Chad reported five cases in January–June 2013, of which four were contained, from five villages, compared with one case reported during January–June 2012. None of the villages reporting cases in 2013 had reported a case previously.

The peak transmission season in Chad appears to be April–August. Since March 2012, The Carter Center has helped the

[§] A country will be considered to have reestablished dracunculiasis endemicity if 1) the country has not reported a confirmed indigenous case of the disease for >3 years, and 2) subsequent indigenous transmission of cases (laboratory-confirmed) is shown to occur in that country for ≥3 consecutive calendar years.

ministry of health to implement active village-based surveillance by training nearly 2,000 volunteers in 700 villages in the at-risk area along the Chari River. In addition to the unusually sporadic, limited nature of the outbreak in Chad over the past 3½ years, dogs with emerging worms have been detected in the same at-risk area in the past year, often without any correlation with villages where human cases have occurred. The worms emerging from dogs are morphologically and genetically indistinguishable from the Guinea worms emerging from humans. Intensive epidemiologic investigation and further genetic studies of these worms are being conducted. The most recent sampling of reward awareness found 100% awareness in an area in which dracunculiasis is endemic (2012) and 38% awareness in an area in which it is not endemic (2012).

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Editorial Note

Based on the trend for 2012, when approximately three quarters of all reported cases occurred during January–June, and initial findings for the same period of 2013, fewer than 150 cases of dracunculiasis likely will be reported in 2013. If so, this would be a historic low. The rapid acceleration in reduction of cases in South Sudan, despite many challenges, is encouraging, and shows that the intensification of interventions there in 2012 is having positive results. Unless Chad, Ethiopia, and Mali can overcome their own challenges quickly, South Sudan might eliminate dracunculiasis before they do.

The main challenges requiring urgent attention by governments and partners include 1) failures in surveillance and containment (e.g., missed cases, unexplained sources of cases, and uncontained cases), 2) establishment and maintenance of surveillance in Guinea worm–free areas of all countries in which the disease still occurs or was recently eliminated, and 3) providing clean drinking water quickly to as many targeted villages as possible. Insecurity in parts of Mali is now the main political barrier to complete eradication of dracunculiasis.

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Histoplasmosis in a State Where It Is Not Known to Be Endemic — Montana, 2012–2013

Histoplasmosis is caused by infection with the dimorphic fungus, *Histoplasma capsulatum*, following inhalation of contaminated soil (*1*). Among symptomatic patients, the most common clinical presentation is acute pneumonia (*1–3*). Persons with compromised immune systems are at risk for disseminated histoplasmosis, a severe illness requiring antifungal therapy that is often characterized by fever, malaise, anorexia, and weight loss (*2,4*). *H. capsulatum* is endemic in the Ohio River and Mississippi River valleys, where it is found in soil enriched with bird droppings and bat guano (*1,5–7*). During November 2012–February 2013, histoplasmosis was diagnosed in four Montana residents by four different physicians. No epidemiologic links among the cases were identified. Each patient's medical records were reviewed, and their exposure and travel histories were obtained. Three patients reported no recent travel outside of Montana and likely were exposed in Montana, which is west of areas where *H. capsulatum* is recognized as endemic (*5,6*). One patient reported recent travel to California, where she was exposed to potting soil containing bat guano. Low clinical suspicion, probably related to lack of history of exposure to areas where *H. capsulatum* is known to be endemic, likely delayed diagnosis and appropriate therapy for three patients. Health-care providers should be aware of the possibility of histoplasmosis in Montana and consider the diagnosis in patients with clinically compatible illnesses.

Patient 1

A woman aged 59 years with a history of breast cancer who was treated with chemotherapy and radiation in 2002 was evaluated in February 2011 for left parotid gland swelling (Table). A computed tomography (CT) scan with intravenous (IV) contrast revealed a 2-cm lesion in the tail of the parotid gland. On April 6, the patient underwent a fine needle aspiration of her left parotid gland; cytology revealed atypical lymphoepithelial cells. In October 2012, the patient reported continued swelling behind her left ear, which eventually developed into a weeping lesion. She reported no fever, chills, night sweats, weight loss, cough, or difficulty breathing. On November 11, she underwent a left parotidectomy. Histopathology revealed lymphoepithelial cysts and necrotizing granulomatous inflammation with rare yeast forms consistent with *H. capsulatum*. A follow-up urine histoplasma antigen enzyme immunoassay (EIA) on December 7, 2012, was negative. The patient was referred for treatment of histoplasmosis and started on itraconazole therapy.

The patient was a retired administrator and had never lived outside southwest Montana. She reported engaging in walking, fishing, and gardening, and had multiple bird feeders. She did not report any exposures to caves or bats. In May 2012, the patient visited Sacramento, California, where she participated in the potting of plants using soil labeled as containing bat guano. No other persons exposed to the same potting soil during her trip were known to have become ill. Other than the trip to Sacramento, the patient had not traveled outside of Montana for several years.

Patient 2

An adolescent boy aged 17 years sought care in November 2011 with complaints of fatigue. Following a positive heterophile antibody test for Epstein-Barr virus, he was diagnosed with mononucleosis. Over the next 9 months, the patient continued to experience fatigue, headaches, and night sweats, and had a 5-pound (2.3 kg) weight loss. In September 2012, he sought follow-up care and was noted to have clinically significant anterior cervical lymphadenopathy. On September 19, a CT scan of the pelvis with IV contrast revealed extensive mesenteric and bilateral inguinal lymphadenopathy. At that time, a chest radiograph, complete blood count, electrolytes, and liver function tests were within normal limits. His Epstein-Barr virus immunoglobulin (Ig)M was 11.7 U/mL (normal = 0–43.9 U/mL) and IgG was 539.0 U/mL (normal = 0–21.9 U/mL). On December 27, he underwent a lymph node biopsy of an anterior cervical lymph node and a submandibular node that revealed necrotizing granulomatous inflammation with yeast forms consistent with *H. capsulatum*. A follow-up urine EIA on January 15, 2013, was negative. The patient was started on itraconazole therapy.

The patient had lived in southwest Montana since birth. He reported frequent outdoor recreational activities, including exploring caves, trundling (rolling large rocks or boulders down hillsides), wakeboarding, camping, hiking, and snowboarding. He also worked as a landscaper during the summer of 2012. He did not report any known exposures to bats or bird droppings. His last travel outside of Montana was to Omaha, Nebraska, in 2007.

Patient 3

A man aged 79 years with a history of uncontrolled diabetes mellitus type II, tobacco use, and colon cancer treated with a partial colectomy in 2003 experienced fatigue and fever on July 3, 2012, and was evaluated in an emergency department on July 8;

TABLE. Characteristics of four patients with diagnosed histoplasmosis — Montana, 2012–2013

Patient	Age (yrs)	Sex	Area of residence	Month of symptom onset	Clinical presentation	Immuno-compromising condition	Laboratory testing*	Site of infection	Recent travel outside Montana†	Possible high-risk exposures
1	59	F	Southwest Montana§	February 2011¶	Left parotid gland swelling	Yes	Histopathology = positive; EIA = negative	Disseminated	Yes: California (May 2012)	Bat guano–containing potting soil (May 2012)
2	17	M	Southwest Montana§	November 2011**	Fatigue, night sweats, weight loss, cervical lymphadenopathy	Yes	Histopathology = positive; EIA = negative	Disseminated	No	Exploring caves, water sports on lakes and rivers
3	79	M	East Montana	July 2012	Fever, fatigue, pneumonia	Yes	Culture = positive	Pulmonary	No	None known
4	76	F	Southwest Montana§	January 2013	Headache, cough, wheezing, hypoxia	Yes	EIA = positive	Disseminated	No	None known

Abbreviation: EIA = enzyme immunoassay.
* Laboratory tests that were not performed (i.e., histopathology, EIA, serology, and culture) are not included in the table.
† Defined as travel outside of Montana since 2008.
§ The three patients in southwest Montana lived within a 15-mile (24-km) radius.
¶ Patient 1 first noticed left parotid gland swelling in February 2011 but continued to have clinical illness through November 2012.
** Patient 2 received an initial diagnosis of acute mononucleosis in November 2011 but continued to have clinical illness through December 2012.

a chest radiograph was normal. Because of persistent fevers noted when the patient was reevaluated on July 18, the patient underwent a CT scan of the chest, abdomen, and pelvis without IV contrast; the scan revealed a left lower lobe pneumonia and mild pulmonary fibrosis of the right lung base. Laboratory analysis of a blood specimen revealed a mild leukocytosis and an erythrocyte sedimentation rate of 81 mm/hr (normal: 0–20 mm/hr). The patient was started on moxifloxacin 400 mg daily for 10 days. On reevaluation on July 25, the patient was noted to be afebrile and clinically improved. On October 10, the patient underwent a follow-up CT scan of the chest without IV contrast, which revealed a 3 cm by 1.3 cm oval opacity in the posterior left lower lung and a 4 mm high-density nodule in the right lower lung consistent with a calcified granuloma. At this time, the patient's leukocytosis had resolved, and erythrocyte sedimentation rate was 42 mm/hr. In November 2012, the patient underwent a CT-guided biopsy of the left lower lung lesion that demonstrated a granulomatous pneumonitis.

In December 2012, a positron emission tomographic scan of the chest demonstrated mediastinal and subcarinal lymphadenopathy and a left lung nodule that had increased glucose uptake. The patient then underwent mediastinoscopy with tissue biopsy. In February 2013, the biopsy specimen was culture-positive for *H. capsulatum*. The patient was referred for treatment of histoplasmosis.

The patient was a rancher and lived in eastern Montana. He reported travel >30 years earlier to Canada and Europe but reported no travel since that time outside of eastern and south central Montana. During the 2 weeks before illness onset, he reported mowing grass in a pasture and attending a local rodeo. He did not report any exposures to bird droppings, bat guano, caves, or potting soils.

Patient 4

A woman aged 76 years with a history of uncontrolled diabetes mellitus type II experienced nasal congestion, nonproductive cough, headaches, chest pressure, shortness of breath, and wheezing on January 17, 2013. Four days later, the patient was evaluated in an emergency department. She did not report any fever or myalgias. On examination, she was noted to be afebrile, had bilateral expiratory wheezing, and was hypoxic with a pulse oximetry oxygen saturation of 77% on room air. The patient tested positive for influenza A using a rapid diagnostic test and was hospitalized for additional care. She underwent CT scans of the chest, abdomen, and pelvis with IV contrast, which revealed bibasilar patchy infiltrates along with retroperitoneal and mesenteric lymphadenopathy and rectal wall thickening. The patient's urine tested positive for histoplasma antigen by EIA. When discharged from the hospital, she was referred for treatment of histoplasmosis, and started on itraconazole therapy.

The patient lived in southwestern Montana and was a retired custodian. She enjoyed reading indoors, and engaged in no outdoor activities other than planting flowers in outdoor flowerpots each spring. She denied known exposures to bird droppings, bat guano, bat guano-containing potting soil, or caves. She reported no travel outside of Montana in the several years before her diagnosis.

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Editorial Note

Three of four patients with diagnosed histoplasmosis reported no recent travel and likely acquired their infections in Montana. Although patient 1 likely acquired her infection in Montana before traveling out of state, the possibility also exists that she acquired infection in California following exposure to bat guano–containing potting soil. Each of the four patients had immunocompromising conditions present before symptom onset, increasing their risk for *H. capsulatum* disease (*2*). Patient 2 might have acquired infection during a cave exploration–related bat guano exposure. The lack of recent travel history to recognized areas with histoplasmosis endemicity likely contributed to diagnostic delays for three patients; of these, two patients also had unusual clinical presentations, likely further contributing to diagnostic delays.

H. capsulatum culture from body fluids and tissues provides the strongest evidence of histoplasmosis, but is insensitive (*8*). Patient 3 was diagnosed after *H. capsulatum* isolation from a pulmonary nodule biopsy. The absence of recent travel outside of Montana for this patient suggests that the infection was acquired in Montana. Clinical evidence for patients 2 and 4 suggests their *Histoplasma* infections also were acquired in Montana.

Patients 1 and 2 were diagnosed by histopathology performed by different pathologists. Histopathology provides presumptive evidence of infection, but specificity depends on pathologist experience (*8*). Urine antigen detection also is used to diagnose disseminated histoplasmosis (*2,8,9*), but its sensitivity is greater among immunocompromised persons (93.1% compared with 73.3%) (*9*). The specificity of urine EIA for histoplasmosis has been shown to be 99% in both healthy and immunocompromised persons (*8,9*), although false-positives are possible among patients with other endemic fungal infections (*2*). Why patients 1 and 2 had negative urine EIA tests following histopathologic diagnoses is unclear. Although patient 2 likely was immunocompromised when he developed disease, his immune system might have recovered by the time of EIA testing.

What is already known on this topic?

Histoplasmosis is a potentially severe illness caused by infection with the dimorphic fungus *Histoplasma capsulatum*. This fungus is endemic in the Ohio River and Mississippi River valleys in the United States, where it is found in soil enriched with bird droppings and bat guano.

What is added by this report?

Four unrelated cases of histoplasmosis were identified during 2012–2013 among residents of Montana, a location further west than areas where *H. capsulatum* is known to be endemic.

What are the implications for public health practice?

Health-care providers should be aware of the possibility of *H. capsulatum* in Montana and the potential for histoplasmosis in patients with clinically compatible illnesses, even in the absence of a history of travel outside of the state.

The recognized zone of histoplasmosis endemicity extends from the Ohio River Valley west into North Dakota and South Dakota (*6*). States further west, including Montana, are not typically considered areas where histoplasmosis is endemic. However, two recently published studies provide limited data that histoplasmosis endemicity might extend into Montana and other western states (*5,10*). The four cases described in this report provide additional evidence that histoplasmosis should be considered in the differential diagnosis of clinically compatible illness in Montana residents.

The findings in this report are subject to at least two limitations. First, confirmation of the diagnosis by isolation of *H. capsulatum* in culture was not performed for three patients. Second, the source of each patient's infection could not be determined with certainty; patient 1 likely acquired her infection in Montana, but also could have acquired her infection from exposure to bat guano–containing potting soil in California. Similarly, one or more patients might have had reactivation of latent disease after *H. capsulatum* infection acquired from an area when histoplasmosis was endemic many years before symptom onset. Environmental studies could help determine if *H. capsulatum* is endemic in Montana (*5,6*).

Three patients experienced diagnostic delays, likely in part because none reported recent travel to areas where *H. capsulatum* is endemic. Health-care providers should be aware of the possibility of *H. capsulatum* in Montana and the potential for histoplasmosis in patients with clinically compatible illnesses, even in the absence of a history of travel outside of Montana.

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Update: Influenza Activity — United States and Worldwide, May 19–September 28, 2013

During May 19–September 28, 2013,* the United States experienced low levels of seasonal influenza activity overall. Influenza A (H1N1) pdm09 (pH1N1), influenza A (H3N2), and influenza B viruses were detected worldwide and were identified sporadically in the United States. In June, influenza A (H3N2) variant† viruses (H3N2)v were first detected in Indiana, and between June 18 and September 28, a total of 20 cases of influenza A variant viruses ([H3N2]v and influenza A (H1N1) variant [H1N1]v) were reported from five states. This report summarizes influenza activity in the United States and worldwide from May 19 through September 28, 2013.

United States

The U.S. influenza surveillance system is a collaborative effort between CDC and federal, state, local, and territorial partners. CDC uses eight data sources to collect influenza information (*1*), six of which operate year-round: 1) U.S. World Health Organization (WHO) collaborating laboratories, 2) the National Respiratory and Enteric Virus Surveillance System (NREVSS), 3) reports of human infections with novel influenza A viruses, 4) the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), 5) the 122 Cities Mortality Reporting System, and 6) the Influenza-Associated Pediatric Mortality Reporting System.§

During May 19–September 28, WHO and NREVSS collaborating laboratories in the United States tested 52,150 respiratory specimens for influenza; 2,013 (3.9%) tested positive for influenza (Figure). During summers of the previous 6 years (excluding the summer during the 2009 pandemic) the average number of respiratory specimens tested for influenza was 33,780 (range: 22,961–51,734), with an average of 835 (2.5%) specimens testing positive (range: 175–3,160).

Of the 2,013 specimens positive for influenza in the summer months of 2013, 1,403 (70%) were influenza A viruses, and 610 (30%) were influenza B viruses. Influenza B viruses were reported more frequently than influenza A viruses from late May until early June, and influenza A (pH1N1) viruses were more commonly reported than influenza A (H3N2) viruses from mid-June to September. Of the 1,403 influenza A viruses, 621 (44%) were subtyped: 402 (65%) were influenza A (pH1N1) viruses, 201 (32%) were influenza A (H3N2) viruses, and 18 (3%) were influenza A (H3N2)v viruses. Influenza viruses were reported from the District of Columbia, Puerto Rico, and 45 states in all 10 U.S. Department of Health and Human Services regions.¶ The largest number of influenza-positive specimens (971) came from the southeastern United States (Region 4), followed by the western states (Region 9), with 505 influenza-positive specimens.

During May 19–September 28 data from ILINet indicated that the weekly percentage of outpatient visits to ILINet providers for influenza-like illness (ILI)** remained below the national baseline of 2.2% (range: 0.7%–1.2%).†† The percentage of deaths attributed to pneumonia and influenza (P&I), as reported by the 122 Cities Mortality Reporting System, remained below the epidemic threshold (range: 5.2% to 6.5%).§§ Two influenza-associated pediatric deaths occurring during May 19–September 28 were reported; one was associated with an influenza A (pH1N1) virus

* Data as of October 18, 2013.

† Influenza viruses that circulate in swine are called swine influenza viruses when isolated from swine, but are called variant influenza viruses when isolated from humans. A variant virus (human isolate) might have the M gene alone or the M gene plus other genes from the influenza A (pH1N1) virus, along with other genetic changes. Seasonal influenza A (H3N2) viruses that circulate worldwide in the human population have significant antigenic and genetic differences from influenza A (H3N2) viruses circulating in swine. Additional information is available at http://www.who.int/influenza/gisrs_laboratory/terminology_ah3n2v/en/index.html.

§ The CDC influenza surveillance system collects five categories of information from the eight data sources: 1) viral surveillance (World Health Organization collaborating laboratories, the National Respiratory and Enteric Virus Surveillance System, and human infections with novel influenza A viruses); 2) outpatient illness surveillance (U.S. Outpatient Influenza-like Illness Surveillance Network); 3) mortality (122 Cities Mortality Reporting System and influenza-associated pediatric mortality reports); 4) hospitalizations (FluSurv-NET, which includes the Emerging Infections Program and surveillance in five additional states); and 5) summary of the geographic spread of influenza (state and territorial epidemiologist reports).

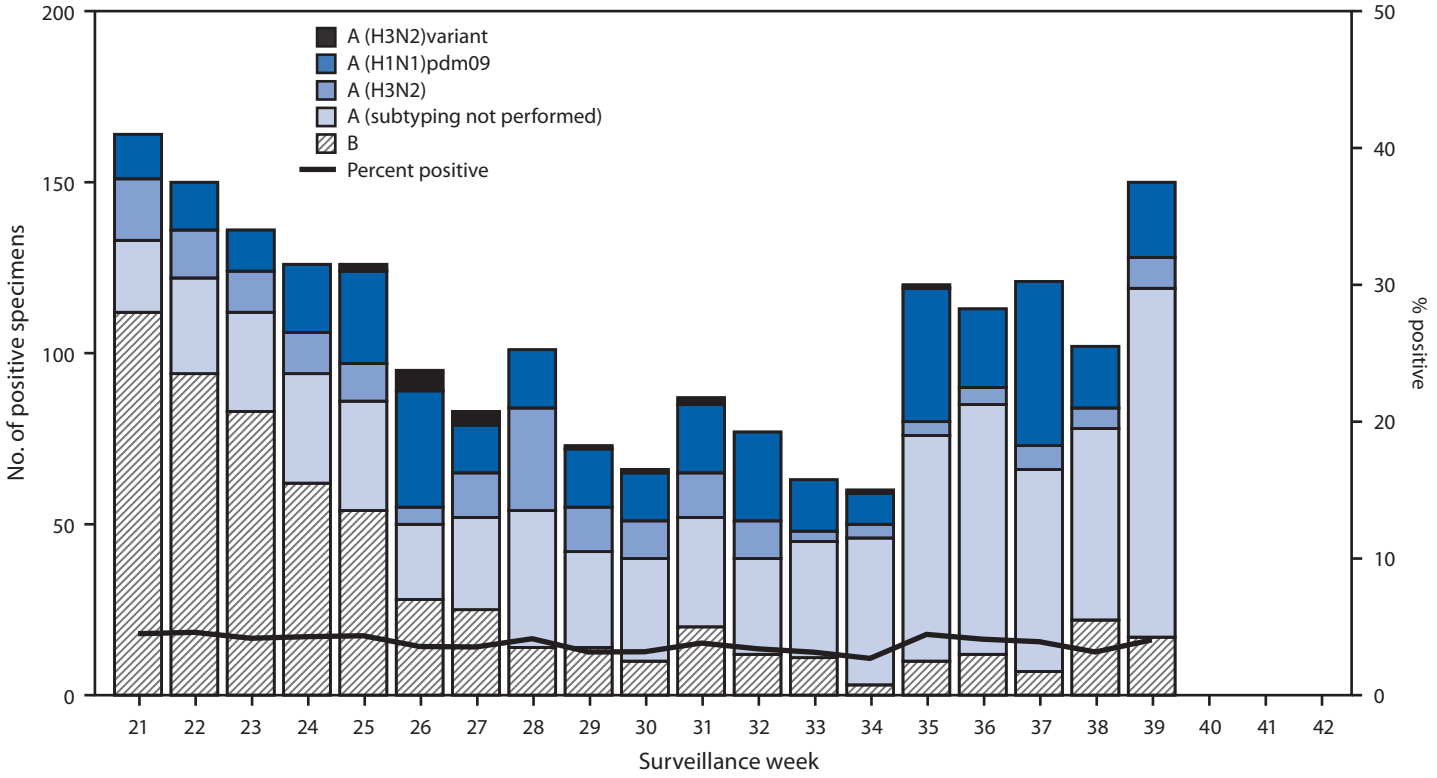
¶ The 10 regions include the following jurisdictions: *Region 1:* Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; *Region 2:* New Jersey, New York, Puerto Rico, and the U.S. Virgin Islands; *Region 3:* Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia; *Region 4:* Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee; *Region 5:* Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin; *Region 6:* Arkansas, Louisiana, New Mexico, Oklahoma, and Texas; *Region 7:* Iowa, Kansas, Missouri, and Nebraska; *Region 8:* Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming; *Region 9:* Arizona, California, Hawaii, Nevada, American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Marshall Islands, and Republic of Palau; *Region 10:* Alaska, Idaho, Oregon, and Washington.

** Defined as a temperature of ≥100°F (≥37.8°C), oral or equivalent, and cough and/or sore throat, without a known cause other than influenza.

†† The national and regional baselines are the mean percentage of visits for ILI during noninfluenza weeks for the previous three seasons plus two standard deviations. Noninfluenza weeks are defined as periods of 2 or more consecutive weeks in which each week accounted for <2% of the season's total number of specimens that tested positive for influenza. National and regional percentages of patient visits for ILI are weighted on the basis of state population. Use of the national baseline for regional data is not appropriate.

§§ The seasonal baseline proportion of P&I deaths is projected using a robust regression procedure in which a periodic regression model is applied to the observed percentage of deaths from P&I that were reported by the 122 Cities Mortality Reporting System during the preceding 5 years. The epidemic threshold is set at 1.645 standard deviations above the seasonal baseline.

FIGURE. Number* and percentage of respiratory specimens testing positive for influenza reported by World Health Organization and National Respiratory and Enteric Virus Surveillance System collaborating laboratories in the United States, by type, subtype, and week — United States, May 19–September 28, 2013†



* N = 2,013.
† As of September 28, 2013.

and one was associated with an influenza A virus for which subtyping was not performed.

Novel Influenza A Virus Infection

Between May 19 and September 28, a total of 20 cases of influenza A variant viruses (18 [H3N2]v and two [H1N1]v) were reported from five states (Arkansas [two], Illinois [one], Indiana [14], Michigan [two] and Ohio [one]). The 20 cases reported resulted in one influenza A (H3N2)v–associated hospitalization and no deaths. Although cases have been identified from five states, Indiana reported 14 (70%) of the 20 cases. In all 20 cases, contact with swine in the week before illness onset was reported. No ongoing community transmission of these viruses has been detected. The median age of patients was 6.5 years (range: 2–69 years); 65% were female (Influenza Division, National Center for Immunization and Respiratory Diseases, CDC, unpublished data, 2013).

Worldwide

During May 19–September 28, typical seasonal patterns of influenza activity occurred in the temperate climate Southern Hemisphere countries. In Australia and New Zealand, influenza activity began in early August and decreased in mid-September. Influenza A viruses predominated in both countries with influenza A (H3N2) viruses identified more frequently than influenza A (pH1N1) viruses. Influenza B viruses were also identified in both countries. In South Africa, after a peak in influenza activity caused by influenza A (pH1N1) in June, a second, smaller peak was observed in early August because of increased influenza A (H3N2) and influenza B virus circulation. In temperate areas of South America, influenza activity peaked in June and declined through September. Influenza A viruses were reported more frequently than influenza B viruses, and influenza A (pH1N1) was the predominant virus reported by Argentina, Chile, and Uruguay. Influenza A (H3N2) viruses predominated in Paraguay (*2*).

Influenza activity was reported from countries with tropical influenza seasonality. The overall level of activity compared with previous seasons, and the predominant subtype varied by country. In the Caribbean and Central America, influenza activity peaked in early July and declined during August and September, with cocirculation of influenza A (pH1N1) and influenza A (H3N2) viruses. In tropical South America, influenza A (pH1N1) viruses predominated, with two peaks

of activity: the first in June, primarily the result of activity in Brazil and Columbia, and a second peak in late July, the result of increased activity in Ecuador and Peru. South Asia and Southeast Asia saw a decrease in influenza activity during September. Different combinations of types and subtypes of influenza cocirculated in several countries, including Cambodia, India, China, Vietnam, and Thailand. In temperate climate countries in North America and Europe, influenza activity remained low, with small numbers of influenza A (H3N2), influenza A (pH1N1), and influenza B viruses identified. During February 19–September 28, a total of 135 cases of human infection with avian influenza A (H7N9) virus were reported (*3*). No human cases of avian influenza A (H7N9) virus infection have been detected outside of China (*3*).

Antigenic Characterization of Influenza Virus Isolates

The recommended components for the 2013–14 influenza trivalent influenza vaccines are an A/California/7/2009 (H1N1)-like virus, an influenza A (H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011 (e.g., A/Texas/50/2012), and a B/Massachusetts/2/2012-like (B/Yamagata lineage) virus (*4*). For quadrivalent vaccines, a B/Brisbane/60/2008-like (B/Victoria lineage) virus is recommended (*4*).

CDC antigenically characterized 342 influenza viruses collected during May 19–September 28 from laboratories worldwide, including 227 influenza A (pH1N1) viruses, 85 influenza A (H3N2) viruses, and 30 influenza B viruses. A subset of these viruses was genetically characterized. Most viruses tested were propagated in mammalian cell cultures; isolation rates of current human influenza viruses are higher in mammalian cell cultures than in eggs. However, egg-propagated (EP) vaccine viruses are used widely for production of influenza vaccines because most influenza virus vaccines are egg-based. Propagation of influenza viruses in eggs might lead to isolation of viruses that differ antigenically and genetically from viruses from corresponding clinical samples isolated in mammalian cell cultures. In addition, mammalian cell-propagated (CP) viruses are genetically more representative of viruses present in original clinical specimens (*5,6*). Therefore, it is important to select EP vaccine viruses that are antigenically and genetically most similar to their CP counterparts.

All but two (99%) influenza A (pH1N1) viruses analyzed (94 from North America, 131 from South America, one from Asia, and one from Oceania) were antigenically similar to EP A/California/7/2009, the influenza A (pH1N1) vaccine component. Most EP and CP influenza A (pH1N1) viruses analyzed during this time had similar antigenic properties. All 85 influenza A (H3N2) viruses (40 from the United States, 40 from South America, two from Oceania, and three from Asia) were antigenically similar to many current CP reference viruses, including A/Victoria/361/2011 and A/Texas/50/2012. The majority (60%) of CP influenza A (H3N2) viruses collected and characterized since February 2013 were antigenically similar to the EP A/Texas/50/2012 vaccine virus, while less than 10% of these viruses were antigenically similar to EP A/Victoria/361/2011. For this reason, WHO recommended that the EP A/Texas/50/2012 vaccine virus replace EP A/Victoria/361/2011 as the influenza A (H3N2) vaccine component for the 2013–14 Northern Hemisphere and the 2014 Southern Hemisphere influenza seasons (*4*).

Of the 30 influenza B viruses collected and analyzed during this period, 13 (43%) belonged to the B/Yamagata lineage (five from the United States, seven from South America, and one from Asia), and were antigenically similar to the B/Massachusetts/2/2012 virus, the influenza B component for the 2013–14 Northern Hemisphere trivalent vaccine. The remaining 17 viruses tested (57%, one from the United States and 16 from South America) belonged to the B/Victoria lineage and were antigenically similar to the B/Brisbane/60/2008 virus, which is the B/Victoria-lineage component of the 2013–14 Northern Hemisphere quadrivalent influenza vaccine. Globally, B/Yamagata lineage viruses predominated during February 1–September 28 (*4*). Most EP and CP influenza B viruses analyzed during this time had similar antigenic properties. The WHO recommendation for influenza vaccine composition for the 2014 Southern Hemisphere season remained the same as that for the 2013–14 Northern Hemisphere season (*4*).

Antiviral Resistance Profiles of Influenza Virus Isolates

The WHO Collaborating Center for Surveillance, Epidemiology, and Control of Influenza at CDC tested 336 specimens collected during May 19–September 28 for resistance to influenza antiviral medications. Of the 336 specimens tested for resistance to the neuraminidase inhibitor medications oseltamivir and zanamivir, 196 were collected internationally (127 influenza A [pH1N1], 42 influenza A [H3N2], and 27 influenza B viruses), and 140 were from U.S. specimens (93 influenza A [pH1N1], 39 influenza A [H3N2], and eight influenza B viruses). Two of the 93 influenza A (pH1N1) viruses from the United States were found to be resistant to oseltamivir and contained the H275Y substitution in the neuraminidase gene; all the viruses were sensitive to zanamivir. High levels of resistance to the adamantanes (amantadine and rimantadine) persist among influenza A (pH1N1) viruses and influenza A (H3N2) viruses currently circulating globally (*7*).

What is already known on this topic?

CDC collects, compiles, and analyzes data on influenza activity year-round in the United States. The influenza season generally begins in the fall and continues through the winter and spring months; however, the timing and severity of circulating influenza viruses can vary by geographic location and season.

What is added by this report?

The United States experienced low levels of influenza activity during May 19–September 28, 2013, and influenza A (H1N1) pdm09 (pH1N1), influenza A (H3N2), and influenza B viruses were identified sporadically. Twenty cases of influenza A variant viruses (influenza A [H3N2]v and influenza A [H1N1]v) were detected in five states, all of which were associated with swine contact. The majority of recent seasonal influenza viruses are antigenically similar to the influenza vaccine for the 2013–14 season.

What are the implications for public health practice?

To prevent influenza and its associated complications, influenza vaccination is recommended in all persons aged ≥6 months. Year-round influenza surveillance provides critical information for planning interventions to prevent and control influenza, developing vaccine recommendations and antiviral treatment guidance, and presenting information to the media and public regarding the progress and severity of the influenza season.

Reported by

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Editorial Note

During May 19–September 28, 2013, influenza A (pH1N1), influenza A (H3N2), and influenza B viruses cocirculated worldwide. In the United States, similar levels of seasonal influenza viruses were detected compared with summer months of previous years (excluding the 2009 pandemic), and influenza A viruses were predominant. Although neither the influenza viruses that will predominate nor the severity of influenza-related disease during the 2013–14 season in the United States can be predicted, antigenic characterization of viral isolates submitted during the summer demonstrated that the majority of influenza viruses were antigenically similar to the influenza vaccine strains contained in the 2013–14 Northern Hemisphere vaccine.

Compared with the summer of 2012, fewer human infections with novel influenza A viruses were identified in the United States in the summer of 2013. Since the first identification of H3N2v viruses in humans, direct contact with swine has been documented in most cases, but limited person-to-person spread is suspected in a small number. Consistent with the age distribution of patients, serologic studies suggest there is little or no existing cross-reactive antibody to H3N2v in young children, but a substantial proportion of adolescents and younger adults have cross-reactive antibodies (*8,9*). Where community transmission of this virus has not been identified, the potential for this virus to develop the ability to transmit efficiently from person-to-person is of concern. Rapid and intensive investigation of each novel influenza A case remains necessary to evaluate the spread of disease and the possibility of person-to-person transmission. While seasonal influenza viruses are circulating at low levels, state and local health departments should consider increased specimen collection among patients with ILI who 1) seek care at an ILINet provider; 2) are part of an ILI outbreak among children in child-care or school settings (because these settings were associated with person-to-person H3N2v, virus transmission in 2011); 3) have an unusual or severe presentation of ILI, including hospitalized persons; or 4) have medically attended ILI or acute respiratory infection, especially among children in jurisdictions where H3N2v cases have occurred (*10*).

Annual influenza vaccination remains the best method for preventing influenza and its associated complications (*4*). For optimal protection against seasonal influenza viruses, annual influenza vaccination is recommended for all persons aged ≥6 months each year, regardless of whether the vaccine virus strains have changed since the previous season. In addition to the types of influenza vaccines available during the last season, several new influenza vaccines have been approved for use and will be available for the 2013–14 season, including a quadrivalent live attenuated influenza vaccine (LAIV4), quadrivalent inactivated influenza vaccines (IIV4), a trivalent cell culture-based inactivated influenza vaccine (ccIIV3), and a new recombinant hemagglutinin vaccine (RIV3) (*4*). For many vaccine recipients, more than one type or brand of vaccine might be appropriate within indications and Advisory Committee on Immunization Practices (ACIP) recommendations. Where more than one type of vaccine is appropriate and available, ACIP has not recommended any one influenza vaccine product over another. Children aged 6 months–8 years who are being vaccinated for the first time should receive 2 doses of influenza vaccine. For children aged 6 months–8 years who have received influenza vaccination before, health-care providers should consult the ACIP guidelines to assess whether 1 or 2 doses are required (*4*).

Treatment with influenza antiviral medications is recommended as early as possible for patients with confirmed or suspected influenza (either seasonal influenza or variant influenza virus infection) who have severe, complicated, or progressive illness; who require hospitalization; or who are at higher risk for influenza-related complications (*7*).¶¶

Influenza surveillance reports for the United States are normally posted online weekly and are available at http://www.cdc.gov/flu/weekly. Additional information regarding influenza viruses, influenza surveillance, influenza vaccines, influenza antiviral medications, and novel influenza A virus infections in humans is available at http://www.cdc.gov/flu.

¶¶ Persons at higher risk include 1) children aged <5 years (especially those aged <2 years); 2) adults aged ≥65 years; 3) persons with chronic pulmonary (including asthma), cardiovascular (except hypertension alone), renal, hepatic, hematologic (including sickle cell disease), metabolic disorders (including diabetes mellitus), or neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle, such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability [mental retardation], moderate to severe developmental delay, muscular dystrophy, or spinal cord injury); 4) persons with immunosuppression, including that caused by medications or by human immunodeficiency virus infection; 5) women who are pregnant or postpartum (within 2 weeks after delivery); 6) persons aged ≤18 years who are receiving long-term aspirin therapy; 7) American Indians/Alaska Natives; 8) persons who are morbidly obese (i.e., body mass index ≥40); and 9) residents of nursing homes and other chronic-care facilities.

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State, local, and territorial health departments and public health laboratories; U.S. World Health Organization (WHO) collaborating laboratories; the National Respiratory and Enteric Virus Surveillance System collaborating laboratories; U.S. Outpatient Influenza-like Illness Surveillance Network; Influenza-Associated Pediatric Mortality Surveillance System; 122 Cities Mortality Reporting System; WHO FluNet.

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Notes from the Field

Strongyloidiasis in a Rural Setting — Southeastern Kentucky, 2013

Strongyloidiasis is caused by *Strongyloides stercoralis,* a parasitic nematode (worm). Initial symptoms can include abdominal pain, diarrhea, or rash. Infection is often asymptomatic in the chronic phase but can be life-threatening in immunosuppressed persons. Transmission typically occurs when larvae from stool-contaminated soil penetrate skin; intraintestinal autoinfection is also possible, sometimes allowing infection to persist for decades. Serologic studies are often used in prevalence estimates because intermittent shedding can make stool-based testing insensitive. Strongyloidiasis is most common in tropical and subtropical environments with poor sanitation. In the United States, it is commonly reported among refugees and immigrants; in the 1980s, studies in the rural southeastern United States also reported prevalence estimates ranging from 1.2%–6.1% (*1,2*). Prevalence might have since decreased because of investments in sanitation (*3*); however, no recent studies have been done, and strongyloidiasis is not a reportable disease in any state.

The Kentucky Department for Public Health and CDC sought to determine whether *Strongyloides* transmission continues in a rural area of the United States where transmission has been demonstrated in previous serostudies. Kentucky is a state where strongyloidiasis historically has been endemic (*2*). In 2011, Kentucky had 15 strongyloidiasis-related hospital discharge diagnoses reported by the Healthcare Cost and Utilization Project database (*4*). Origin and travel history are not reported in that database, making country of exposure unclear for those cases. Approval for this project was obtained from the Kentucky Cabinet for Health and Family Services Institutional Review Board prior to the start of the study. Investigators recruited a convenience sample of patients attending a nongovernmental organization's weekend clinic offering dental, vision, and medical services in southeastern Kentucky. All patients were eligible to enroll in the study and were referred for free treatment if needed. Patients provided informed consent, demographic information, exposure history, and blood samples that were tested by CDC for anti-*S. stercoralis* antibody by enzyme immunoassay; a positive result indicated current infection (titers decrease after successful treatment).

A total of 752 patients attended the clinic. Testing was offered in a public area frequented by all patients, and multiple invitations for testing were issued in group waiting areas. A total of 102 (13.6%) patients, all adults, agreed to be tested. Five patients tested positive for *S. stercoralis* antibody, including one man and four women, ranging in age from 21 to 69 years. All were born in the United States and provided addresses in one of four cities in southeastern Kentucky. Four had an indoor flush toilet; the fifth had an indoor toilet with manual waste removal. No travel to tropical countries was reported.

Although antibody testing cannot be used to differentiate between acute and chronic infection, given the lack of travel history, autochthonous transmission of *Strongyloides* appears to persist in this Appalachian area. Wider investigations are planned.

Reported by

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Notes from the Field

Strongyloides Infection Among Patients at a Long-Term Care Facility — Florida, 2010–2012

During a 2-week period in August 2011, two patients in a long-term care facility in Miami-Dade County, Florida, had gastrointestinal symptoms; microscopic examination of stool specimens showed that both harbored *Strongyloides stercoralis*, an intestinal nematode. A subsequent chart review revealed an additional case within the facility 1 year earlier. Concerned about the possibility of an outbreak, the associate director of patient care services at the facility contacted the Florida Department of Health in Miami-Dade County and the Florida State Department of Health, which contacted CDC. This report describes the subsequent investigation.

In May 2012, a serologic and risk-factor survey of residents and staff was performed to assess the prevalence of and associations with infection. *Strongyloides* informational packets were distributed to all residents and staff members, and consent for serologic testing was obtained. In June, blood samples from consenting residents and staff members were tested for *S. stercoralis*–specific antibody testing by crude antigen enzyme-linked immunosorbent assay. This serologic test becomes positive after infection (how long after infection is not well defined), and antibody titers typically drop to <50% by 6–18 months after successful treatment of the parasite.

In a convenience sample of 106 of the 176 facility residents, 12 (11%) had a positive result, as did three from a convenience sample of 26 of the 238 staff members. All 15 persons with positive results reported being born either in North America (five) or the West Indies (10). Thirty-seven long-term care facility residents in the convenience sample were born in the United States or Mexico, and four (10.8%) had results positive for *S. stercoralis*-specific antibody; only one of these persons reported no travel outside of the United States. Six long-term care facility residents reported corticosteroid use in the last 3 months, and none were infected. Because no prior testing had been performed, assessing whether any of the infections had been acquired within the facility was not possible.

Recommendations were made to offer testing and treatment to the residents and staff members who had not yet been approached and to extend this offer to incoming residents. Further research is needed to determine the prevalence of *Strongyloides* infection and the risk for transmission to help inform screening strategies for long-term care facilities.

Reported by

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Announcement

World Stroke Day — October 29, 2013

Approximately 795,000 strokes occur each year in the United States. A leading cause of disability, stroke occurs among all age groups, including newborns, children, young adults, and older adults (*1*), and will affect one in six persons worldwide during their lifetimes (*2–4*). This year's theme for World Stroke Day, October 29, is "Because I Care." It emphasizes that stroke is preventable and the benefits of prevention should be extended to the entire family (*4*).

With timely care and support, most stroke survivors can recover and regain their former quality of life. Everyone should take the following actions to reduce their likelihood of having a stroke: 1) know your personal risk factors for stroke, including high blood pressure, diabetes, obesity, high blood cholesterol, atrial fibrillation, and a history of having a transient ischemic attack or previous stroke and control or manage these conditions by working with health-care providers; 2) engage in physical activity regularly; 3) maintain a healthy diet high in fruits and vegetables; 4) limit alcohol consumption; 5) avoid cigarette smoke (if you smoke, seek help to stop now); and 6) learn to recognize the warning signs of a stroke* (call 9-1-1 immediately if you think someone is having a stroke).

* Sudden numbness or weakness of the face, arm, or leg, especially on one side of the body; sudden confusion, trouble speaking or understanding; sudden trouble seeing in one or both eyes; sudden trouble walking, dizziness, loss of balance or coordination; or sudden severe headache.

CDC addresses stroke prevention through state-based programs to prevent heart disease and stroke, through the Paul Coverdell National Acute Stroke Registry, and through many partnerships, including the Million Hearts Initiative. Additional information on stroke prevention is available from CDC at http://www.cdc.gov/stroke, and additional information about World Stroke Day is available at the World Stroke Organization website (*4*).

References

1. Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. Circulation 2013;127:e6–245.
2. Seshadri S, Beiser A, Kelly-Hayes M. The lifetime risk of stroke: estimates from the Framingham Study. Stroke 2006;37:345–50.
3. World Health Organization. The atlas of heart disease and stroke. Geneva, Switzerland: World Health Organization; 2004. Available at http://www.who.int/cardiovascular_diseases/resources/atlas.
4. World Stroke Organization. World Stroke Campaign. Geneva, Switzerland: World Stroke Organization; 2013. Available at http://www.worldstrokecampaign.org.

Notice to Readers

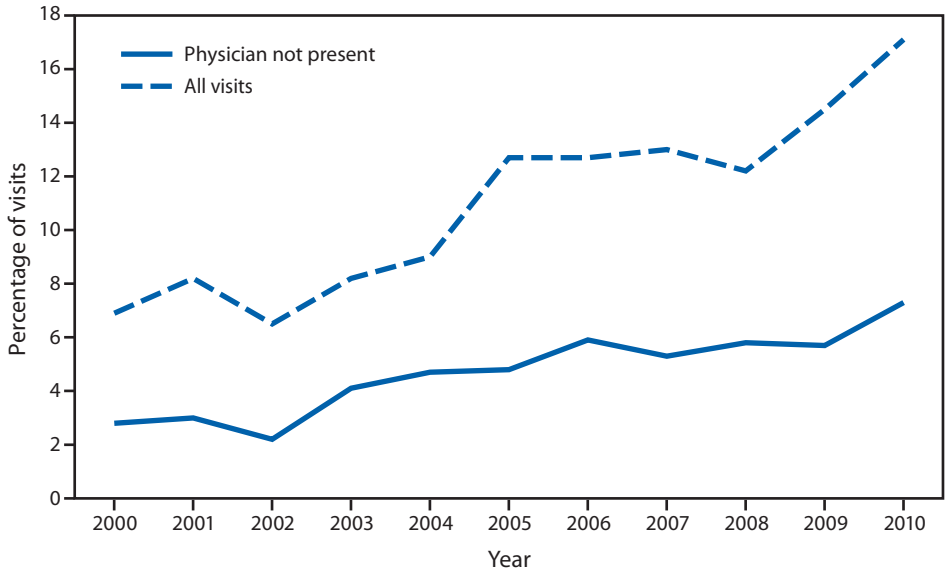
Notifiable Disease and Mortality Tables for Weeks 39–41 Now Online

The Notifiable Disease and Mortality Tables for surveillance weeks 39, 40, and 41 have now been posted on the *MMWR* website, along with current week 42 data and the October 25, 2013, issue. The data include quarterly Table IV data regarding tuberculosis. Posting of the notifiable disease and mortality data for the 3-week period was delayed because of the lapse in government funding.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Emergency Department (ED) Visits During Which a Patient Was Seen by a Physician Assistant or Nurse Practitioner, Overall and Without a Physician Present* — National Hospital Ambulatory Medical Care Survey, United States, 2000–2010



* Based on a national sample of visits to hospital EDs.

The percentage of hospital ED visits during which a patient was seen by a physician assistant or nurse practitioner increased from 7% in 2000 to 17% in 2010. The percentage of ED visits during which a patient was seen by a physician assistant or nurse practitioner and did not see a physician increased from 3% in 2000 to 7% in 2010.

Source: CDC. National Hospital Ambulatory Medical Care Survey. Available at http://www.cdc.gov/nchs/ahcd.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.

Data presented by the Notifiable Disease Data Team and 122 Cities Mortality Data Team in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333 or to *mmwrq@cdc.gov.*

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