

Ongoing outbreak of measles in Oslo, Norway, January–February 2011

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Between 19 January and 17 February 2011, 10 cases of measles (eight laboratory-confirmed and two probable) were reported in Oslo with the majority of cases in a mainly unvaccinated immigrant community. Of these, two cases were identified outside the immigrant community, in Norwegian children.

Outbreak description

The measles outbreak described here started on 19 January 2011 in Oslo and the index case was an unvaccinated two-year-old child from the Somali immigrant population (Figure). The child developed classical symptoms of measles 12 days after a family visit from Ethiopia, and the source case was probably one of the visiting relatives, according to the symptoms described by the parents.

By 17 February, eight confirmed and two probable cases were reported in Oslo. The case definition used was based on the World Health Organization (WHO) classification of measles cases [1] and included clinical and laboratory aspects: any person in whom a clinician suspects measles infection, or any person with fever and maculopapular rash (i.e. non-vesicular) and cough, coryza (i.e. runny nose) or conjunctivitis (i.e. red eyes) and presence of measles-specific IgM antibodies. A confirmed case was defined when both clinical case definition and laboratory criteria were fulfilled. A probable case was defined as fulfilling the clinical picture; two cases were classified as probable after a weak positive IgM result.

Epidemiology of measles in Norway

Nowadays, measles is a rare disease in Norway due to high coverage of the measles-mumps-rubella (MMR) vaccine. MMR vaccine was introduced in the national vaccination programme in 1983 as a two-dose schedule (at 15 months and at 11–12 years of age). In 2009, the vaccination coverage in two-year-olds (birth cohort 2007) [2] with the first dose was 93% in Norway, 92% in Oslo and 88% in the district of old Oslo. The MMR vaccine coverage in Oslo for children born in 2008 and 2009 was 91% and 72%, respectively. The MMR

vaccine coverage data for the second dose are available for 16-year-olds (birth cohort 1993) and is 94% in Oslo and 90% in the district of old Oslo.

All measles cases identified in the last ten years in Norway have been linked to importation from endemic areas or linked to other outbreaks in Europe [3–4]. The last outbreak in Norway occurred in 2008 in an anthroposophical community, where the index case fell ill immediately after returning from Austria [5]. In 2007, there was an outbreak among Irish travellers who were working in Norway at the time, but no cases occurred in the local population [3].

Clinical and laboratory data

Of the 10 cases, nine were children (one female and eight males) and one was an adult female healthcare worker (Table). All cases had typical symptoms of measles including a generalised maculopapular erythematous rash, fever, cough, runny nose and red eyes. Seven cases were admitted to hospital due to dehydration and impaired general condition, although none developed serious illness. In Norway, threshold to hospitalise measles cases is low for isolation purposes.

For all the 10 cases described above, samples were tested for measles and in eight cases measles IgM antibodies were detected in serum and/or saliva by Anti-Measles Virus IgM test (Enzygnost; Simens Healthcare Diagnostics Products, Marburg, Germany) and/or Measles IgM Capture EIA (Microimmune Ltd, Middlesex, United Kingdom) performed at the Norwegian Institute of Public Health (NIPH). In two cases the laboratory results were weak positive IgM and the cases were classified as probable. Additionally, five of the ten cases were confirmed by measles PCR [6]. Data from sequencing are not yet available.

Epidemiological investigation and public health measures

Of the 10 patients, eight were unvaccinated, one was vaccinated with one dose of MMR containing vaccine and for one the vaccination status was not known. All

cases live in districts of Oslo with low vaccination coverage [2]. The first six cases in the outbreak, cases 1 to 6, (Table) were among the immigrants living in the same area of Oslo. Case 7, vaccinated with one dose, was suspected of having acquired measles by exposure to case 5 in an emergency center. There is no known other contact with other measles patients.

The adult case (case 8) is from another immigrant group and is working in the health service in Oslo. We have no information on any possible linkage to the other cases in this outbreak and the vaccination status is unknown.

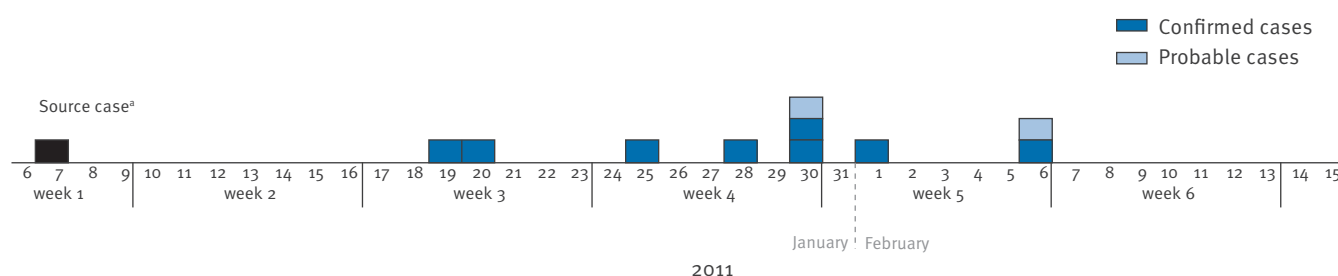
The last two cases (cases 9 and 10) are Norwegians and they were exposed to the first measles patients in an emergency center in Oslo. None of the two last cases have had any known contact with measles other than the waiting room at the emergency center. Both were around the recommended age for the first MMR containing vaccine dose.

Local health authorities have conducted contact tracing around the affected children immediately after the first case was notified. For the children attending nursery schools, the local health authorities provided information to parents, and checked the immunisation status of the other children enrolled in the same school. The adult hospitalised case attended a meeting during the time she was infectious and therefore was not in contact with patients. The other participants at the meeting were informed about the measles case and asked to check their vaccination status and be aware of development of symptoms.

The municipal and local health authorities also conducted a door-to-door campaign to inform and check immunisation status in the families living in the area. Many Somali parents in Oslo are sceptical about MMR vaccination and fear of autism seems to be the main reason. Information meetings and discussions were held with the community, in cooperation with Somali health-care workers and the local Muslim society. Statements

FIGURE

Confirmed and probable outbreak measles cases by IgM result and epidemiological link, Oslo, January–February 2011 (n=10)



^a Probable source case, not included in the outbreak.

TABLE

Confirmed and probable measles cases, Oslo, Norway, January–February 2011 (n=10)

Case	Age groups (years)	Onset of symptoms	Laboratory results	Epidemiological information	Vaccination status
1	< 2	19 January	IgM+ PCR+	Contact with the source case	Unvaccinated
2	2-10	20 January	IgM+	Contact with the source case	Unvaccinated
3	2-10	25 January	IgM+	Sibling of case 2	Unvaccinated
4	2-10	28 January	IgM+ PCR+	Sibling of case 2	Unvaccinated
5	2-10	30 January	IgM+ PCR+	Contact with cases 2,3 and 4	Unvaccinated
6	2-10	1 February	IgM+ PCR+	Contact with cases 2,3 and 4	Unvaccinated
7	2-10	30 January	IgM+ (weak positive)	Contact with case 5 in an emergency center	Vaccinated in 2008 ^a
8	> 40	30 January	IgM+ Seroconversion IgG PCR+	No known contact to any other case	Unknown
9	< 2	6 February	IgM+ PCR+	Contact with confirmed cases in the emergency center	Unvaccinated
10	< 2	6 February	IgM+ (weak positive) PCR-	Contact with confirmed cases in the emergency center	Unvaccinated

^a One dose of measles-mumps-rubella containing vaccine.

from parents in the immigrant group pointed to belief that MMR vaccine was associated with autism and this was the reason why they chose not to have their children vaccinated. After the outbreak and the associated information campaign, around 25 children from the immigrant community have been vaccinated against MMR.

Conclusions

This outbreak shows that also in settings with high vaccination coverage, there may still be pockets of unvaccinated individuals that can transmit measles to susceptible children under the recommended age of MMR vaccination and that measles can spread outside communities with low vaccination coverage. It also demonstrates that transmission of measles can occur in healthcare settings if children suspected of having a highly contagious disease are not isolated when arriving. Moreover, the case in a healthcare worker (HCW) provides more evidence for the need to improve the immunisation coverage among the HCWs in Europe.

This outbreak also shows the importance of reaching communities with low vaccination coverage as the Somali immigrant community mentioned above. It also shows the importance of continuous efforts despite high vaccination coverage. Although the vaccination coverage is very high in Norway it is still below the WHO recommended threshold of 95% and the NIPH are now planning to perform a catch-up vaccination campaign. We also demonstrated the benefit of organising information campaigns on vaccination for targeted groups or in general.

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