

Increase in *Salmonella* Stourbridge infections in Germany during 2016

16 December 2016

Main conclusions and options for response

Germany has reported an increase in the number of *Salmonella* Stourbridge cases during the second half of 2016. As the vehicle/source of infection has not been identified, more cases may occur. The high proportion of hospitalised cases and the two deaths highlight the importance of identifying the vehicle/source of infection and applying control measures.

Seven other EU Member States have reported additional cases of *Salmonella* Stourbridge in 2016. However, the number of cases reported remains within the expected range.

Whole genome sequencing (WGS) of *Salmonella* Stourbridge isolates and analysis and interpretation of the results by Germany, France, Ireland, Luxembourg and the United Kingdom will enable the potential multi-country dimension of this event to be verified.

Public health authorities may consider contacting their national food safety and veterinary authorities to investigate whether non-human isolates of *Salmonella* Stourbridge have been identified this year.

As a complement to WGS and pulsed-field gel electrophoresis (PFGE) typing, ECDC is prepared to facilitate the inter-country investigations (e.g. using shared, common trawling questionnaires for prospective cases in other countries).

ECDC will continue monitoring this event through EPIS-FWD.

Source and date of request

ECDC Internal Decision, 12 December 2016.

Public health issue

Potential multi-country outbreak of *Salmonella* Stourbridge in 2016.

Consulted experts

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Disease background information

Salmonella Stourbridge (*S. Stourbridge*) is a rare serotype in the European Union (EU) and the European Economic Area (EEA) Member States [1]. Between 2010 and 2015, this serotype was reported by seven Member States (n=92) and the annual number of confirmed cases has ranged from eleven to 22 cases, with a median 15 cases. France and Germany have accounted for 61% and 21% of the reported cases, respectively. Cases have been more common among adults aged 45 to 64 years (30%) and over 65 years old (25%). There were more (54%) male than female cases reported. Most (93%) of the cases with known travel history (n=29) were domestic. Between 2010 and 2015, no deaths were reported due to *S. Stourbridge* infection [1].

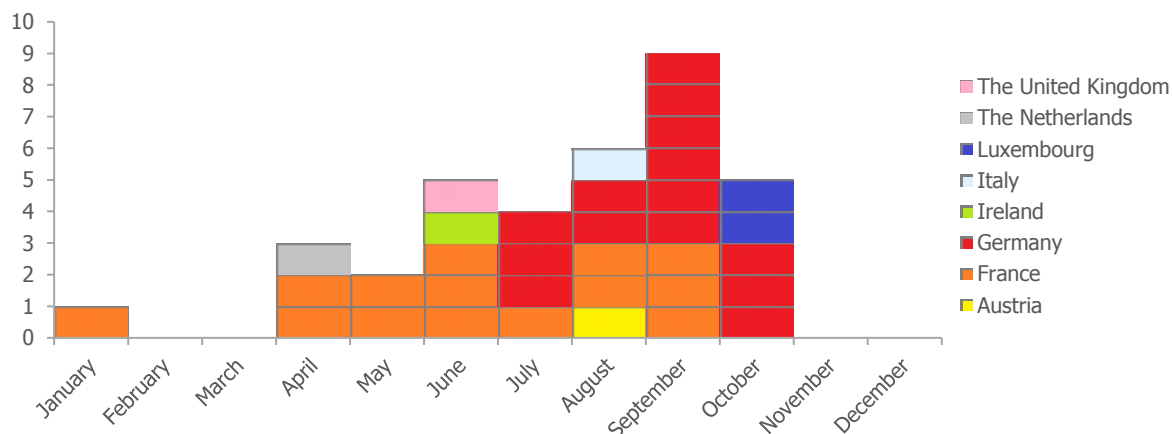
ECDC has collected historical and real-time PFGE data for *Salmonella* in the European Surveillance System (TESSy) since 2012. PFGE data are available for nine *S. Stourbridge* isolates deriving from three Member States, with the dates used for statistics ranging from 9 June 2008 to 24 October 2016. These isolates comprise three unique PFGE profiles that differ from each other by two bands.

A European-wide outbreak of *S. Stourbridge* was described in 2005, where 77 cases were reported by six EU Member States and Switzerland. The vehicle of infection was found to be unpasteurised goat's cheese [2].

Event background information

On 22 November 2016, Germany reported through the Epidemic Intelligence Information System for Food- and waterborne Diseases and Zoonoses (EPIS-FWD) an increase in the number of *S. Stourbridge* (6,8:b:1,6) infections during the second half of 2016. Fourteen cases were notified in Germany in 2016, compared to one to five cases (median three cases) per year between 2011 and 2015. The first case in 2016 was observed in July and the most recent case had disease onset in late October. Cases were notified in different federal states. The median age was 58 years (range 13–84 years), 36% of cases are male and 64% are females. The proportion of hospitalised cases is relatively high, with 69% of cases having been hospitalised (nine of the 13 cases with available information). Two male cases have died due to the disease. No cases had documented travel outside of Germany before becoming ill. Six of seven isolates tested have the PFGE profile *XbaI*.1546, according to TESSy nomenclature, and the seventh isolate has a very similar profile (*XbaI*.2532) with only a two-band difference, suggesting that the two types are closely related. Germany will perform WGS on eight isolates and results will be available in the coming weeks.

Information gathered through EPIS-FWD and TESSy highlights an increase in *S. Stourbridge* infections in the EU/EEA, with 35 cases reported in 2016, as of 16 December, compared to 11 cases in 2014 and 22 cases in 2015. The 35 cases in 2016 have been reported by eight EU Member States: Austria (1), France (14), Germany (14), Ireland (1), Italy (1), Luxembourg (2), the Netherlands (1) and the UK (1). The French public health authorities consider the number of cases in France in 2016 to be within the expected range. The majority of the 2016 cases occurred between April and October. The latest dates of onset were reported in October by Luxembourg in two siblings, aged one and two years, who had visited Germany before falling ill. The case reported by the United Kingdom visited France before falling ill. Twelve cases were hospitalised: nine in Germany, one in Austria, one in Luxembourg and one in the United Kingdom. There is a striking difference in the age distribution between the cases in Germany (median 58 years, ranging from 18 to 34 years of age) and France (median 53 years, ranging from 0 to 80 years of age) compared to other countries (median one year, ranging from 0 to 10 years of age).

Figure 1. Temporal/geographical distribution of Salmonella Stourbridge infections in the EU/EEA, 2016 (n=34)

Luxembourg has performed PFGE and WGS on seven isolates of *S. Stourbridge* between 2005 and 2016. All seven isolates have identical PFGE profiles (*Xba*I.1546. Submitted to TESSy). Results from WGS show that isolates from 2005–2008 cluster together within four alleles difference using the Enterobase cgMLST analysis scheme, while the isolate from 2016 is slightly different (eight allelic differences from the 2005–2008 cluster). In addition, PFGE and WGS have been performed on the isolate from Ireland. There were 31 allele differences between this isolate and the next closest isolate using the Enterobase cgMLST V2 scheme (26 allele differences with the cgMLST(3020) beta scheme) (nd). The PFGE profile has been uploaded to TESSy. France and the United Kingdom have also performed WGS analysis on isolates from 2016. Comparison of WGS data is ongoing.

ECDC public health threat assessment for the EU/EEA

Germany is the only EU/EEA Member State where there has been a statistically significant increase in the number of cases during 2016. Considering that *S. Stourbridge* is a rare serotype, it cannot be excluded that some of the cases observed in other countries may have been exposed to a common vehicle/source of infection, potentially originating from or occurring in Germany. Considering the reporting delay, it is possible that additional cases have occurred in November and December. In addition, as long as the vehicle/source of infection remains unidentified, new cases may occur.

If there was a common source of contamination between Germany and the other countries, the difference in age distribution between the cases in Germany and France on one hand, and in Austria, Italy, Luxembourg, the Netherlands and the United Kingdom on the other hand might be explained by a difference in the exposure or eating habits by age groups in different countries.

The high proportion of hospitalised cases and the two deaths in Germany highlight the severity of the disease caused by this particular strain and the need to rapidly find the vehicle/source of infection. The unusual severity of the infection should be further explored.

The observed similarity of PFGE patterns over time and the limited number of isolates with PFGE data in TESSy without background epidemiological data makes the interpretation of these data difficult for the purpose of the outbreak delineation. WGS data from Luxembourg has also shown a relatively high level of genetic stability over time. WGS data are available from four countries and expected soon from a fifth country, which should enable the assessment of the multi-country dimension of this event.

ECDC encourages the sharing, joint analysis and interpretation of PFGE and WGS data together with involved Member State experts. In addition, public health authorities may consider contacting their national food safety and veterinary authorities to investigate whether non-human isolates of *S. Stourbridge* have been identified this year.

ECDC is able to support Member States with WGS. Please contact directly ECDC at fwd@ecdc.europa.eu

As a complement to WGS and PFGE typing, ECDC is prepared to facilitate inter-country investigations (e.g. using shared, common trawling questionnaire for prospective cases in other countries.)

References

1. European Centre for Disease Prevention and Control. The European Surveillance System (TESSy) Retrieved 13 December 2016, from <http://ecdc.europa.eu/en/activities/surveillance/TESSy/Pages/TESSy.aspx>
2. Espié E, Vaillant V. International outbreak of *Salmonella* Stourbridge infection, April–July 2005: results of epidemiological, food and veterinary investigations in France. *Euro Surveill.* 2005;10(32). Available at: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=2772>