

munity influenza exposure, as measured according to the presence of ill household members. Frontline HCWs were defined as staff who worked in the emergency department, triage unit, or outpatient clinic and screened patients with suspected 2009 H1N1 influenza. In this hospital, all HCWs with suspected or confirmed 2009 H1N1 influenza have been required to report to the hospital's occupational health unit since May 2009, and the infection control policy was for HCWs to wear surgical masks while caring for patients with suspected 2009 H1N1 influenza, whereas the use of N95 masks was restricted to aerosol-generating procedures. A hospital-wide hand hygiene program with monthly monitoring and feedback has been sustained since July 2006 [6].

During the 7.5-month study period, 69 HCWs had confirmed 2009 H1N1 influenza, 51 (74%) of whom met the criteria for HA 2009 H1N1 influenza. Eighteen HCWs with 2009 H1N1 influenza were excluded because of potential community influenza exposure (they had ill household members). All 51 HCWs consented to study enrollment; the median age of the study group was 36 years (range, 24–54 years), and 24 (47%) of 51 HCWs reported unprotected exposure to patients with confirmed 2009 H1N1 influenza (Table 1). Nurses were the most frequently exposed (26 [51%] of 51 exposed HCWs), and most exposures occurred on medical units (30 [59%] of 51 exposed HCWs). According to multivariate analysis, unprotected exposure to patients with 2009 H1N1 influenza (adjusted odds ratio [aOR], 2.41 [95% confidence interval {CI}, 1.19–16.71]) was the sole factor associated with HA 2009 H1N1 influenza infection in the case group, whereas protective factors for the control group included assignment to units with >75% adherence to hand hygiene practices (aOR, 0.45 [95% CI, 0.27–0.89]), use of a surgical mask while caring for a patient with suspected 2009 H1N1 influenza (aOR, 0.79 [95% CI, 0.41–0.99]), and assignment as a frontline HCW who cared for

patients with suspected or confirmed 2009 H1N1 influenza (aOR, 0.83 [95% CI, 0.46–0.98]). Notably, exposure to patients who did not meet criteria for influenza-like illness was associated with a high proportion of unprotected HCW exposures (11 [46%] of 24).

Notably, 24 (47%) of 51 cases of HA influenza among HCWs in this study group involved unprotected exposures by HCWs—a behavioral risk associated with HA 2009 H1N1 influenza infection. Unprotected exposures were more extensive among the HCWs who provided initial care to patients who did not have classic influenza-like illness, likely as a result of delays in initiation of standard infection control measures. In addition, a high rate of compliance with hand hygiene practices (>75%) was independently associated with reduced transmission of 2009 H1N1 influenza, and the protective effect of surgical masks is consistent with existing literature for 2009 H1N1 influenza [7, 8]. Last, factors associated with unprotected exposure and reduced risk of infection among frontline HCWs will require further exploration in other study populations to provide additional evidence for optimized infection control practices and minimization of viral infection.

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## Death Due to Community-Associated *Clostridium difficile* in a Woman Receiving Prolonged Antibiotic Therapy for Suspected Lyme Disease

TO THE EDITOR—*Clostridium difficile* infections can occur outside the hospital in association with antibiotic use and can result in fulminant colitis and death. In December 2009, the Minnesota Department of Health investigated a death due to *C. difficile* of a 52-year-old woman with no recent hospitalizations.

In June 2009, the patient sought care for symptoms of fatigue, insomnia, achy joints, memory loss, and confusion. These symptoms had been present for >5 years and had worsened in the past 2 years. She received a diagnosis of a relapse of depression. In August, on the basis of responses to a “Lyme Disease Question-

naire/Checklist” given at a health care visit, Lyme disease serologic tests were performed in a California laboratory. Results were indeterminate by immunofluorescence assay and were IgM-positive (2 of 3 bands) but IgG-negative (3 of 10 bands) on Western blot. She was placed on a 5-week course of doxycycline for possible Lyme disease. The patient’s symptoms improved but then worsened after completion of antibiotics. Both her primary physician and a rheumatologist found no objective evidence of Lyme disease in October. In November, without further Lyme disease testing, another physician prescribed oral cefuroxime and telithromycin for a planned 2–4 months to treat chronic Lyme disease. Five weeks after initiating this therapy, the patient developed diarrhea for 3 days and received a diagnosis of *C. difficile* colitis. An enzyme immunoassay was positive for *C. difficile* toxin A and B. Because she had no overnight stays in a health care facility in the 12 weeks prior, she was classified as having a community-associated *C. difficile* infection. The patient was started on oral metronidazole therapy but was hospitalized 2 days later with severe abdominal pain secondary to diffuse colitis and abdominal ascites. The next morning, she experienced cardiac arrest twice and succumbed to cardiac arrest during an emergency colectomy. Pseudomembranes were noted in the colon, and *C. difficile* was isolated from stool. The isolate was toxinotype III, binary toxin positive, and contained a 36–base pair *tcdC* deletion.

This case illustrates the potential severity of community-associated *C. difficile* infection and the danger of antibiotic treatment for a presumed diagnosis of chronic Lyme disease. In the absence of a positive IgG finding on Western blot, symptoms lasting >1 month are not likely due to *Borrelia burgdorferi* infection, even if the IgM result is positive [1]. Longstanding nonspecific symptoms unaccompanied by objective evidence of infection do not warrant antibiotic treatment for Lyme disease [2]. Even in patients with histories of ap-

propriate clinical and serological criteria for Lyme disease, multiple randomized placebo-controlled trials have shown no durable benefit to long-term antibiotic therapy for persistent nonspecific symptoms [3–5]. Severe adverse effects, such as death, catheter-related blood stream infections, pulmonary embolism, septic thrombophlebitis, and gastrointestinal bleeding, have previously been reported in patients treated with antibiotics for Lyme disease [3–7]. This death due to fulminant *C. difficile* colitis serves as yet another example of the severe adverse outcomes that can result from inappropriate antibiotic therapy for presumptive Lyme disease.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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