European Monitoring Centre for Drugs and Drug Addiction

ecdc EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

JOINT ECDC AND EMCDDA
RAPID RISK ASSESSMENT

Anthrax cases among injecting drug users Germany, June-July 2012

Update, 6 July 2012

Main conclusions and recommendations

As of 4 July 2012, three cases of anthrax among injecting drug users (IDUs) have been reported from Germany; two from Regensburg, Bavaria and one from Berlin. All three cases had onset of symptoms in June 2012 and one case has died. The first two cases are likely linked through exposure to heroin contaminated by a most likely identical *Bacillus anthracis* strain (based on molecular typing results). The link of the third case, though probable, needs to be confirmed. The geographical distribution of the contaminated heroin is unknown at this time, but it is possible it has the same source as the contaminated heroin incriminated in the 2009/2010 outbreak in Scotland (with cases also reported from Germany and England). The risk of exposure for heroin users in Germany and other countries is presumably still present and therefore it is not excluded that additional cases among IDUs will be identified in the near future.

Link to the previous rapid risk assessment

Joint rapid risk assessment: Anthrax cases among injecting drug users, Germany, 22 June 2012:
http://ecdc.europa.eu/en/publications/Publications/120622_TER_Anthrax_IDU_Germany.pdf

Consulted experts

Robert Koch Institute (RKI), Germany: Helen Bernard, Roland Grunow, Osamah Hamouda, Christian Herzog.

Updated event background information

As of 4 July, 2012, three cases of infection with *B. anthracis* have been reported among IDUs in Germany. The first two cases were reported from the city of Regensburg, Bavaria. Both had symptom onset during June and anthrax infection was confirmed by blood culture and PCR [1]. The first case has died. Molecular typing on isolates of *B. anthracis* infecting these first two cases showed that the strains were genetically similar to each other and to the strains isolated during the 2009/2010 outbreak [1]. The third and most recently reported case had symptom onset of massive oedema and a local necrotic ulcus at the site of injection in the middle of June. Anthrax infection was confirmed by the RKI using PCR from ulcus material several days after the initiation of antibiotic therapy and serology [2]. The condition of the third case has improved following antibiotic therapy. There is no indication that this third case stayed in Bavaria or purchased heroin from Bavaria [2].

The RKI, the public health authorities on the federal, state and local levels in the respective regions, and the German police are continuing their investigations of these cases at present. Updated information on anthrax and anthrax among IDUs has been posted on the website of RKI [3], press statements have been issued by the RKI and the Bavarian Health and Food Safety Authority (LGL), and public health authorities and drug counselling facilities have been informed throughout Germany.

Actions by European and national counterparts

The European Union (EU) public health institutes have all been alerted to this event through the Early Warning and Response System. The European early warning network of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), as well as the expert networks on drug-related infectious diseases and drug-related deaths, have been alerted to all three cases in Germany, and surveillance has been strengthened to report 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. At this time, EUROPOL is not aware of possible deliberate contamination of heroin or cutting agents with *B. anthracis* by either drug traffickers or other criminal or terrorist elements. Consequently, with the information currently available for these three cases, as well as the cases in 2009/2010, accidental contamination seems the most plausible explanation for these incidents.

ECDC threat assessment for the EU

The frequent occurrence of skin and soft tissue infections among IDUs is a well known phenomenon [4-6]. However, anthrax infection of injecting drug sites has been reported less frequently. A single case of anthrax was diagnosed in a heroin user in Norway in 2000, but no further cases were detected [7]. The first unusual large-scale and geographically dispersed outbreak of anthrax infection following injection of heroin probably from a single batch contaminated with *B. anthracis,* was that reported from Scotland, England and Germany between 2009 and 2010 [8-11].

The three cases of anthrax reported from Germany suggest that *B. anthracis*-contaminated heroin is circulating among the IDU community in Germany and potentially elsewhere. Similar to the outbreak in Scotland, these recent cases suggest that contaminated heroin or a contaminated cutting agent mixed with the heroin may be a common vehicle of the infectious agent. So far, the only known link between the German cases is injecting drugs. Strain comparisons of cases from 2009/10 and from 2012 suggest a common source of contamination, which may still be present or become present again.

It cannot be excluded that additional cases of anthrax may be identified among German IDUs in the near future. As the precise distribution channels of anthrax-contaminated heroin are not known, the possibility cannot be excluded that anthrax-infected IDUs will also be identified in other EU countries. Investigation of the origin of the drug supply and distribution channels, if possible, may help to identify countries potentially exposed to contaminated heroin.

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, which may result in undiagnosed cases or late diagnosis potentially leading to more severe clinical outcome. This highlights the importance of clinical awareness in healthcare settings of the risk of injection-related infection with rare pathogens among the IDU population.

As anthrax cannot normally be transmitted from person to person, the risk to the general population following these three cases is negligible. In healthcare settings where anthrax infected patients are cared for, standard infection control guidelines would be advisable to limit the direct contact with anthrax contaminated materials and infected open wounds. Specific information on the infection risk from infected IDUs to other IDUs through needle sharing is not available, however needle sharing should always be avoided. Infection control guidelines for the clinical management of drug users with possible, probable or confirmed anthrax were developed during the outbreak in 2009/2010 and are publicly available at: http://www.documents.hps.scot.nhs.uk/giz/anthrax-outbreak/ic-management-anthrax-v0-7-2010-01-18.pdf.

Conclusions

Based on current information (similar strain and clustered in time and space), it is very likely that the two cases in Regensburg are linked through exposure to heroin contaminated by a most likely identical strain of *B. anthracis*. The third case reported from Berlin is also likely associated to this contaminated heroin, but molecular typing of the infecting strain of *B. anthracis*, if possible from the limited amount of material, will have to confirm this hypothesis.

The geographical distribution of contaminated heroin is unknown at this time, but it is possible that it has the same source as the contaminated heroin incriminated in the 2009/2010 outbreak. The risk of exposure for heroin users in Germany and other countries is still present and therefore additional cases among IDUs may occur in the future.

The following measures (as were implemented during the 2009/2010 outbreak) continue to be relevant for consideration in affected areas:

- Increase awareness in hospitals and other healthcare settings, including drug services, to support surveillance efforts, and to provide information on the distribution of the contaminated products.
- Increase awareness in non-governmental organisations and support groups for drug users in Europe in order to keep people who inject drugs appropriately informed about this event.
- Conduct genotyping of isolates of cases in Germany and any new cases to confirm a link among cases as well as with genotypes found in the environment or animals.
- In the event that cases are identified in other Member States: exchange 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 (including materials already developed in Scotland during the 2009/2010 outbreak).
- Continue forensic investigations at the national and European levels to identify contaminated batches of heroin and limit the occurrence of additional anthrax cases.

ECDC and EMCDDA will continue to monitor the evolution of this situation in terms of the epidemiological information available.

References

1. Robert Koch Institute (RKI). Zwei Milzbrandfälle bei Heroinkonsumenten - Ärzte sollten bei Drogengebrauchern frühzeitig an Milzbrand denken. 2012 [05 July 2012]; Available from: http://www.rki.de/DE/Content/Service/Presse/Pressemitteilungen/2012/09_2012.html?nn=2398074.
2. Robert Koch Institute (RKI). Dritter Milzbrandfall bei Heroinkonsument (Berlin); Third case of anthrax in heroin user (Berlin). 2012 [5 July 2012]; Available from: http://www.rki.de/DE/Content/InfAZ/A/Anthrax/Milzbrand-dritter-Todesfall_2012_Berlin.html?nn=2398074.
3. Robert Koch Institute (RKI). Milzbrand bei Drogenkonsumenten. 2012 [21 June 2012]; Available from: http://www.rki.de/DE/Content/InfAZ/A/Anthrax/aktuell.html.
4. McGuigan CC, Penrice GM, Gruer L, Ahmed S, Goldberg D, Black M, et al. Lethal outbreak of infection with Clostridium novyi type A and other spore-forming organisms in Scottish injecting drug users. J Med Microbiol. 2002 Nov;51(11):971-7.
5. Murray-Lillibridge K, Barry J, Reagan S, O'Flanagan D, Sayers G, Bergin C, et al. Epidemiological findings and medical, legal, and public health challenges of an investigation of severe soft tissue infections and deaths among injecting drug users - Ireland, 2000. Epidemiol Infect. 2006 Aug;134(4):894-901.
6. Health Social Services and Public Safety (HSS), Public Health Wales, Health Protection Scotland (HPS). Shooting up: Infections among people who inject drugs in the UK 2010. 2011.
7. Ringertz SH, Hoiby EA, Jensenius M, Maehlen J, Caugant DA, Myklebust A, et al. Injectional anthrax in a heroin skin-popper. Lancet. 2000 Nov 4;356(9241):1574-5.
8. Health Protection Agency (HPA). Anthrax: information on 2010 outbreak. 2010 [21 June 2012]; Available from: http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Anthrax/AnthraxOutbreakInformation/.
9. Health Protection Scotland (HPS). An Outbreak of Anthrax Among Drug Users in Scotland, December 2009 to December 2010. A report on behalf of the National Anthrax Outbreak Control Team. 2011.
10. Radun D, Bernard H, Altmann M, Schoneberg I, Bochat V, van Treeck U, et al. Preliminary case report of fatal anthrax in an injecting drug user in North-Rhine-Westphalia, Germany, December 2009. Euro Surveill. 2010 Jan 14;15(2).
11. Robert Koch Institute (RKI). Ein dritter Fall von Anthrax bei einem i. v. Heroinkonsumenten in Deutschland, 13/12/2010. 2010 [21 June, 2012]; Available from: http://www.rki.de/DE/Content/Infekt/EpidBull/Archiv/2010/49/Art_02.html?nn=2386228.