investigation. Because the assay for clenbuterol is not available in the majority of laboratories, only eight of the 26 cases described in this report were confirmed; 16 cases were classified as probable and two as suspected.

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CDC Editorial Note: Clenbuterol is a b2 adrenergic receptor agonist with a rapid onset and long duration of action approved for limited veterinary use in the United States.2,3 Clenbuterol is also used illicitly as an alternative to anabolic steroids in humans and livestock because it can increase muscle mass.4,5 Most adverse health effects are related to its stimulation of b2 adrenergic receptors and clinical manifestations, including hypokalemia, hyperglycemia, hyperlactemia, agitation, tachycardia, and hypotension.6 Adverse human health effects have been reported previously in a case of clenbuterol ingestion7 and from ingestion of meat from livestock fed clenbuterol.8 However, the 26 cases described in this report are the first published accounts of poisoning from clenbuterol associated with reported heroin use.

Whether these cases represent adulteration of a single source of heroin before widespread distribution or adulteration of multiple sources is unknown. Also unclear is whether the substance used by each patient was heroin contaminated with clenbuterol or pure clenbuterol sold as heroin. The presence of adulterants in heroin is common. In some years, substances such as caffeine were detected in more than half of samples tested.8 Widespread poisoning secondary to adulterated heroin has occurred before as in the case of scopolamine-adulterated heroin reported in four states during the mid-1990s.9

For various reasons, the 26 cases described in this report likely represent a fraction of actual cases of clenbuterol poisoning. Patients might not have medical evaluation for fear of legal repercussions. Passive reporting to public health agencies or PCCs might not have occurred because ED physicians, hospital intensivists, and the patients themselves might have presumed that the effects were related to a known coingestant. The identification of potential cases during the PCC record review process might have been limited by each center’s database classification. The etiologic agent in suspicious cases might have been coded by using words other than “heroin” or “clenbuterol,” such as “unknown drug” or “presumed coingestant.”

Communication and cooperation among PCCs, EDs, CDC, and local public health agencies allowed for coordination of an appropriate response to the clenbuterol incidents. Local public health agencies and PCCs (available 24 hours a day at telephone 800-222-1222) should be notified of any case of suspected or known human exposure to an adulterated product. Early and rapid collaboration among local, state, and federal public health and law enforcement agencies might be necessary to identify, respond to, and minimize the effects of unintentional or intentional adulteration of substances used by the public.

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REFERENCES
9 available

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Shigella flexneri Serotype 3 Infections Among Men Who Have Sex With Men—Chicago, Illinois, 2003-2004

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Shigellosis is a reportable disease in Illinois. During 1995-2002, a total of 95 cases of S. flexneri serotype 3 infection in Chicago residents were reported to CDPH (mean: 11.9 cases per year); 40 (42%) of these cases occurred in males aged ≥18 years. In contrast, 33 (85%) of 39 reported cases (mean: 19.5 cases per year) occurred in adult males during 2003-2004. The mean annual number of case reports among adult males increased from 5.0 to 16.5, whereas case reports among women and children decreased from 6.9 to 3.0 during this period. CDPH conducted an investigation to characterize these infections.

For this investigation, a case of S. flexneri serotype 3 infection was defined as one with onset of diarrhea during 2003-2004 in a male Chicago resident aged ≥18 years, with accompanying isolation of S. flexneri serotype 3 from stool culture. Health-care providers were asked to report all Shigella infections among Chicago residents to CDPH and to send Shigella isolates to the state public health laboratory for

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speciation. Persons whose illness was consistent with the case definition were interviewed with a standard case-investigation questionnaire, which included the following questions: “With regard to sexual orientation, would you describe yourself as (1) heterosexual, (2) homosexual, (3) bisexual, (4) don’t know, or (5) refused?” and “In the week prior to the onset of this illness, do you remember engaging in a same-sex relationship?” Responses were “yes”, “no”, or “don’t know.” Information about sexual activities and human immunodeficiency virus (HIV) status was not collected systematically. Serotyping, antimicrobial-susceptibility testing, and pulsed-field gel electrophoresis (PFGE) of available isolates were performed at the Illinois Department of Public Health and CDC.

Illness onsets for 33 identified patients occurred throughout both years. In all patients, clinical illness was limited to gastroenteritis; 16 (48%) patients were hospitalized for treatment, and all recovered without sequelae. Patients ranged in age from 20 to 56 years (median: 35 years); 24 (83%) of 29 patients for whom race was ascertained were non-Hispanic white. Twenty-two (88%) of 25 patients asked to characterize their sexual orientation described themselves as MSM. No other exposures or risk factors for shigellosis were found.

Fourteen isolates obtained from MSM were available for additional testing. Twelve (86%) were identified as S. flexneri subtype 3a; the remaining two isolates were S. flexneri subtype 3b. Seven closely related PFGE patterns were identified among the 11 S. flexneri subtype 3a isolates typed by PFGE. Eleven isolates were tested for antimicrobial susceptibility; all were susceptible to ciprofloxacin and resistant to ampicillin, and nine (82%) were resistant to trimethoprim-sulfamethoxazole.

CDC Editorial Note: Shigella is the third most common cause of bacterial gastroenteritis in the United States.1 The majority of Shigella infections in the United States are caused by S. sonnei and affect young children and their caretakers. S. flexneri causes approximately 18% of US Shigella infections.3 The national incidence of S. flexneri infections decreased 64% from 1989 to 2002.4 However, a recent analysis indicated an increase in Shigella infection among adult males.5 This increase is likely attributable to outbreaks of shigellosis among MSM; since the 1970s, outbreaks of shigellosis attributable to S. flexneri and more recently S. sonnei have been reported among MSM in major cities in North America (3-5), Europe,3 and Australia.6

The low inoculum required for Shigella infection (as few as 10-200 organisms) facilitates person-to-person transmission. Risk factors for sexual transmission of Shigella have not been well characterized but likely involve exposure to fecal material. In outbreaks among MSM, 50%-90% of participants reported oral-genital or oral-anal contact during the week before diagnosis with Shigella infection.5,6 A case-control study of shigellosis among MSM in Sydney, Australia, implicated exposure to a commercial sex venue as the sole risk factor for illness.4 Although the effect of HIV infection on risk for sexual transmission of Shigella is not well understood, it might be associated with elevated risk for acquiring shigellosis and with more severe disease.7

Other enteric illnesses, such as those caused by hepatitis A, Entamoeba histolytica, Giardia lamblia, Campylobacter, and Salmonella, also can be transmitted sexually.8,10 Because feces can contain multiple pathogens, polymicrobial infections can result from a single sexual exposure.3,8 Outbreaks of sexually transmitted shigellosis might be observed more frequently than outbreaks of other sexually transmissible enteric organisms because the infectious dose is lower, the illness produces symptoms that are more likely to bring patients to medical attention, and laboratory diagnosis is simpler. More routine molecular subtyping of Shigella by PFGE might also facilitate recognition of epidemiologically related shigellosis clusters.

To reduce the risk for sexually transmitted enteric infections, persons with diarrhea should refrain from oral-anal, oral-genital, and anal-genital contact while they are symptomatic. Because Shigella and other enteric pathogens can be carried asymptomatically, persons who engage in sexual contact that could expose them or their sex partners to fecal material should wash their hands and anal-genital regions thoroughly with soap and water before and after sexual activity. The use of condoms during oral-genital or anal-genital contact, dental dams during oral-anal contact, and gloves during digital-anal contact will help reduce the opportunities for sexual transmission of Shigella and other pathogens. Clinicians should request appropriate laboratory examinations, including stool culture for patients with diarrhea who are MSM, and counsel patients about the risk for infection with enteric pathogens during sexual activity that could expose them to feces. Shigella isolates should be routinely serotyped and molecularly subtyped by PFGE to assist in detection of outbreaks. Investigations of shigellosis outbreaks and outbreaks of other enteric diseases among MSM are needed to better characterize specific high-risk behaviors for transmission, identify effective prevention measures, and clarify the role of HIV infection and antiretroviral therapy in the sexual transmission of Shigella.

REFERENCES
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