



European Monitoring Centre  
for Drugs and Drug Addiction



**Joint ECDC and EMCDDA Threat Assessment  
Anthrax outbreak among drug users, UK and Germany  
Update: 11 February 2010**

**SOURCE AND DATE OF REQUEST**

Updates the threat assessment of 15 January 2010 (Anthrax outbreak among drug users, Scotland and Germany) published on the ECDC website.

**PUBLIC HEALTH ISSUE**

Anthrax among drug users and risk of new infections through contaminated product.

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**DISEASE BACKGROUND INFORMATION**

Anthrax is an acute infectious disease caused by the Gram-positive spore-forming bacterium *Bacillus anthracis*. Anthrax most commonly occurs in wild and domestic animals like cattle, sheep, goats, camels, and is endemic in a number of mostly agricultural countries in South and Central America, Southern and Eastern Europe, Asia, Africa, the Caribbean, and the Middle-East. In most industrialized countries, anthrax is a rare disease, and infection in humans is usually due to occupational exposure to infected animals or their products.

Anthrax infection is classically described as occurring in three forms: cutaneous (about 95% of all cases occurring), pulmonary with severe atypical pneumonia, and

gastrointestinal; although there has also been one report (from Norway) of “injection anthrax” which had clinical presentation. Symptoms of disease vary depending on how the disease was contracted. The incubation period is usually 1 to 7 days, but can be prolonged to up to 60 days. Untreated, the case fatality rates range from 5-20% in cutaneous anthrax, to more than 85% in pulmonary and gastrointestinal anthrax. Antibiotic treatment is effective and can prevent most deaths in cutaneous cases; however, mortality in pulmonary and gastrointestinal cases remains high even with treatment <sup>(1)</sup>.

*B. anthracis* spores can live in the soil for many years, and humans can become infected with anthrax by handling products from infected animals or by inhaling anthrax spores from contaminated animal products. Anthrax infection can also be acquired by eating meat from infected animals, or, as has been reported, by injecting contaminated drugs <sup>(2)</sup>. The risk of person-to-person transmission is extremely low.

*B. anthracis* is listed as Category A pathogen in the list of bioterrorism agents of the US CDC, and belongs to the group of “very high threat” agents of the EU. Deliberate release of spores may also lead to infection in humans.

## **EVENT BACKGROUND INFORMATION**

### ***Anthrax cases in Scotland, UK***

On 18 December 2009, the UK issued an EWRS message reporting an outbreak of anthrax among injecting drug users (IDU) in Scotland. Two cases from Glasgow, one of them fatal, were confirmed as having anthrax infections, and three additional possible cases were under investigation. Both confirmed cases developed illness in the first week of December <sup>(3)</sup>.

As of 10 February 2010 the Health Protection Scotland has confirmed 19 cases among heroin users, including nine deaths. The first case was hospitalised on 7 December 2009 and the latest was reported by the authorities on 5 February <sup>(4)</sup>. One of the fatal cases reported only smoking and snorting heroin. Post mortem physical inspection did not show traces of injections or soft tissue lesions, which supports a possible contamination by inhalation.

Cases were identified from National Health Service (NHS) Greater Glasgow & Clyde initially and later from six additional NHS board areas, suggesting that the contaminated heroin may still be in circulation and that more cases could be reported. The peak in confirmed cases by date of admission to hospital has been in the week beginning on 28 December 2009 (six cases). This is suggesting a peak of exposure to the contaminated heroin to have been in the week beginning on 20 December 2009.

In Scotland and England, information was sent out to hospitals, general practitioners, emergency departments, microbiologists, and drug services to raise awareness and to request that cases of severe soft tissue infection or sepsis affecting an IDU are reported to their local public health authority.

Samples of heroin are currently being tested in Scotland in order to identify a possible contaminated batch and to differentiate between contamination of heroin and contamination of the cutting agent mixed with heroin. So far, all samples have been tested negative for anthrax.

Anthrax surveillance in Scotland is based on voluntary laboratory reports. Since 1987 only one case of anthrax has been reported in Scotland, in 2006, in a person who handled and played drums made from animal hides <sup>(5)</sup>.

### ***Anthrax case in Germany***

On 12 January 2010, Germany issued a EWRS message reporting a fatal case of anthrax in a 42 year old male injecting drug user, who presented oedema and swelling of the leg after intravenous popliteal (area behind the knee joint) drug injection (probably heroin). The patient was hospitalized on 6 December 2009 and despite antibiotic treatment, died on 13 December. Death occurred due to multi-organ failure after necrotizing fasciitis (severe infection and destruction of soft tissue). As far as known, the deceased has no travel history to Scotland <sup>(6)</sup>.

The Robert Koch Institute, in collaboration with the respective local and regional health authorities in Aachen district, North Rhine-Westphalia, is currently investigating the case. An epidemiological investigation, which includes distribution of information to hospitals, general practitioners, emergency departments, microbiologists and low threshold facilities was launched in order to raise awareness, gain more thorough information and search for suspected cases.

On 5 February 2010, the Health Protection Scotland informed the public through a press release on the web, that tests carried out at reference laboratories in the UK and Germany identified the strain isolated from the case in Germany to be indistinguishable from the strains of the cases in Scotland <sup>(4)</sup>.

### ***Anthrax cases in England, UK***

On 5 February 2010, the UK Health Protection Agency and NHS London confirmed a case of anthrax among an injecting heroin user in the London area. The case is currently hospitalized and under treatment.

Considering the similarities with the recent 19 cases having occurred in Scotland, the source of infection has been considered likely to be similar to the one in Scotland and Germany <sup>(7)</sup>.

On 10 February 2010 a fatal case of anthrax was reported by the UK Health Protection Agency among an injecting heroin user in Blackpool <sup>(8)</sup>.

### ***Situation in other EU countries***

ECDC is monitoring the situation in terms of suspected cases of anthrax among heroin users in the EU from verified and unverified information sources. As of 10 February 2010, there have been no further confirmed cases but media in Portugal reported a cluster of deaths among IDUs in the area of Coimbra around the middle

of January<sup>(9)</sup>. National public health authorities in Portugal have confirmed that six heroin users died during the first two weeks of the year, shortly after having injected heroin. Initial information from post-mortem studies and clinical data do not indicate anthrax as associated with these deaths.

### ***Actions by European partners***

The European early warning network of the EMCDDA has been alerted of the cases in the UK and the death in Germany and has strengthened surveillance to detect possible additional cases in Europe.

EUROPOL has been informed and is conducting enquiries in support of the EU Member States national authorities in an attempt to gather information that may assist in identifying a possible source of contamination.

### **ECDC THREAT ASSESSMENT FOR THE EU**

The frequent occurrence of skin and soft tissue infections in injecting heroin users is a well-known phenomenon<sup>(10,11)</sup>. However, anthrax is a rare cause, and few cases have been described so far. In 2000, one single case of anthrax was diagnosed in a heroin user in Norway, but no further cases were detected<sup>(2)</sup>. Therefore, the occurrence of 22 confirmed cases, including 11 deaths in an 8 week period is unusual and unexpected.

The cluster of 19 confirmed cases of *B. anthracis* and genotyping in Scotland among heroin users strongly suggests that contaminated heroin or contaminated cutting agent may be a common vehicle of infection. The link between the fatal case in Germany and the cases in Scotland was further strengthened when tests at the national reference laboratories identified indistinguishable strains of the infecting agent. No information is yet available about the strain of the case confirmed in the London area.

Considering the complex international distribution chain of heroin and the link among cases in Scotland and Germany, the exposure to a contaminated batch of heroin distributed in several EU Member States is probable. However, it is still possible that the German and English cases are due to small amounts of heroin originating from Scotland, in which case other EU member states than UK and Germany might not be affected. Investigation of the origin of the drug supply and distribution channels, if possible, may help to identify countries potentially exposed to a contaminated batch of heroin.

In Scotland the peak in confirmed cases by date of admission to hospital was in the week starting on 28 December 2009 (six cases). This suggests that the peak of exposure to the contaminated heroin was in the week beginning on 20 December 2009 but as the latest reported case in the UK had a recent onset date it is likely that the risk of exposure is still present.

At this time, ECDC has not been alerted about possible deliberate contamination of heroin or cutting agents with *Bacillus anthracis*. Based on the information currently available there is no evidence for deliberate contamination of heroin and no bio-terrorist component is suspected.

As anthrax has rarely been associated with severe infection among drug users, clinicians may not consider anthrax in the differential diagnosis of severe infections in this population and consequently may result in undiagnosed cases. This highlights the importance of clinical awareness in health care settings of the risk of injection-related infection with rare pathogens among the IDUs.

## CONCLUSIONS

The current information about the clinical presentation, the circumstances of heroin use and the recent microbiological findings suggests that there is sufficient epidemiological evidence to consider that the cases in Scotland and in Germany are linked. It is reasonable to assume that the cases were exposed to a common source of heroin contaminated by *B. anthracis*

The confirmation of the latest cases in Scotland and London area suggests that the contaminated heroin is still circulating. As the extent of the geographical distribution of the contaminated heroin is not known, the risk of exposure for heroin users in these and other countries remains present. Accidental contamination seems currently the most plausible explanation to these incidents.

As discussed on 14 January during a teleconference of EWRS national focal points, the following measures were suggested:

- Increase awareness in hospitals and other health care settings, including drug services, to support surveillance efforts, and to provide information on the distribution of the contaminated products;
- Compare genotype of isolates of cases in different countries to confirm a link among cases as well as with genotypes found in the wild;
- Exchange among Member States documents useful for investigation and control, such as case definitions, educational material, investigation questionnaires, protocols for treatment and documents useful to develop a strategy to address communication among vulnerable groups;
- Continue forensic investigations at the National and European level to identify contaminated batches of heroin and limit the occurrence of additional anthrax cases.

ECDC remains available to facilitate the coordination of the epidemiological investigation among affected Member States. In addition, EMCDDA and ECDC collaborate to facilitate the information exchange with the drugs sector.

## CONTACTS

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