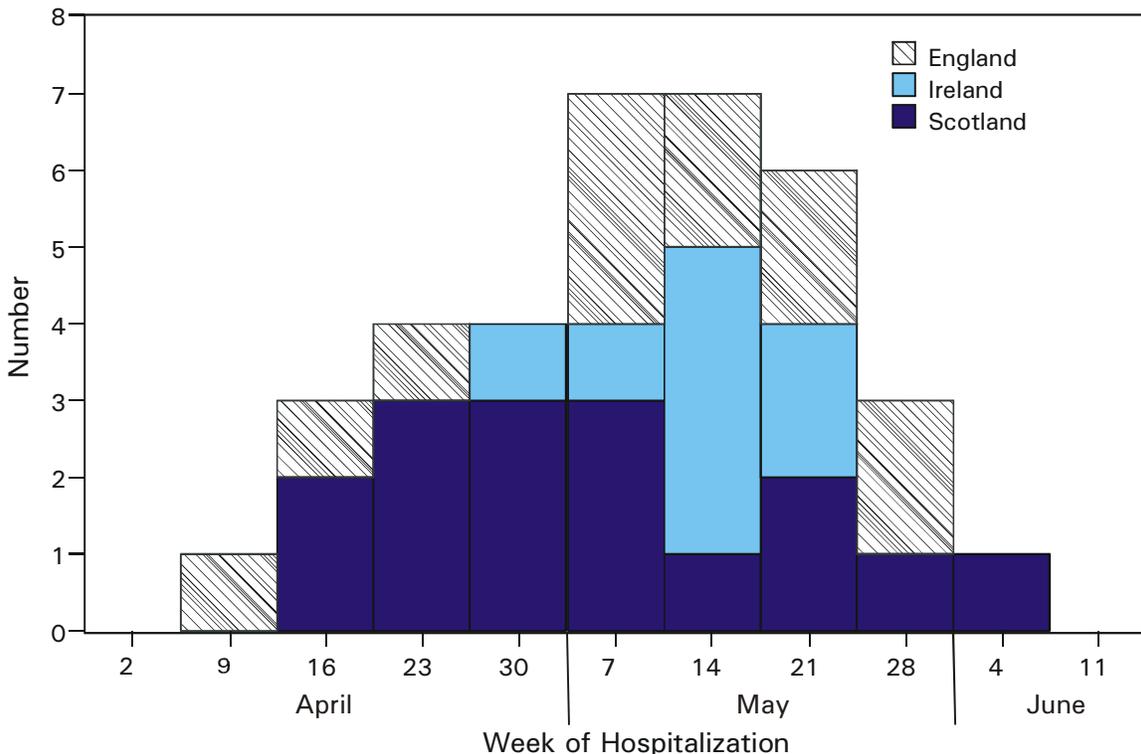


Update: *Clostridium novyi* and Unexplained Illness Among Injecting-Drug Users — Scotland, Ireland, and England, April–June 2000

Since April 19, 2000, health authorities in Scotland, Ireland, England, and the United States have been investigating an outbreak of unexplained illness and death among injecting-drug users (IDUs) in the United Kingdom and Ireland (1–3). Initial testing of specimens from 76 IDUs identified *Clostridium* species in 18 (24%) patients; nine were *Clostridium novyi*. This report updates the investigation of this outbreak, which indicates that *Clostridium* species may be associated with these illnesses.

During April 1–June 19, investigators identified 88 IDUs in Scotland (n=48), Ireland (n=19), and England (n=21) with injection-site soft tissue inflammation resulting in hospitalization or death; 40 (45%) have died. Thirty-five (40%) patients had illnesses that met the syndrome-based case-definition (1), including sustained hypotension and markedly elevated white blood cell count (WBC), or postmortem evidence of a diffuse toxic or infectious process, with initial hospitalization during April 11–June 6 (Figure 1). The median age of the 35 case-patients was 32 years (range: 20–51 years); 18 (51%) were men, and 34 (97%) died. Median peripheral WBC was 63,600 cells/mm³ (range: 8,200–153,000 cells/mm³). In Ireland, cases remained limited to Dublin, and in Scotland cases have been reported from both the Glasgow and Aberdeen areas. In England, most cases have been identified in and around Manchester, but several cases have been reported from other parts of the country.

FIGURE 1. Cases of unexplained severe illness and death among injecting drug users — Scotland, Ireland, and England, April–June 2000



Unexplained Illness Among Injecting-Drug Users — Continued

Among the 35 patients with illnesses meeting the case definition, nine (26%) have laboratory evidence of clostridial infections based on culture isolation or 16S ribosomal DNA polymerase chain reaction and sequencing performed on blood or tissue, including three *C. novyi*, three *C. perfringens*, one with both *C. novyi* and *C. perfringens*, and two clostridial species awaiting further typing. Of the remaining 41 patients with illnesses who failed to meet the case definition but who may be linked to this outbreak, and for whom data are available, nine (22%) have evidence of clostridial infections, including five *C. novyi* and four with species pending. Although the role of other pathogens requires further delineation, only four (11%) patients with illnesses meeting the case definition have evidence of other etiologic agents (*Staphylococcus aureus*, group A *Streptococcus*, and group C *Streptococcus*), compared with 12 (29%) of 41 patients with unexplained soft tissue infections but lacking severe systemic toxicity.

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Editorial Note: Although clostridial species have been implicated previously in clusters of wound infections among IDUs (4,5), the number of cases and severity of illness associated with this outbreak appear to be unique. *C. perfringens* can produce fulminant shock through direct toxogenic effects on myocardial contractility, but this organism usually causes extensive tissue destruction and gas production, features that are not prominent in the current cases (6). *C. sordellii* can also cause a distinctive, toxin-mediated illness characterized by tissue edema, myonecrosis, leukemoid reaction and sudden onset of shock (7). However, perhaps because of its fastidious and strict anaerobic growth requirements (6), *C. novyi* has been less commonly implicated in such a clinical syndrome. The significance of isolating clostridial species from the tissue of the patients described in this report remains unclear, but the presence of these organisms suggests soil or fecal contamination of the drugs or other materials used by these IDUs and may provide the causative explanation for their illnesses.

Unexplained Illness Among Injecting-Drug Users — Continued

Clinical, epidemiologic, and laboratory investigations continue to characterize these illnesses, confirm the role of *C. novyi* as one of the potential etiologic agents, identify risk factors for disease, and implement measures to prevent further cases. Surveillance activities to identify additional cases in the United Kingdom and Ireland are ongoing, and efforts to find cases in the rest of Europe or the United States have been expanded. Health-care providers and public health personnel are encouraged to report persons with illnesses meeting the case definition to their designated public health authorities.

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Notice to Readers**Injuries From Fireworks in the United States**

Fireworks traditionally are used in the United States to celebrate Independence Day on July 4th. The U.S. Consumer Product Safety Commission (CPSC) estimates that 8500 persons in the United States are treated in emergency departments each year for fireworks-related injuries (1). Of all fireworks-related injuries, 70%–75% occur during a 30-day period that surrounds the July 4th holiday (June 23–July 23) (2). Seven of every 100 persons injured by fireworks are hospitalized, approximately 40% of those injured are children aged ≤14 years, and males are injured three times more often than females (1). The injury rate is highest among boys aged 10–14 years (3). Most commonly, injuries from fireworks affect the hands (34%), face (12%), and eyes (17%) (4). Injuries are more frequent and more severe among persons who are active participants than among bystanders (3).

The estimated annual cost of fireworks-related injuries is \$100 million (4). In 1997, the U.S. National Fire Protection Association (NFPA) estimated that fireworks were responsible for direct property damage of \$22.7 million (5).

Although some types of fireworks are legal in some states, CDC, NFPA, and CPSC recommend that fireworks be used only by professionals. All fireworks potentially are dangerous (e.g., sparklers burn at more than 1000 F [538 C]), especially to children.