DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

National Institute for Occupational Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati OH 45226-1998

September 15, 2010
HETA 2010-0056

Dr. Susan E. Lance, DVM, PhD
State Epidemiologist, Director, Epidemiology Program
Georgia Department of Community Health, Division of Public Health
2 Peachtree Street, NW Suite 14.440
Atlanta, Georgia 30303

Dear Dr. Lance:

This letter is in response to your January 27, 2010, technical assistance request to the National Institute for Occupational Safety and Health's (NIOSH) Hazard Evaluation and Technical Assistance Branch (HETAB) regarding the deaths of two Georgia teachers from the 2009 pandemic influenza A (pH1N1) virus.

Background

Two teachers in different Georgia school districts died in September 2009 from laboratory-confirmed pH1N1 infection. As part of NIOSH and CDC's response to the pandemic, the Georgia Department of Community Health (DCH) together with the Georgia Department of Education (DOE), asked us to look into possible work-related factors in these cases, recognition of which could lead to protective recommendations for other teachers.

We communicated with DOE staff (assistant state and local superintendents) to obtain information about the two teachers. We spoke with DCH staff (state and county health officials) to review preliminary findings and get a better picture of the influenza activity in the local schools. We reviewed school absenteeism data provided by DCH.

2009 Pandemic Influenza A Virus

The pH1N1 virus, also referred to as "swine flu," was first detected in humans in the United States in April 2009. On June 11, 2009, the World Health Organization signaled that a pandemic of pH1N1 was underway. During the spring of 2009, more than 40,000 confirmed or probable cases and more than 300 deaths in the United States were reported to the CDC [CDC 2009a].

Spread of the pH1N1 virus is similar to that of seasonal influenza [CDC 2009b]. Influenza viruses are spread mainly through droplet transmission though evidence for airborne transmission and transmission via direct contact also exists [CDC 2009b].

The symptoms of pH1N1 infection include fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills, and fatigue. Some patients have vomiting and diarrhea, while others have respiratory symptoms without a fever. Illness with the pH1N1 virus has ranged from mild to severe. While most ill people have recovered without medical treatment, hospitalizations and deaths from pH1N1 infection have occurred. Many patients with illness resulting in hospitalization or death had one or more medical conditions previously recognized as placing people at high risk of serious seasonal influenza-related complications. These conditions include pregnancy, diabetes, heart disease, asthma, and kidney disease [CDC 2009b].

Findings

Schools A and B are located 75 miles apart in South-Central Georgia. The first day of classes for the 2009-2010 school year was August 3, but teachers started work on July 27. September 5–7, 2009, was Labor Day weekend. School B was also closed on September 8 for a "calendar reduction day." School A is a middle school with an enrollment of 407. School A did not have a nurse on staff at the start of the school year. School B is an elementary school with an enrollment of 428, and did have a nurse on staff.

Case 1 was a 51 year old white male teacher in School A. He first became ill on Saturday, August 22, 2009, with headache, fever, chills, cough, nausea and vomiting, fatigue, and muscle and joint pain. He sought outpatient care initially, but went to the emergency room on August 30, 2009, where he was admitted for inpatient care. pH1N1 infection was confirmed by laboratory test of a nasal swab. He received antiviral therapy beginning September 6, 2009, but because of his worsening condition he was transferred to a tertiary care center. He died on September 8, 2009. His medical history included hypertension, gastroesophageal reflux disease, and dyslipidemia.

Case 1 had been a teacher for 26 years, working a 40-hour week Mondays through Fridays during the school year. He was an assistant baseball coach for the county schools. Case 1 had not traveled in the weeks before his illness. A parent reported that a child in Case 1's class had influenza-like illness (ILI), but no other cases of pH1N1 were confirmed aside from the teacher.

Case 2 was a 41 year old white female in School B who first became ill on September 12, 2009, with fever, chills, cough, sore throat, and shortness of breath. She continued working until September 17, when school officials asked her to see a health care provider. She was unable to get an appointment at a local clinic, and died in her apartment, where she lived alone, on September 18, 2009. She was not reported to have any chronic illnesses, but was obese, with a body mass index of 44.3 kg/m^2. The pathology report showed infection with both pH1N1 and Group B streptococcus.

Case 2 had been a teacher for 16 years, working a 40-hour week Mondays through Fridays during the school year. She had not traveled in the weeks before her death. The county epidemiologist and the principal of School B said there had been several cases of ILI among the students, including one in Case 2's classroom, but none were confirmed as pH1N1. An aunt of

Case 2 was confirmed to have pH1N1 infection on September 19, 2009, but it is unclear what contact she had with her niece.

School absenteeism data is generated by DCH Division of Public Health's state electronic notifiable disease surveillance system (SendSS) and notes the percentage of students absent, without specifying the reason. None of the five schools in School A's county reported for the week of Case 1's death. In School B's county, one of 16 schools reported for the week of Case 2's death, with absenteeism greater than 10%. The same report figures were repeated in each of the next 3 weeks.

Conclusions

These two teachers died of pH1N1, but we believe the cases are unrelated. Both had the opportunity to be infected at work, because school openings coincided with the expansion of the pandemic. Transmission of pH1N1 was amplified in many schools throughout the country, placing teachers and students at increased risk of infection from routine contact during school activities. In the case of these two teachers, however, we cannot confirm that infection occurred at work because there were no other confirmed pH1N1 cases, in particular among students in their respective classrooms. Similarly, we found no information that would allow us to trace the infections back to a community contact, where exposure would have been as likely as in the school setting. Aside from epidemiological linkage, there is no test to differentiate school- from community-acquired pH1N1 infection. Both teachers had independent risk factors for severe infection. We did not find any job-specific factors that would have placed the two teachers at increased risk of pH1N1 infection and death.

Recommendations

1. Encourage school personnel, including teachers, to receive seasonal influenza vaccine. The formulation for the 2010–11 season protects against pH1N1 [CDC 2010]. Vaccination should occur preferably 2 weeks before starting the school year.

2. Encourage students and employees with ILI symptoms to stay home.

3. Encourage good hand-washing hygiene, as well as cough and sneeze etiquette, to reduce transmission of pH1N1 and other infectious agents.

4. Ensure that routine cleaning is done, including wiping down frequently touched surfaces, using EPA-approved products.

For comprehensive recommendations, please see the 'CDC guidance for state and local public health officials and school administrators for school (K-12) responses to influenza during the 2009-2010 school year' (http://www.cdc.gov/h1n1flu/schools/schoolguidance.htm).

This letter closes our file on this technical assistance request. A copy of this letter is being provided to the Occupational Safety and Health Administration Region IV Office and the Georgia Department of Education. NIOSH recommends distributing copies of this letter to staff representatives in the affected schools. Thank you for your cooperation with this technical assistance request. If you have any questions, please do not hesitate to call me at 513-458-7173.

Sincerely yours,

Carlos Aristeguieta, M.D., M.P.H.
Medical Officer
Hazard Evaluations and Technical
Assistance Branch
Division of Surveillance, Hazard
Evaluations and Field Studies

cc: Occupational Safety and Health Administration Region IV Office
Gary McGiboney, Ph.D., Associate Superintendent, Georgia Department of Education

References

CDC (Centers for Disease Control and Prevention) [2009a]. 2009 H1N1 early outbreak and disease characteristics [http://www.cdc.gov/h1n1flu/surveillanceqa.htm]. Date accessed: August 30, 2010.

CDC [2009b]. 2009 H1N1 flu ("Swine Flu") and you. [http://www.cdc.gov/H1N1flu/qa.htm]. Date accessed: August 30, 2010.

CDC [2010]. Prevention and Control of Influenza with Vaccines. Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010. MMWR Early Release 59, July 29:1–62.