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An outbreak of measles in Reims, eastern France, January-March 2008 - a preliminary report

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Outbreak description

Between the end of January and 12 March 2008, 16 cases of measles were reported to the local health authority in Reims in eastern France (see Figure 1, with order of notification indicated by numbers in the boxes). The outbreak has to date affected nine adults and seven children, aged from seven months to 28 years. Among these cases, 13 were biologically confirmed (presence of measles RNA and/or measles-specific IgM antibodies in sera and/or oral fluids).

The index case was a 20-year-old female, whose rash onset was on 21 January. She developed pneumonia eight days after the rash onset and was hospitalised at the university hospital. The source of infection remains unknown (she is unemployed and did not report any travel outside her hometown, contact with a measles case or having any visitors from abroad in the seven to 18 days before the rash onset).

The first generation of cases included her two sons (aged seven months and 17 months) and two young adults in her family (21 years and 19 years old). All these secondary cases except one adult were hospitalised between 2 and 6 February. None of the five cases was vaccinated against measles.

The second generation of cases infected by hospitalised members of this family cluster included three persons: a 25-year-old unvaccinated nurse who worked in the ward to which one of the secondary cases was admitted; a 22-year-old unvaccinated medical student who took care of the two hospitalised children (precautions around the two boys, although not fully adapted, had been taken and had been respected); and a four-year-old girl who was admitted to the hospital emergency room while the two children were patients in a nearby ward. This child stayed in the paediatric surgery department for three weeks and developed a rash on 21 February. As the diagnosis was made only on the day she was released, eight days after the rash onset, no special precautions had been taken around her during her stay. She had received a single dose of the measles-mumps-rubella vaccine (MMR) in 2006. None of these three cases developed any complications.

The third generation of cases was related to the child hospitalised in the paediatric surgery department. A non-immune 24-year-old nursing student, who had worked in the unit until 29 February, developed the rash on 3 March. Two children hospitalised in the same department (seven years old and 11 months old) developed the rash on 5 and 7 March respectively, after hospital discharge. Both of them had received one dose of MMR.

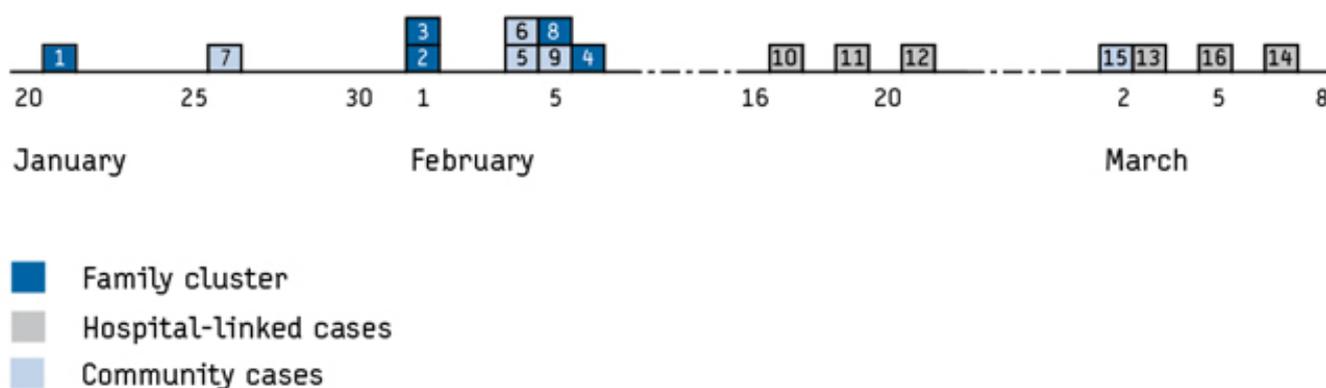
Among these 11 related cases, nine were laboratory-confirmed. To date, the identical genotype D4 sequences

were obtained by the National Reference Centre for the index patient and four other cases.

Another biologically confirmed case was reported in a 27-year-old senior medical student (rash onset on 5 February) without any known link with previous cases. Four other cases not related to the cluster were notified in this period: a 27-year-old man (rash onset on 4 February, genotype D5) who, during the incubation period, did not report any travel outside Reims nor had any known contact with visitors from abroad; and a seven-year-old child (rash on 2 March). These two cases were biologically confirmed and no epidemiological link could be identified. Two other cases were considered as suspect: a one-year-old boy, who had received an MMR dose five days before rash onset on 4 February, and his mother, who was retrospectively diagnosed with measles (rash on 26 January).

FIGURE 1

Reported measles cases by date of rash onset and transmission setting (n=16), Reims, Marne District, France, 21 January–7 March 2008



Control measures

Around each case reported to the health authority, contact people were identified and their immunisation statuses were updated. A post-exposure immunisation was recommended to unvaccinated people if the contact had occurred during the previous 72 hours, and the possibility of an immunoglobulin injection was discussed if at high risk for severe measles.

Staff members of the hospital units to which measles cases had been admitted were advised to undergo a serological examination if their immunisation status was unknown and to update it if necessary. Patients, possibly infected by the two staff members who had worked while contagious, were informed and invited to contact their GP to ascertain their vaccination status and to complete it if necessary. Primary care paediatricians and GPs working in the Marne district, where Reims is located, were alerted and requested to report all suspected cases of measles and to test for specific IgM.

Discussion

This is the first important cluster of measles with three generations following the index case reported in France since the launch of the national plan for the elimination of measles and congenital rubella [1] and measles mandatory notification in July 2005 [2].

In France, the first dose of MMR is recommended at 12 months old and the second dose between 13 and 24 months. A catch-up strategy includes a two MMR dose regimen for children born in 1992 or later and a one MMR dose regimen recommended for children and adults born between 1980 and 1991 if not previously vaccinated. Unvaccinated health workers born before 1980 and without a previous history of measles should receive one dose of MMR if non-immune (absence of specific IgG), especially if working in units hosting patients with a high risk of contracting severe measles. In the Marne district, MMR vaccination coverage is estimated at 92% at 24 months old (preliminary data of the Ministry of Health). Measles coverage in health staff is, to date, unknown.

In this outbreak, both D4 and D5 genotypes have so far been identified. In recent years, D4 viruses have been implicated in several major outbreaks in Europe (in Romania, the United Kingdom, Spain and Germany). D5 virus circulation in Europe is rare and is often associated with imported cases [3].

This outbreak underlines the need to achieve higher vaccine coverage among children, teenagers and young adults. Although nosocomial transmission of measles is well documented [4,5], more awareness among health professionals of measles diagnosis, appropriate infection control practices to prevent transmission in hospital settings and specific vaccination recommendations for health professionals is needed.

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