Two Concurrent Enteric Disease Outbreaks Among Men Who Have Sex With Men, Minneapolis–St Paul Area

Richard N. Danila, Dana L. Eikmeier, Trisha J. Robinson, Allison La Pointe, and Aaron S. DeVries
Infectious Diseases, Minnesota Department of Health, St Paul

Between 1 November 2013 and 31 March 2014, concurrent shigellosis and cryptosporidiosis outbreaks occurred among men who have sex with men in the Minneapolis–St. Paul area, 75% of whom were HIV-infected. Current HIV/AIDS strategy emphasizing treatment as prevention may effectively decrease HIV transmission, but raises concerns about other diseases if safer sex messages are de-emphasized.

Keywords. cryptosporidiosis; HIV infection; HIV prevention; men who have sex with men; shigellosis.

INTRODUCTION

As part of the Centers for Disease Control Emerging Infections Program (EIP), we conduct statewide active laboratory-based surveillance for Shigella spp. and Cryptosporidium spp. infections. We identified 2 concurrent unrelated outbreaks of shigellosis and cryptosporidiosis in a 5-month period.

METHODS

Methods for EIP surveillance have been described elsewhere mandated [1]; briefly, case report forms are completed by medical providers, all laboratories serving Minnesota residents are routinely queried for missing reports, and isolate submission to the public health laboratory is mandated for all cases [1]. All patients with shigellosis or cryptosporidiosis cases were routinely interviewed for history of illness, including immunosuppression, and standard risk exposures, and in the context of an outbreak they are interviewed (or reinterviewed) with specific detailed questions to determine potential common exposures, including sexual orientation and practices.

RESULTS

Between 1 November 2013 and 31 March 2014, a total of 34 cases of Shigella spp. including 8 cases of Shigella flexneri 3a were reported in Minnesota (Figure 1). Previously in 2013, a total of 134 Shigella spp. cases, including 4 unrelated S. flexneri 3a cases, had been reported. The onset of illness for S. flexneri 3a ranged from 8 November 2013 to 23 February 2014 (date missing for 1 patient). Five patients were hospitalized for 1–6 days. All 8 patients were male, with a median age of 48 years (range, 33–73 years). Seven were residents of the Minneapolis–St Paul area and 1 was homeless but from the same area. Six were white, non-Hispanic, 1 was white, Hispanic, and 1 was black, non-Hispanic. All were men who had sex with men (MSM), and 4 were infected with human immunodeficiency virus (HIV). Three of the other non-outbreak S. flexneri 3a 2013 cases occurred in men (1 occurred in an infant), and were not clustered in time and space, with the latest onset on 9 August 2013 and 1 case associated with international travel. The 8 outbreak cases had no epidemiological links or known contact with each other, including sexual. Five of the 6 who could be reinterviewed for detailed exposures reported male-to-male sexual contact in the week before illness onset. We did not ascertain specific sex partner venues; however, 1 patient had traveled to New York City in the 6 days before onset and reported sexual contact there. Seven isolates were indistinguishable by pulsed field gel electrophoresis from one of 2 closely related patterns; the pattern for the isolate from the traveler to New York City differed by 9 bands. The 7 indistinguishable isolates were sensitive to ciprofloxacin, ceftriaxone, azithromycin, sulfisoxazole, and trimethoprim-sulfamethoxazole and resistant to nalidixic acid; the isolate from the traveler to New York City was resistant to sulfisoxazole and trimethoprim-sulfamethoxazole and sensitive to nalidixic acid.

Between 1 November 2013–31 March 2014, 8 cases of Cryptosporidium hominis in HIV-infected MSM were reported (Figure 1). The onset of illness ranged from 15 November 2013 to 28 January 2014. Two patients were hospitalized, for 4 and 9 days. The median patient age was 40 years (range, 26–45 years), and all patients were residents of the Minneapolis–St Paul area. Five (63%)
were black, compared with 4% for all of the other *Cryptosporidium* spp. cases reported in 2013. No common food, water, or animal exposures were reported. Before this outbreak, 44 *C. hominis* cases were reported in 2013. The *C. hominis* subtype IFA12G1R2 was identified in stool specimens from all 8 cases; historically, this rare subtype had been identified in <1% of all earlier isolates from Minnesota residents. None of the patients were related to those in the concurrent shigellosis outbreak.

### DISCUSSION

The 2 concurrent outbreaks were a natural observation of our routine public health surveillance data. Because these results were derived primarily from surveillance data, our study had limited information about individual medical histories. The demographic characteristics of the patients in these outbreaks differed in multiple ways from those of reported patients with nonoutbreak shigellosis or cryptosporidiosis. For instance, the *Cryptosporidium* outbreak patients were more likely to be black than all other patients reported in 2013, supporting the occurrence of an outbreak and reflecting the racial disparities in the HIV epidemic in Minnesota.

*Shigella* has a low infective dose and is transmitted through fecal-oral contact. The incidence of shigellosis has been documented elsewhere to be increased among MSM, especially through direct anal contact. *Shigella* infection may be more severe among HIV-infected persons and thus more likely to be detected [2]. These elements have been referred to as a “perfect biological storm” for transmission of infection [3]. Recent outbreaks have occurred among MSM in Chicago, the United Kingdom, and Australia [4–8]. Similar to what was noted in the United Kingdom outbreak, we recorded a general lack of awareness of shigellosis and its sexual risk factors among the patients reported here.

*Cryptosporidium* is transmitted by the fecal-oral route with the ingestion of viable oocysts, and cryptosporidiosis has been associated with MSM. Cryptosporidiosis can occur in immunocompetent and immunocompromised individuals and is an AIDS-defining illness [9].

The outbreaks presented here are a reflection of the ongoing sustained increased incidence seen in the United States of syphilis and gonorrhea among MSM, a large proportion of whom are co-infected with HIV [10]. Globally, the incidence of HIV is increasing among MSM, particularly younger MSM [11]. The newest HIV/AIDS prevention strategy emphasizes treatment as prevention, with assessment of community viral load levels and creation of an HIV treatment cascade representing prevalent HIV cases, patients with a diagnosis of HIV infection, those seeking and retained in care, those in treatment, and those virally suppressed [12, 13]. This clearly has been effective at decreasing rates of HIV transmission but raises concerns about other sexually transmitted diseases if safer sex messages are de-emphasized [14]. Prevention messages for MSM, including those who are known to be HIV-infected, must go beyond an emphasis on HIV treatment as prevention and continue to include the risk of other sexually transmitted diseases, including enteric diseases transmitted through sexual contact.

### Notes

**Financial support.** The work was funded in part by the Centers for Disease Control and Prevention Emerging Infections Program (cooperative agreement CDC-RFA-CK12-120203CONT14).

**Potential conflicts of interest.** All authors: No reported conflicts.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

**References**

1. Centers for Disease Control and Prevention. Incidence and trends of infection with pathogens transmitted commonly through food—


