



RAPID RISK ASSESSMENT

A community outbreak of Legionnaires' disease in Edinburgh, Scotland

12 June 2012

Source and date of request

Directorate-General for Health and Consumers – 7 June 2012

Question to be addressed: due to increasing case numbers in the community outbreak in Edinburgh, Scotland, the public health risk for European Union (EU) citizens should be assessed

Main conclusions and recommendations

Eighty-eight cases of Legionnaires' disease, of which one was fatal, have occurred in the south-western part of Edinburgh since 24 May 2012 when the first case was reported to have fallen ill.

Although the exact source of the outbreak has not yet been identified, the clustering of cases in the south-western part of Edinburgh and the evolving number of cases suggests an ongoing source in this part of the city. Environmental investigations to confirm the source and treatment of local cooling towers in the area are ongoing. The implementation of precautionary control measures at any identified suspected risk installations are of utmost importance to decrease the risk of exposure.

In the absence of an identified and controlled source of *Legionella*, there may be an ongoing risk of exposure to *Legionella* for persons living or visiting the area, although the risk is assessed to be low for the general public due to implemented control measures.

The risk for Legionnaires' disease should be considered higher for persons above 40 years of age, smokers and immune-compromised persons. For this group, timely diagnosis and appropriate treatment will be particularly important.

As Legionnaires' disease cannot be transmitted from human to human, the risk for the EU remains very limited apart from susceptible people visiting the affected areas.

The information given to members of the public about their potential exposure is important to ensure timely diagnosis and appropriate treatment. This has been addressed by the Scottish authorities by setting up a telephone hotline.

Public health issue

Consideration of the public health risk for EU citizens linked to the large outbreak of Legionnaire's disease occurring in Edinburgh, Scotland.

Consulted experts

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External experts: Martin Donaghy, Alison Potts, National Services Scotland

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Disease background information

Legionnaires' disease is a common cause of atypical pneumonia caused by *Legionella* bacteria, most commonly the species *Legionella pneumophila*. Another clinical manifestation of the infection is Pontiac fever, a self-limited febrile illness that does not progress to pneumonia or death. Legionnaires' disease is characterised by a non-productive cough, accompanied by anorexia, malaise, myalgia and headache. Abdominal pain and diarrhoea are also common. Illness can be severe and despite improvements in diagnostics and treatment options, fatality can occur in about 5–15% of cases if not treated appropriately with available antibiotics. Both sporadic cases and outbreaks occur worldwide and are recognised more commonly in summer and autumn. An outbreak of Legionnaires' disease may be difficult to detect due to low attack rates (0.1–5%) [1].

The incubation period of Legionnaires' disease is, for the majority of cases, between two and ten days, with a median of six days. However, the incubation period in some cases has been described as being as long as 19 days [2]. Legionnaires' disease usually affects more males than females, with smokers, the elderly or immune-compromised individuals at higher risk for complications.

A laboratory diagnosis of Legionnaires' disease can be made using a variety of laboratory tests including: culture/isolation of the causative organism, antigen detection in urine, a significant rise in antibody titres or PCR methods. Determination of the monoclonal subtype and molecular sequence typing can support linking between strains from the sampled environment and from patients.

Legionnaires' disease is a waterborne disease, associated with man-made water systems. In conditions that are favourable for *Legionella* growth (such as water temperatures in the range of 25–42°C, stagnant water with sediment build-up, and low biocide levels) the bacteria can multiply. Aerosolisation of such a water supply can cause sporadic cases or outbreaks through inhalation of this aerosol. Cooling towers, evaporative condensers, humidifiers, decorative fountains, whirlpools, showers, etc. are examples of installations with identified risks [1,3].

Control measures available to reduce the amount of *Legionella* in a water system depend on the system's engineering and use. They can include temperature control, disinfection using chemicals or other oxidising materials, and use of biocides or installation of filters [3].

Event background information

This is a community outbreak of Legionnaires' disease in Edinburgh, Scotland. The first confirmed cases in the cluster fell ill on Monday 24 May 2012. Since then, all cases have been linked geographically to Dalry, Gorgie and Saughton, mixed industrial/residential areas in the south-west of the city.

The latest update from local health authorities dated 12 June 2012 at 17.00 pm local time indicates that [4]:

- Eighty-eight cases, 39 confirmed cases and 49 suspected cases (9 probable, 40 possible) have been reported
- One male confirmed case has died
- Of seventy cases admitted to hospital, 37 remain there, of whom 14 are in intensive care units
- Eighteen cases have been treated in the community
- Seven cases are being treated outside the National Health Service(NHS) Lothian area
- The age of confirmed cases ranges between 33 and 76, with more males than females affected
- Industrial cooling towers at three facilities have been identified as the potential source of the infection and their cooling systems have been subject to additional chemical treatments, with a number being shut down
- Environmental investigations continue

- *Legionella pneumophila* serogroup 1 (Knoxville) has been isolated from two cases
- The last date of onset in a confirmed case was the 5th of June. No new cases were reported on the 11th June
- A telephone hotline has been set up

ECDC threat assessment for the EU

The age and profile of reported cases in this current outbreak are typical for a Legionnaires' disease outbreak. It has so far only affected people visiting or staying in specific locations in Edinburgh. The geographical spread of cases and the absence of a common known exposure indoors, suggests infection acquired in the natural environment (e.g. cooling towers). No indication of travel abroad was reported by cases.

Due to the rather long incubation period for Legionnaires' disease, some further cases are expected to be identified over the next couple of days. Increasing proximity to and frequency of exposure to the suspected source of exposure (cooling towers), would increase the risk of developing the disease. The national authorities assess the risk to the general population to be low.

As Legionnaires' disease cannot be transmitted from human to human, the risks for the rest of the EU remains limited to people that have spent some time in the affected areas of Edinburgh. According to available information, local health authorities have implemented rigorous control measures and the population is being informed.

Conclusions

Eighty-eight cases of Legionnaires' disease of which one was fatal have occurred in the south-western part of Edinburgh since 24 May 2012 when the first case fell ill.

Although the exact source of the outbreak has not yet been identified, the clustering of cases in the south-western part of Edinburgh and the evolving number of cases suggests an outbreak from an outdoor source such as an industrial cooling tower in this part of the city. Environmental investigations to confirm the source and treatment of cooling towers in the area are ongoing. The implementation of precautionary control measures at any identified suspected risk installations are of utmost importance to decrease the risk of exposure.

In the absence of an identified and controlled source of *Legionella*, there may be an ongoing risk of exposure to *Legionella* for persons living or visiting the area, although given that potential sources have been identified and measures taken to reduce risk, the current risk is now assessed to be low for the general public.

The risk for Legionnaires' disease should be considered higher for persons above 40 years of age, smokers and immune-compromised persons. For this group timely diagnosis and appropriate treatment will be particularly important.

As Legionnaires' disease cannot be transmitted from human to human, the risk for the EU remains very limited apart from susceptible people visiting the affected areas.

The information given to members of the public about their potential exposure is important to ensure timely diagnosis and appropriate treatment. This has been addressed by the Scottish authorities by setting up a telephone hotline.

Some more cases are likely to be identified due to the long incubation period of Legionnaires disease.

References

- 1 Heymann DL. Control of Communicable Diseases Manual. 18th ed. American Public Health Association; 2004.
- 2 Den Boer JW, Yzerman EP, Schellekens J, Lettinga KD, Boshuizen HC, Van Steenberghe JE, et al. A large outbreak of Legionnaires' disease at a flower show, the Netherlands, 1999. *Emerg Infect Dis.* 2002 Jan;8(1):37–43.
- 3 World Health Organization. *Legionella* and the prevention of legionellosis. Geneva: WHO; 2007. Available from: http://www.who.int/water_sanitation_health/emerging/legionella_rel/en/index.html
- 4 NHS Lothian: Outbreak of Legionella in South West Edinburgh: Update- 12/06/2012. Available from: <http://www.nhslothian.scot.nhs.uk/MediaCentre/PressReleases/2012/Pages/LegionellaSouthWestEdinburgh.aspx>