RAPID RISK ASSESSMENT

Outbreak of Legionnaires' disease in a hotel in Calpe, Spain December 2011 – January 2012

6 February 2012

Main conclusions and recommendations

A cluster of 13 cases of travel-associated Legionnaires' disease has occurred over a two-month period. In addition, three staff of the hotel in the town of Calpe, Spain, where cases had stayed, presented with Legionnaires' disease, suggesting an outbreak emanating from a source in the hotel. Environmental investigations are being undertaken in the hotel to identify the source of this outbreak.

Legionnaires' disease cannot be transmitted from human to human. As the hotel has been closed, the residual risk remains limited to visitors and staff of this hotel in the past two weeks, as well as staff still working in the hotel; particularly those involved in the implementation of control measures.

Source and date of request

ECDC Internal Decision, 2 February 2012.

Public health issue

This is an outbreak of 13 cases of travel-associated Legionnaires' disease (TALD), including three deaths, and three further cases among hotel staff, with cases having onset of illness during a period of two months. Cases are travellers from the United Kingdom and Spain and Spanish hotel staff. The cases are associated with one hotel in the town of Calpe, in the province of Alicante, Spain, indicating the possibility of a point-source outbreak at the hotel. The hotel was closed on the evening of 2 February 2012.

Consulted experts

Rosa Cano, ELDSNet member, ISCIII, Spain

Nick Phin, ELDSNet member, HPA, UK

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 10 days, with a median of six days. However, the incubation period has been described as being as long as 19 days [2]. Legionnaires' disease usually affects more males than females, with smokers and the elderly or immunocompromised 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, use of biocides or installation of filters [3].

Surveillance and control of the disease is, in accordance with Decision No 2119/98/EC [4], organised at the European level through the European Legionnaires' disease surveillance network (ELDSNet) [5]. A European case definition has been established for surveillance purposes. As part of the network's activities, on a daily basis countries notify data on individual TALD cases. Identified clusters of TALD are shared with all Member States through ELDSNet. Risk assessments of accommodation sites associated with the cluster are undertaken by the Member State where the accommodation site is located, reported to ECDC and shared with the network [5].

Event background information

Since 16 December, 13 cases of TALD have been notified to the ELDSNet Surveillance Network. All cases (12 residents from the United Kingdom and one from Spain) stayed in the hotel between 25 November 2011 (first arrival) and 31 January (last departure). Dates of onset range from 4 December 2011 to 31 January 2012 (Figure). The figure also shows the possible dates of exposure for each case at the hotel. An additional three cases have been detected in hotel staff; dates of onset of disease are 20 December 2011, 1 and 21 January 2012, respectively.

All cases have been confirmed by urinary antigen test. Two clinical isolates have been typed in the United Kingdom and found to be *L. pneumophila* serogroup 1, mAb subgroup 'Allentown/France', DNA-sequence type ST23 in both isolates. The average age of the TALD cases is 74.2 years (ranging from 44 to 89) and the gender distribution is seven males to six females. This hotel was associated with a cluster in 2007 involving seven cases.

Hotel guests have been informed about the potential exposure to the *Legionella* bacteria and given the opportunity to change hotel. Guests from the United Kingdom who stayed in the hotel prior to the detection of the cluster/outbreak have been informed about the symptoms of Legionnaires' disease and were advised to seek healthcare if these symptoms are present. An alert was issued in the UK to clinicians asking them to consider Legionnaires' disease in cases of pneumonia with recent travel to this area.

The regional health office together with the regional epidemiological department is leading investigations in the hotel. Tour operators have sent a consultant to assist in this investigation. A cleaning and hyper-chlorination of the water system in the hotel was carried out on 16 and 17 January 2012. As a result, the local health authorities confirmed that appropriate control measures, in accordance with the European guidelines, had been implemented with subsequent negative water samples. However, additional water samples collected on 30 January tested positive by PCR on 2 February 2012, resulting in the closure of the hotel (personal communication R. Cano 03/02/2012).

No risk installations in the surrounding area, such as cooling towers, have been identified [6].

Local hospitals and general practitioners in the area have been alerted to support case-finding.

ECDC threat assessment for the EU

The age and profile of reported cases in this current outbreak is usual for a Legionnaires' disease outbreak. It has only affected travellers to Calpe and more specifically those staying at the identified hotel and hotel staff.

Legionnaires' disease cannot be transmitted from human to human. The risk associated with any specific source is therefore limited to a confined population in time and space in the area where a contaminated water-aerosolising installation is situated.

The clustering of cases in time and place is clearly indicating a persistent point-source transmission in this hotel as no cases have been reported in the community, except among hotel workers.

Cases have occurred with exposure at the hotel ranging from late November to end of January 2012. However, given the incubation period, residents at the hotel more than two weeks ago are probably no longer at risk of developing the disease. Residents at the hotel in the past two weeks may have been exposed to *Legionella*, and therefore the possibility of additional cases occurring in the coming days cannot be excluded. The information given to residents in the past two weeks about their potential exposure is important to ensure timely diagnosis and appropriate treatment. This has been done through tour operators in the UK, but the hotel should ensure that all residents during the past two weeks are informed individually.

As the hotel is currently closed, the residual risk associated with this cluster only concerns persons working at the hotel and participating in the implementation of additional control measures. The risk of transmission can be increased during operations on the water distribution systems. As the direction of the flow of water can change, a release of biofilm containing the *Legionella* bacteria can occur. Other measures like changing mixer valves can also lead to a release of biofilm into the water distribution system.

An important finding is the determination of the monoclonal subtype of the strain in two of the patient samples. This will allow matching of the strain to positive water samples identified as part of assessing the source.

Conclusions

Although the exact source of the outbreak has not been identified, the close clustering of the cases suggests an outbreak from a point source in the hotel. The hotel was closed on the evening of 2 February 2012.

Environmental investigations are needed (and are being undertaken) to identify the source of this outbreak. This is vital to evaluate whether there is a considerable ongoing risk for *Legionella* infection at this hotel. In the meantime, the implementation of precautionary control measures at any identified suspected risk installations or devices is of utmost importance to decrease the risk of exposure.

In the absence of an identified and controlled source of *Legionella* in the hotel, there may be an ongoing risk of exposure to *Legionella* for persons working in the hotel, especially when maintenance is carried out on the water distribution systems. The risk for Legionnaires' disease should be considered higher for persons above 40 years of age, smokers and immunocompromised 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 as the hotel is closed. No further exposure is expected because of the closure of the hotel. However, recent travellers might be at risk of developing symptoms. The information given to residents in the past two weeks about their potential exposure is important to ensure timely diagnosis and appropriate treatment.

Contact

support@ecdc.europa.eu

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 Steenbergen 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 Decision No 2119/98/EC of the European Parliament and of the Council of 24 September 1998 setting up a network for the epidemiological surveillance and control of communicable diseases in the Community. OJ L 268, 3.10.1998, p. 1–7.

5 European Legionnaires' Disease Surveillance Network (ELDSNet). See : http://ecdc.europa.eu/en/activities/surveillance/ELDSNet/Pages/index.aspx

6 Teleconference 2 February 2012 with participation of United Kingdom, Spain (national and regional authorities), ECDC and representatives from tour operators.

Figure: Dates of onset and potential exposure periods at hotel for cases of Legionnaires' disease and actions taken