Novel Influenza A (H1N1) Virus Infections in Three Pregnant Women—United States, April-May 2009

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ON MAY 12, THIS REPORT WAS POSTED as an MMWR Dispatch on the MMWR website (http://www.cdc.gov/mmwr).

CDC first identified cases of respiratory infection with a novel influenza A (H1N1) virus in the United States on April 15 and 17, 2009. During seasonal influenza epidemics and previous pandemics, pregnant women have been at increased risk for complications related to influenza infection. In addition, maternal influenza virus infection and accompanying hyperthermia place fetuses at risk for complications such as birth defects and preterm birth. As part of surveillance for infection with the novel influenza A (H1N1) virus, CDC initiated surveillance for pregnant women who were infected with the novel virus. As of May 10, a total of 20 cases of novel influenza A (H1N1) virus infection had been reported among pregnant women in the United States, including 15 confirmed cases and five probable cases. Among the 13 women from seven states for whom data are available, the median age was 26 years (range: 15-39 years); three women were hospitalized, one of whom died. This report provides preliminary details of three cases of novel influenza A (H1N1) virus infection in pregnant women.

Case Reports

Patient A

On April 15, a woman aged 33 years at 35 weeks’ gestation with a 1-day history of myalgias, dry cough, and low-grade fever was examined by her obstetrician-gynecologist. She had been in relatively good health and had been taking no medications other than prenatal vitamins, although she had a history of psoriasis and mild asthma. The patient had not recently traveled to Mexico. Rapid influenza diagnostic testing performed in the physician’s office was positive.

On April 19, she was examined in a local emergency department, with worsening shortness of breath, fever, and productive cough. She experienced severe respiratory distress, with an oxygen saturation of approximately 80% on room air and a respiratory rate of approximately 30 breaths per minute. A chest radiograph revealed bilateral nodular infiltrates. The patient required intubation and was placed on mechanical ventilation. On April 19, an emergency cesarean delivery was performed, resulting in a female infant with Apgar scores of 4 at 1 minute after birth and of 6 at 5 minutes after birth; the infant is healthy and has been discharged home. On April 21, the patient developed acute respiratory distress syndrome (ARDS). The patient began receiving oseltamivir on April 28. She also received broad-spectrum antibiotics and remained on mechanical ventilation. The patient died on May 4.

On April 25, a nasopharyngeal swab specimen collected from patient A indicated an unsubtypable influenza A strain by real-time reverse transcription–polymerase chain reaction (rRT-PCR) at the San Antonio Metro Health Laboratory. The specimen was forwarded to the Virus Surveillance and Diagnostic Branch Laboratory, Influenza Division, CDC, where testing was inconclusive for novel influenza A (H1N1) virus. On April 30, a repeat nasopharyngeal specimen was collected, which was positive by rRT-PCR for novel influenza A (H1N1) virus at CDC.

Patient B

A previously healthy woman aged 35 years at 32 weeks’ gestation was seen at a local emergency department on April 20 with a 1-day history of shortness of breath, fever, cough, diarrhea, headache, myalgia, sore throat, and inspiratory chest pain. She was febrile (101.6°F [38.7°C]), with a heart rate of 128 beats per minute, respiratory rate of 22 breaths per minute, and oxygen saturation of >97% on room air. A chest radiograph was normal. Rapid influenza diagnostic testing was negative. The patient received a parenteral nonsteroidal anti-inflammatory medication, acetaminophen, and inhaled albuterol and was discharged home. She was evaluated the following day in her obstetrician-gynecologist’s office, where a nasopharyngeal swab sample was collected and sent for rRT-PCR testing. The patient received antibiotics, antinausea medication, acetaminophen, and an inhaled corticosteroid. The patient recovered fully, and her pregnancy is proceeding normally.

Patient B had been in Mexico during the 3 days preceding her arrival at the emergency department. Several family members in Mexico and the United States had recently been ill with influenza-like illness, and her sister had been hospitalized for pneumonia during the preceding week. Testing of the nasopharyngeal swab specimen from patient B collected on April 21 was identified as an unsubtypable influenza A strain by rRT-PCR testing at the Naval Health Research Laboratory in San Diego. Additional testing at CDC confirmed infection with novel influenza A (H1N1) virus.

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Patient C

On April 29, a woman aged 29 years at 23 weeks’ gestation was experiencing cough, sore throat, chills, subjective fever, and weakness of 1 day’s duration and was seen at the family practice clinic where she had been receiving prenatal care. The patient had a history of asthma but was not taking any asthma medications. Her son, aged 10 years, reportedly had similar symptoms the week before the onset of her symptoms. Another son, aged 7 years, had become ill on the same day as his mother and accompanied her to the clinic. At the clinic, the younger son was coughing vigorously and was asked to put on a mask by office staff members. Rapid influenza diagnostic testing in the family practice clinic of a nasopharyngeal sample from patient C was positive. The woman was prescribed oseltamivir, which she began taking later the same day. Her symptoms are resolving without complications, and her pregnancy is proceeding normally.

Patient C had not traveled to Mexico recently. Her son aged 7 years also was prescribed oseltamivir on April 29 but was not tested for influenza. The physician who evaluated patient C was also pregnant (13 weeks’ gestation). The physician began chemoprophylaxis with oseltamivir and has remained asymptomatic.

A nasopharyngeal swab collected from patient C on April 29 was identified as an unsubtypable influenza A strain by the Washington State Public Health Laboratory. Additional testing at CDC confirmed infection with novel influenza A (H1N1) virus.

CDC Editorial Note: This report provides preliminary details on three cases of novel influenza A (H1N1) virus infection in pregnant women. Additional information on these cases and other pregnant women with this infection is being compiled by CDC based on reports from state health departments. The three pregnant women described in this report all initially had symptoms of acute febrile respiratory illness similar to the clinical symptoms in nonpregnant women with the infection; one patient (patient A) developed ARDS and died. The most frequently reported symptoms among nonpregnant patients with novel influenza A (H1N1) virus infection have been fever, cough, and sore throat.

Although data are insufficient to determine who is at highest risk for complications of novel influenza A (H1N1) virus infection, seasonal influenza epidemics and previous influenza pandemics have shown that pregnant women generally are at higher risk for influenza-associated morbidity and mortality compared with women who are not pregnant. The increased risk of complications is thought to be related to several physiologic changes that occur during pregnancy, including alterations in the cardiovascular, respiratory, and immune systems. Pregnant women with underlying medical conditions such as asthma are at particularly high risk for influenza-related complications. Because pregnant women are at increased risk for influenza complications, the Advisory Committee on Immunization Practices and the American College of Obstetricians and Gynecologists have recommended that women receive the trivalent inactivated influenza vaccine.

The novel influenza A (H1N1) virus that is circulating is susceptible to the neuraminidase inhibitor antiviral medications, oseltamivir and zanamivir. In randomized, placebo-controlled trials among outpatients, these medications have reduced the severity and duration of symptoms of seasonal influenza if started within 48 hours of illness onset, and limited data from observational studies among hospitalized patients with seasonal influenza indicate that oseltamivir can reduce mortality, even when started >48 hours after illness onset. In addition, oseltamivir and zanamivir have been highly effective in preventing seasonal influenza if used shortly after exposure to the disease. Little information is available on the safety or effectiveness of these medications when used during pregnancy. However, considering the limited information available and the known risks for influenza complications during pregnancy, any potential risk to a fetus likely is outweighed by the expected benefits of influenza antiviral treatment for this novel virus. Thus, CDC interim guidance indicates that pregnant women with confirmed, probable, or suspected novel influenza A (H1N1) virus infection should receive antiviral treatment for 5 days.

Although zanamivir can be used in pregnancy, oseltamivir is preferred for treatment of pregnant women because of its systemic absorption. Theoretically, higher systemic absorption might suppress influenza viral loads more effectively in sites other than the respiratory system (e.g., placenta) and might provide better protection against mother-child transmission. Similar to the recommendation for nonpregnant persons who are treated, oseltamivir treatment should be initiated as soon as possible, ideally within 48 hours of onset of symptoms. In addition, any pregnant woman hospitalized with confirmed, probable, or suspected novel influenza A (H1N1) virus infection should receive oseltamivir, even if >48 hours have elapsed since illness onset. Beginning treatment as early as possible is critical. In addition, treating fevers in pregnant women with acetaminophen is important because maternal hyperthermia has been associated with various adverse fetal and neonatal outcomes.

In all clinical settings, including settings that provide care for pregnant women with influenza, the American College of Obstetricians and Gynecologists has recommended that pregnant women with influenza receive antiviral treatment as soon as possible. However, due to the limited available information on the safety and effectiveness of antiviral medications when used during pregnancy, these medications should be used in pregnant women only if the potential benefit justifies the theoretical and known risks. Whether pregnant women who receive influenza antiviral medications develop antiviral resistance is not known. Therefore, antiviral resistance should be considered in the differential diagnosis of patients with influenza-like illness who do not respond to antiviral treatment.
women, patients should be screened for signs and symptoms of febrile respiratory illness at the initial point of contact, and these patients should be promptly segregated and assessed. Outpatient clinical settings and labor and delivery units should develop and implement procedures for handling patients with respiratory illness and friends or family members who might accompany them. Pregnant women who are in close contact with a person who has a confirmed, probable, or suspected case should receive a 10-day course of chemoprophylaxis with zanamivir or oseltamivir. For chemoprophylaxis in pregnant patients, a preferred anti-influenza medication has not been determined. Although zanamivir might have the benefit of more limited systemic absorption,9 respiratory symptoms such as coughing or severe nasal congestion might limit its usefulness because of its inhaled route of administration. The pregnant physician caring for patient C began chemoprophylaxis soon after exposure.

Because of the increased risk for severe complications, the public health response to outbreaks of novel influenza A (H1N1) virus should include considerations specific to pregnant women. Interim guidance on issues specific to pregnant women and the novel influenza A (H1N1) virus is available at http://www.cdc.gov/h1n1flu/clinician_pregnant.htm. Additional information regarding novel influenza A (H1N1) virus is available at http://www.cdc.gov/h1n1flu. Clinicians should report cases of novel influenza A (H1N1) virus infection in pregnant women to their state or local health departments or CDC.

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REFERENCES
10 Available.
*Case definitions available at http://www.cdc.gov/h1n1flu/casedef.htm.

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IN THE REPORT, “NOVEL INFLUENZA A (H1N1) Virus Infections in Three Pregnant Women—United States, April-May 2009,” on page [23], the second and third sentences in the first complete paragraph should read as follows: “The specimen was forwarded to the Virus Surveillance and Diagnostic Branch Laboratory, Influenza Division, CDC, where it could not be confirmed as novel influenza A (H1N1) virus. On April 30, a repeat nasopharyngeal specimen and sputum specimen were collected that were both positive by rRT-PCR for novel influenza A (H1N1) virus at CDC.”

Malignant Mesothelioma Mortality—United States, 1999-2005
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2 figures, 1 table omitted

MALIGNANT MESOTHELIOMA IS A FATAL cancer primarily associated with exposure to asbestos. The latency period between first exposure to asbestos and clinical disease usually is 20-40 years.1 Although asbestos is no longer mined in the United States, the mineral is still imported, and a substantial amount of asbestos remaining in buildings eventually will be removed, either during remediation or demolition. Currently, an estimated 1.3 million construction and general industry workers potentially are being exposed to asbestos.2 To characterize mortality attributed to mesothelioma, CDC’s National Institute for Occupational Safety and Health (NIOSH) analyzed annual multiple-cause-of-death records for 1999-2005, the most recent years for which complete data are available.3 For those years, a total of 18,068 deaths of persons with malignant mesothelioma were reported, increasing from 2,482 deaths in 1999 to 2,704 in 2005, but the annual death rate was stable (14.1 per million in 1999 and 14.0 in 2005). Maintenance, renovation, or demolition activities that might disturb asbestos should be performed with precautions that sufficiently prevent exposures for workers and the public. In addition, physicians should document the occupational history of all suspected and confirmed mesothelioma cases.

Asbestos was used in a wide variety of construction and manufacturing applications through most of the 20th century. In the United States, asbestos use peaked at 803,000 metric tons in 1973 and then declined to approximately 1,700 metric tons in 2007.† For this report, malignant mesothelioma deaths were identified for 1999-2005 from death certificates and included any deaths for which International Classification of Diseases, 10th Revision (ICD-10) codes† for malignant mesothelioma were listed in the multiple-cause-of-death mortality data entity axis.‡ Because mesothelioma predominantly is associated with occupational exposure and has a long latency, the analysis was restricted to deaths of persons aged ≥25 years. The annual death rate per 1 million persons aged ≥25 years was calculated using the July 1 population estimates for each year provided by the U.S. Census Bureau. Overall death rates were calculated based on the 2002 census population.

During 1999-2005, a total of 18,068 malignant mesothelioma deaths were reported in the United States; 14,591 (80.8%) occurred among males and 17,180 (95.1%) among whites. Mesothelioma deaths were classified as mesothelioma of pleura (1,572; 8.7%), peritoneum (657; 3.6%), other anatomical site (2,605; 14.4%), and unspecified anatomical site (13,454; 74.5%).8 Mortality increased with age, with the greatest number of decedents aged ≥75 years; 311 deaths (1.7%) occurred in persons aged ≤44 years. From 1999 to 2005, the total number of malignant mesothelioma deaths increased 8.9%, from 2,482

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