RAPID RISK ASSESSMENT

Increase of Legionnaires' disease in EU travellers returning from Dubai since October 2016

First update, 21 September 2017

Conclusions and options for response

ECDC observed a significant increase in the number of cases of travel-associated Legionnaires' disease (TALD) in EU travellers returning from Dubai during the period October 2016 to May 2017 that could not be accounted for by the increase in travel patterns from the EU. The return to the baseline level of TALD in the most recent two months suggests that the measures implemented by UAE have been effective in containing this outbreak.

However, in previous years October and November have been the months associated with the highest numbers of TALD notifications – particularly in 2016 – and cases are therefore still expected to occur in the coming months.

ECDC's ongoing monitoring of the situation will be based on the continued timely reporting of TALD cases by the EU Member States through the ELDSNet surveillance scheme. There are also several options that EU Members States may consider to assess and mitigate the risks in relation to TALD cases having travelled to areas that have experienced increased numbers of cases in the past:

- In addition to the standard reporting procedures, inform ELDSNet of TALD cases having stayed in private accommodation.
- Inform travellers – particularly those over 50 years, smokers and immunocompromised persons – to seek medical advice if they experience severe respiratory infection symptoms up to two weeks after travelling in order to ensure early and appropriate diagnosis and treatment.
- Remind clinicians to consider Legionnaires' disease in patients presenting with community-acquired atypical pneumonia and a history of travel in the two weeks prior to disease onset.

ECDC will be monitoring the epidemiological situation closely.

Suggested citation: European Centre for Disease Prevention and Control. Increase of cases of Legionnaires' disease in EU travellers returning from Dubai, since October 2016, First update, 21 September 2017. Stockholm: ECDC; 2017.

Source and date of request

Update of RRA ECDC internal decision, 9 August 2017.

Public health issue

Increase in travel-associated Legionnaires' disease among returning EU travellers from Dubai since the last quarter of 2016.

Consulted experts

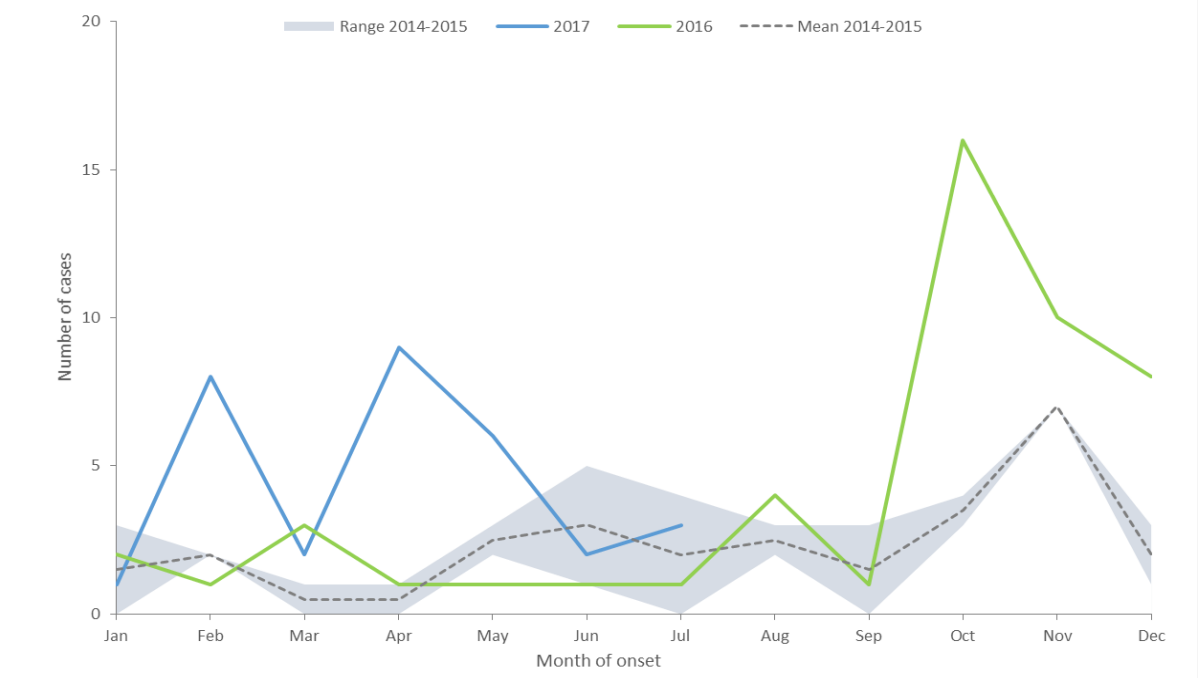
(In alphabetical order) ECDC: Denis Coulombier, Birgitta de Jong, Lara Hallström, Emmanuel Robesyn.

Event background information

Epidemiological situation

ECDC's ELDSNet surveillance scheme on travel-associated Legionnaires' disease (TALD) [1] observed an increase in the number of cases associated with travel to Dubai starting in the last quarter of 2016, compared with previous years (Figure 1). Although an annual increase of 40% had been observed in the number of TALD cases associated with Dubai and reported since 2011, the doubling of cases in October and November 2016 (compared with 2014 and 2015) led to a rapid risk assessment (published 23 December 2016). While cases with a travel history from Dubai reported in February, April and May 2017 were above levels observed since 2014, cases reported in the last two months, June and July 2017, are back within the level observed in the past at this time of the year.

Figure 1. TALD cases with history of stay in Dubai, United Arab Emirates, by year and month of onset, January 2014–July 2017

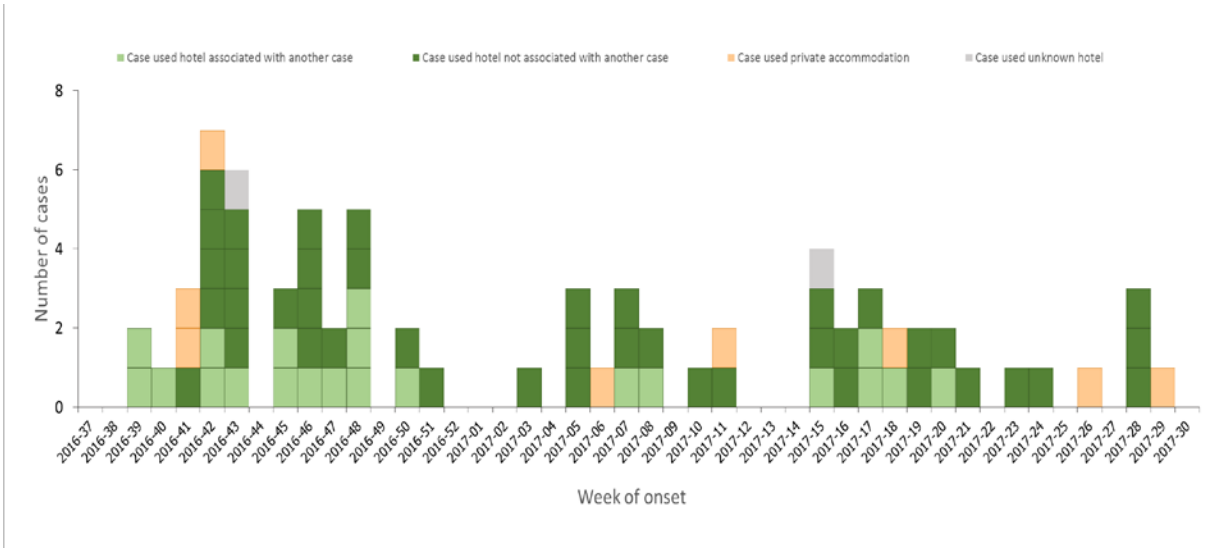


Source: ELDSNet, data as of 12 September 2017 (cases staying in private accommodation are excluded).

As of 19 September 2017, 75 TALD cases with a history of travel to Dubai and onset since 1 October 2016 have been reported to ECDC from 14 countries in the EU/EEA area. Sixty-seven cases associated with commercial accommodation were reported through the ELDSNet TALD surveillance scheme [1]. Although private accommodation is not covered by this surveillance scheme, the United Kingdom and France reported eight cases associated with private accommodation in Dubai during this period. Sixteen cases spent time at another location in the UAE or in a country other than their home country during their incubation period. The 75 cases are reported by the United Kingdom (35 cases), Sweden (8), Germany (7), the Netherlands (7), France (6), Denmark (4), Austria (1), Belgium (1), the Czech Republic (1), Hungary (1), Ireland (1), Italy (1), Spain (1) and Switzerland (1). Two cases were fatal.

All cases have been laboratory confirmed. Nine cases had their infection further characterised through sequence-based typing: six strains were identified as *Legionella pneumophila* serogroup 1 sequence type 616, and one as *Legionella pneumophila* serogroup 1 sequence type 2382. Sequence type 616 is uncommon in Europe and has been associated with other cases of Legionnaires' disease returning from Dubai in previous years. Sequence type 2382 is a new sequence type, closely related to type 616 (personal communication, ELDSNet network). One strain has been characterised as *Legionella pneumophila* serogroup 2-14 sequence type 1327, and two strains have been characterised as *Legionella pneumophila* serogroup 13 sequence type 1327. Figure 2 shows the distribution of TALD cases with a history of stay in Dubai and onset of disease since 1 October 2016.

Figure 2. Distribution of TALD cases with history of stay in Dubai, United Arab Emirates, by week of onset, accommodation site clustering, weeks 37/2016–30/2017



Source: ELDSNet

During weeks 42 and 43 of 2016 there was a peak of cases with onset of illness (Figure 2), corresponding to the period of annual school holidays in a number of EU countries. However, a similar clustering of cases was not observed during the Christmas and New Year period. The epicurve suggests a persisting transmission source of *Legionella* bacteria affecting travellers to Dubai.

The 55 hotel/apartment sites associated with the 67 TALD cases that stayed in commercial accommodation are widely spread across a distance of 40 kilometres in Dubai. Twenty-one cases stayed at a hotel that was associated with another case that had fallen ill since 1 October 2016.

The majority of cases (84%) reported since October 2016 are in the age group of 50 years and above, which is similar to the situation observed generally for cases of Legionnaires' disease reported among returning EU travellers from destinations worldwide [2]. The median age among cases with onset since 1 October 2016 was 61 years (range 36–84), compared with 58 years for all cases with onset in 2014 and 2015.

Travel pattern

According to the International Air Transport Association (IATA) database, the number of air passengers travelling from the EU/EEA to Dubai has steadily increased over the past six years, from 2 264 490 passengers in 2011 to 3 387 720 passengers in 2016 (+50%). A 10% annual increase in air passengers was observed between 2014 and 2015. Over the past five years, the countries with most EU/EEA travellers to Dubai were the United Kingdom (35% of EU/EEA passengers), Germany (20%) and France (9%), followed by Italy (8%), the Netherlands (4%) and Spain (4%). It is therefore not surprising that the majority of TALD cases with onset since 1 October 2016 are reported by the United Kingdom. Passenger volumes show a distinct seasonal pattern; passenger numbers are consistently higher in the European winter period and lower in the European summer period, with peaks tending to correspond with the winter holiday seasons in the EU/EEA.

Furthermore, official tourism statistics from Dubai show an increase of 3–13% for tourists originating from France, Germany and the United Kingdom between January and July 2017 compared to the same period in 2016. The tourism performance indicator of guests' length of stay in Dubai remains stable at 3.5 nights [3]. Figure 3 shows the notification rate per 100 000 travellers from EU/EEA countries to Dubai, based on data from the Dubai Statistics Center.

Figure 3. Number of EU travellers to Dubai and TALD notification rate per 100 000 traveller, Q1 2016–Q2 2017

Travel data: Dubai Statistics Center, UAE [4]. Case data: ELDSNet.

Environmental investigations

Public health authorities in the United Arab Emirates have informed ECDC that environmental investigations were undertaken at the notified hotels, and *Legionella* counts showed acceptable levels for hot and cold water systems (not exceeding 1000 cfu/litre) [5]. The threshold level is the same as that used to determine action levels in European technical guidelines [6].

United Arab Emirates authorities have indicated that they have undertaken a risk assessment of accommodation sites notified by ELDSNet and of possible high-risk sites, such as cooling plants and major fountains in Dubai. To date, they have not identified a single source of infection. In addition, Dubai Municipality have reported having undertaken supplementary water sampling and investigated new cases notified by ELDSNet, as well as monitoring the situation in accordance with Dubai laws and regulations. UAE authorities have not provided ECDC with the results of the sampling carried out as part of these investigations.

ECDC threat assessment for the EU

ECDC observed a significant increase in the number of TALD cases in EU travellers returning from Dubai during the period October 2016 to May 2017 that could not be accounted for by the increase in travel patterns from the EU. The return to the baseline level of TALD in the last two months suggests that the measures implemented by UAE have been effective in containing this outbreak.

However, in previous years October and November have been the months associated with the highest numbers of TALD notifications – particularly in 2016 – and cases are therefore still expected to occur in the coming months.

ECDC will be monitoring closely the epidemiological situation in liaison with the UAE authorities.

References

1 European Centre for Disease Prevention and Control. European Legionnaires' Disease Surveillance Network (ELDSNet) – Operating procedures. Stockholm: ECDC; 2012. Available from: http://ecdc.europa.eu/en/publications/Publications/1202-TED-ELDSNet-operating-procedures.pdf

2 European Centre for Disease Prevention and Control. Legionnaires' disease in Europe, 2014. Stockholm: ECDC; 2016. Available from: http://ecdc.europa.eu/en/publications/Publications/legionnares-disease-europe-2014.pdf

3 Visit Dubai. Dubai tourism 2017: performance report. Visitor performance by source market – Table of top 20 source markets for visitors to Dubai. [Accessed 24 August 2017] http://www.visitdubai.com/en/tourism-performance-report

4 Dubai Statistics Center/themes/tourism. Available from: https://www.dsc.gov.ae/en-us/Themes/Pages/Tourism.aspx?Theme=30 [Accessed 24 August 2017]

5 Dubai Municipality, Public Health and Safety Department. Guidelines for the control of *Legionella* in water systems – Rev. 2, June 2010. Dubai: Public Health and Safety Department; 2010. Available from: https://login.dm.gov.ae/wps/wcm/connect/4391bce6-5502-4ec3-918e-2e76baec8f7f/Guideline+for+the+control+of+legionella+in+water+systems+ENG+and+Arabic.pdf?MOD=AJPERES

6 European Guidelines Working Group. European technical guidelines for the prevention, control and investigation of infections caused by *Legionella* species – June 2017. Available from: https://ecdc.europa.eu/sites/portal/files/documents/Legionella%20GuidelinesFinal%20updated%20for%20ECDC%20corrections.pdf