

# Letter to the editor: Measles outbreak linked to an international dog show in Slovenia – primary cases and chains of transmission identified in Italy, November to December 2014

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## Citation style for this article:

Filia A, Riccardo F, Del Manso M, D'Agaro P, Magurano F, Bella A, Regional contact points for measles surveillance. Letter to the editor: Measles outbreak linked to an international dog show in Slovenia – primary cases and chains of transmission identified in Italy, November to December 2014. *Euro Surveill.* 2015;20(9):pii=21050. Available online: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21050>

Article submitted on 23 February 2015 / published on 05 March 2015

## To the editor:

Recently, Grgič-Vitek et al. reported a measles outbreak in Slovenia linked to an international dog show held in Vrtjoba/Šempeter from 8 to 9 November 2014, involving 44 cases [1]. Genotype D8 was identified in seven cases and viral sequences were deposited in the World Health Organization (WHO) MeaNS database [1].

In December 2014, the European Centre for Disease Prevention and Control (ECDC) conducted a Rapid Risk Assessment of the outbreak and recommended that, since the dog show had exhibitors from 27 European countries, national public health authorities from these countries should consider contacting the exhibitors to verify their measles vaccination status and illness

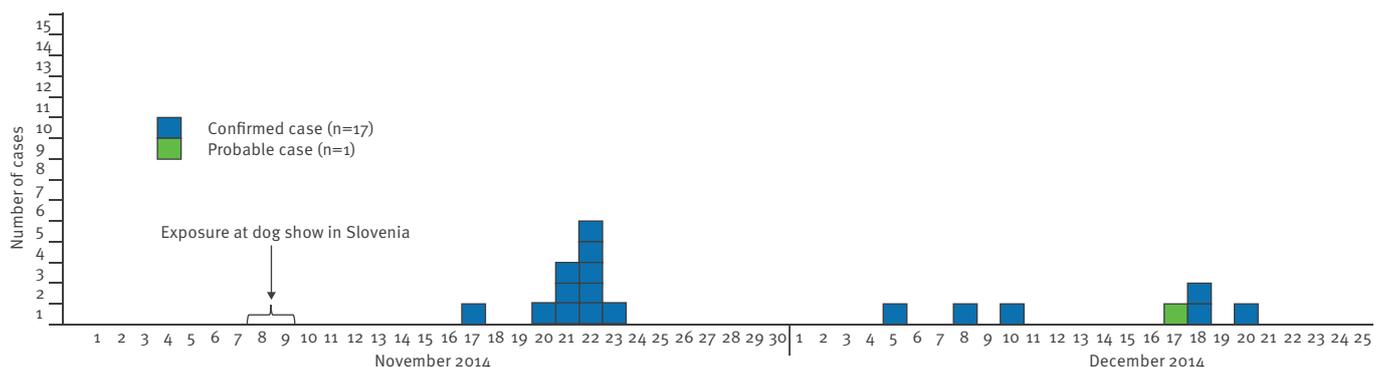
histories, and perform contact tracing for identified cases [2].

The dog show was held near the Italian border and over 350 of the 670 registered exhibitors had reported an Italian address. The Infectious Diseases Epidemiology Unit of the Istituto Superiore di Sanità (ISS), in collaboration with regional and local health authorities in Italy contacted the Italian exhibitors, as recommended.

We obtained the names of registered exhibitors from the Slovenian authorities through the Early Warning and Response System (EWRS), listed these by region of residence and sent them to the regional health authorities (RHA) of 16 regions. We asked RHAs to (i) verify

## FIGURE

Number of measles cases linked to an international dog show in Slovenia, by date of rash onset, Italy, November–December 2014 (n=18)



Cases were classified according to the European Commission case definitions of 8 August 2012 [3].

whether any measles cases had been reported since 1 November 2014 among the persons listed; (ii) contact exhibitors by telephone and conduct an interview, based on a standard questionnaire prepared by ISS, to collect demographic information and enquire about vaccination status, measles symptoms since 1 November 2014 and other known non-registered participants; (iii) contact additional participants identified; (iv) report identified measles cases to the national surveillance system, including laboratory testing and genotyping results and (v) perform contact tracing of cases.

The above-mentioned activities were performed by local health authorities (LHA) who were in contact with 276 of 374 (73.8%) registered exhibitors, of whom 226 confirmed their attendance to the dog show and agreed to be interviewed. Additionally, 164 non-registered participants were identified, of whom 78 have been interviewed to date. Overall, 304/538 (56.5%) participants or their guardians were interviewed, 281 (92%) of whom residing in six regions, mostly located in northern Italy. The median age of participants was 45 years (range 2 months–74 years); 144 (47.4%) were male. Measles vaccination status was reported by 245 participants (80.6%), of whom 189 (77.1%) were unvaccinated. Information on prior measles infection was available for 169 unvaccinated participants, of whom 25 (15.2%) reported no history of illness.

Eighteen measles cases [3] were identified and reported to the national measles surveillance system: 11 primary cases, three secondary cases and four tertiary cases (Figure).

The median age of the cases was 31 years (range 5–52 years); 16/18 cases were female. Vaccination status is known for 17/18 cases of whom 15 were unvaccinated and two had received one dose. Seventeen cases tested IgM/PCR positive against measles. Genotype D8 was isolated in three primary cases and phylogenetic analysis showed that viral sequences were identical to each other and to those identified in Slovenia [1]. Sequencing and genotyping results for additional cases are pending.

The epidemiological, serological and molecular characterisation of cases linked to international mass gatherings is helpful in tracing international measles virus transmission pathways and identifying susceptible population groups, and will become increasingly important as Europe approaches measles elimination.

Although it is possible that additional cases will be identified in Italy, local transmission appears limited to date, suggesting that the public health response to the outbreak was timely in the regions involved. Measles vaccination coverage is suboptimal in Italy (88% for the first dose at two years of age, in 2013), ranging from 85.8% to 93.1% in the regions of residence of the participants at this event, and pockets of susceptible persons are known to exist, especially among adolescents

and young adults [4]. The fact that most Italian cases linked to the dog show were also young adults, further underlines the importance of closing immunisation gaps against measles in this population group. It is well known that the risk of measles transmission can be high at mass gatherings because of the large number of participants from many different countries (with varying vaccination and incidence rates) in a crowded setting [5]. National public health authorities should raise awareness among the population of the risk of measles transmission during travel and mass gatherings, and of the importance of verifying one's immunity before departure. Governments hosting mass gatherings should work with event organisers to include measles immunisation advice for participants and visitors in the event information packages [6].

### Regional contact points for measles surveillance

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### Acknowledgements

We wish to thank all local health authorities who contacted participants and conducted the questionnaire-based interviews. We also wish to thank Silvia Declich, Loredana Nicoletti and Maria Cristina Rota for supporting this investigation.

This work was carried out with financial support from the Italian Ministry of Health – CCM.

### Conflict of interest

None declared.

### Authors' contributions

Antonietta Filia coordinated the investigation, communicated with Regional contact points for measles surveillance and drafted the manuscript. Antonino Bella guided the methodological approach, analysed data for cases reported to the national measles surveillance system and communicated with Regional contact points for measles surveillance. Flavia Riccardo designed the questionnaire and jointly conducted data analysis of questionnaire results with Martina Del Manso. Pierlanfranco D'Agaro performed molecular sequencing analysis of measles virus strains. Fabio Magurano, at the Italian national reference laboratory for measles, contributed to the comparison of Italian and Slovenian sequences and to the interpretation of sequencing results. Regional contact points coordinated the investigation at the regional and local level. All authors were actively involved in the investigation, contributed to revision of the manuscript and approved the final version.

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