

## PROPHYLAXIS OF HIGH SCHOOL STUDENTS WITH CIPROFLOXACIN FOLLOWING TWO CASES OF INVASIVE MENINGOCOCCAL INFECTION AT A LOS ANGELES COUNTY HIGH SCHOOL, NOVEMBER 14-15, 2006

Over the past 10 years, Los Angeles County (LAC) Department of Public Health (DPH) has confirmed 40 to 60 cases of invasive meningococcal disease annually. Outbreaks of invasive meningococcal disease, defined as three or more cases within three months [1] within a circumscribed community (e.g., school) or group of individuals sharing a common exposure, have been rare events in LAC, with the last outbreak noted in 2001 among attendees of a nightclub [2]. As part of routine public health follow-up, all contacts to both confirmed and suspected cases are evaluated for prophylaxis and educated on the symptoms of invasive meningococcal disease; meningococcal isolates are serotyped and may be genotyped by Pulsed Field Gel Electrophoresis (PFGE) at the LAC Public Health Laboratory.

On November 14, 2006, one culture-confirmed case of *Neisseria meningitidis* (*N. meningitidis*) bacteremia (serogroup B) in a high school student and an additional case of suspected meningococcal meningitis (culture-negative) in a critically ill teenager were reported to the LAC DPH by the same community hospital. Medical record review and interviews with family members revealed that both teenagers had symptom onset on November 12, 2006. Both cases attended the same school, but did not know each other, share classes together, or participate in similar activities such as clubs and/or sports teams. Further diagnostic work-up revealed that the culture negative meningitis student had PCR-positive cerebral spinal fluid (CSF) for *N. meningitidis*, serogroup B (California Microbial Disease Laboratory) despite negative blood and CSF cultures.

On the same day, after consultation with high school officials and California Department of Health Services Division of Communicable Disease Control, the LAC DPH held a point-of-distribution (POD) clinic at the students' school to dispense prophylaxis in anticipation of a large turnout. Two clinics were held, one on November 14 from 6 to 9 p.m. and an additional clinic the following day from 8 a.m. to 2 p.m. Parents and students were notified about the POD clinics through the school's automated phone message system, internet page, and a letter to parents, advising only close contacts of the students to obtain prophylaxis. Although the students' names were made public (after parental permission was granted) in an effort to identify only those students who had direct contact with the two ill students, over 3000 students and teachers were evaluated and 2861 persons were provided with prophylactic medication (ciprofloxacin 500 mg orally in a single dose). Two teens experienced allergic reactions—skin rash with itching—and were treated with diphenhydramine. Additionally, five students attending the POD were referred to local hospitals for evaluation of symptoms suggestive of meningitis; one received a lumbar puncture. No student had meningitis and all five were discharged.

Two weeks after completion of the POD, a follow-up survey was distributed to all students and staff at the school. The goals of the survey were to quantitate the possible side-effects related to single-dose ciprofloxacin in an adolescent population and to evaluate the reasons why so many students and school staff chose to receive prophylaxis despite being at low risk. The survey results are presented in a separate article within this Special Studies Report. At six weeks after the symptom onset of the cases, no additional meningococcal cases associated with this high school had been documented.

### DISCUSSION

LAC DPH successfully held a POD clinic to provide antimicrobial prophylaxis rapidly to contacts of one culture-confirmed case of meningococcal bacteremia and one suspected case of meningococcal meningitis within 24 hours of notification to the DPH. Although ACDC recommended that prophylaxis be provided only to persons with close contact to the cases (e.g., shared drinks, cigarettes, secretion), nearly 2900 students and staff received prophylaxis. Factors that may have contributed to this very large participation included:

- the school administration composed the school health announcement to parents and students that was not specific enough to focus on close contacts;
- additionally, the county supervisor's office for this region issued a press release, advising LAC residents of a "meningitis outbreak", despite the fact that the DPH determined that one confirmed case and a suspected case did not meet the definition of an outbreak.

At the time of POD formation, it was not known if the case of bacterial meningitis was caused by *N. meningitis*, although PCR diagnostics revealed Group B meningococcus in the CSF of the suspect case by the time of the second clinic. This meningitis case remained culture-negative; thus PCR proved to be a very important diagnostic tool in providing bacteriologic and serogroup information.

Ciprofloxacin was chosen for prophylaxis because it can be administered in a single dose and is generally well tolerated. Despite experience from large setting, school outbreak prophylaxis distributions (California CD Brief, March 4, 2001) and its widespread use in the treatment of uncomplicated gonorrhea infection in adolescents [3], ciprofloxacin in adolescents is still not supported in the Pediatric Red Book [4,5] or the Physicians Desk Reference (PDR) [6]. The survey documented only two adverse events (0.07%) in students who developed rash without anaphylaxis and were successfully treated with diphenhydramine. This is less than the 1% frequency noted in the PDR [6].

By all accounts, the POD clinic was successfully and efficiently executed by public health officials, parents, and school administrators who participated and observed. The clinic's success can be attributed to recent bioterrorism-related preparedness exercises that have stressed rapid organization of POD clinics for vaccines and antibiotics. Other helpful factors included having school officials, a public health pharmacist, public health nurses, a public health medical director, and the health officer on site.

## REFERENCES

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