



SURVEILLANCE REPORT

European monthly measles monitoring (EMMO)

Issue 6: November 2011

Main developments

- During the period January to October 2011, 27 970 officially validated cases of measles were reported to TESSy by the 29 contributing EU and EEA countries. There were eight measles-related deaths and 24 patients developed acute measles encephalitis. The highest incidence was among infants below one year of age (38.0 cases per 100 000 population). Ninety-seven percent of cases were infected in their country of residence. Of the cases with known vaccination status, 82% were unvaccinated.
- Epidemic intelligence at ECDC captured 30 917 cases of measles in the EU and EEA/EFTA countries from January to 7 December 2011. The additional 2 947 cases captured by epidemic intelligence is explained by the longer surveillance period, delays in reporting to TESSy and the fact that not all early reported measles cases will become validated measles.
- The 2011 measles epidemic curve mirrors that of 2010. The fluctuation in case numbers follows the expected seasonal pattern of measles transmission in Europe but at a level that is 3–5 times higher than the incidence during the 2007–2009 period.
- The measles epidemic in Europe continues. The slow transmission season has passed its nadir and the number of new cases is expected to increase in the beginning of 2012 and peak in the February to May period in the absence of effective interventions.
- Three out of the 29 reporting countries remain measles free in 2011: Cyprus, Hungary and Iceland.

Background

The purpose of the European Monthly Measles Monitoring report (EMMO) is to provide regular and timely updates on the measles situation in Europe in support of effective disease control, increased public awareness and the achievement of the 2015 measles elimination target.

Measles is a highly infectious and potentially fatal disease which can be prevented by a safe and effective vaccine. When given in two doses, at least 98% of vaccine recipients develop long-term protective immunity. Measles only infects humans and theoretically the virus can be eradicated if a large enough proportion of the world's population

is vaccinated. The countries in the European region of the World Health Organization, which includes all EU and EEA/EFTA countries, have committed to eliminating measles transmission by 2015. Elimination means permanent interruption of transmission in all European countries. Importation of measles should not result in outbreaks. To eliminate measles requires sustained vaccination coverage above 95% with two doses of a measles-containing vaccine (MCV) in all population groups, vigilant surveillance and rapid and effective outbreak response.

ECDC closely monitors measles transmission in Europe through the mandatory reporting of cases to The European Surveillance System (TESSy) and epidemic intelligence (EI) activities. All 27 EU and two EEA countries contribute to the enhanced measles surveillance. Reporting is case-based and includes gender, age, date of onset, mode of transmission, complications and outcomes. The data is analysed monthly and presented in the EMMO and the ECDC Annual Epidemiological Report. After validation by the contributing countries, the case-based data is forwarded to WHO's global database. Epidemic intelligence sources include the TESSy database, national websites, the Early Warning and Response System (EWRS), validated media reports and personal communication from national authorities. The ECDC Epidemic Intelligence Information System for Vaccine Preventable Diseases (EPIS-VPD) is an ECDC-hosted platform which allows countries to share information and post inquiries about vaccine preventable diseases. Access to EPIS-VPD is restricted to authorised national focal points in order to ensure rapid and confidential communication about outbreaks.

EMMO data on vaccination coverage is retrieved from WHO's Centralized Information System for Infectious Diseases (CISID) unless otherwise stated. CISID data originates from the WHO/UNICEF Joint Reporting Forms submitted annually by all WHO Member States. It should be noted that countries use different methodologies and definitions to estimate vaccination coverage, and that the recommended age for measles vaccination, particularly for the second dose, varies considerably between countries. Direct comparisons of vaccination coverage between countries should therefore be made with caution.

The EMMO report has two sections. The first section is an analysis of the enhanced measles surveillance data reported to TESSy and validated by countries. The figures presented in this section represent official national data on measles and contribute to the chapter on Vaccine Preventable Diseases (VPD) in the ECDC Annual Epidemiological Report on Communicable Diseases in Europe. The second section presents measles data and outbreak information generated through epidemic intelligence at ECDC. The purpose of this section is to provide rapid information on ongoing measles transmission in the Member States and the data presented in the EI section should be treated as preliminary.

Surveillance section

The enhanced surveillance analysis in issue 6 of the EMMO covers the period from January to October 2011. Twenty-eight out of twenty-nine contributing countries reported for the entire period. Data from Germany is missing for August, September and October due to the development of software to enable automated data transfer to TESSy. Timeliness and completeness of reporting has continued to improve.

Between January and October 2011, 27 970 measles cases were reported to TESSy (Table 1). All countries have been submitting case-based data since August 2011 when Bulgaria returned to reporting on individual cases after having uploaded aggregated data during the country's 2009–2010 outbreak.

France reported the highest number of cases and accounts for more than half of all cases in 2011. Other countries with high absolute numbers of cases in 2011 include Italy, Romania and Spain, which have all experienced widespread outbreaks affecting most of their regions. Some countries with smaller populations, including Belgium, Denmark, Norway, and Slovenia, have reported considerable increases in case numbers compared to 2010.

Thirteen of the 29 reporting countries exceeded the notification rate of one case per 100 000 population (Figure 3). Only three countries, Cyprus, Hungary, and Iceland, reported no cases in 2011 (Table 1, Figure 3).

The number of measles cases reported for the first 10 months of 2011 is comparable to the number reported during the same period of 2010. The reported number of cases has been exceptionally high in the last two calendar years compared with 2009 (7 175 cases) and 2008 (7 817 cases). In 2010, 78% of the cases were reported by Bulgaria as a result of a large outbreak which is now over.

Since the previous EMMO, one additional case of acute encephalitis has been reported, bringing the total to 24 cases of this serious manifestation of measles reported in 2011. The number of measles-related deaths remains unchanged at eight in 2011. Reporting on outcomes and complications is still incomplete in TESSy (Table 2).

Of the reported cases, 42% (11 630 cases) were reported as laboratory-confirmed, 22% (6 131 cases) as probable, 35% (9 872 cases) as possible, and 1.2% (337 cases) as unknown. The 2008 EU case definition was used by 15 (52%) countries. The highest incidence was among infants under one year (38.0 cases per 100 000 population), followed by children between 1 and 4 years (21.2 cases per 100 000 population) (Figure 4).

Vaccination status was known for 83% (23 112 cases) of the reported cases. Of these, 82% (18 927) were unvaccinated and 13.5% (3 114) had only received one dose. Importation status was available for 68% (19 060)

of cases, 97% (18 421 cases) of them were infected in their country of residence, 3% (612 cases) were imported, and 0.1% (27 cases) were import-related*.

*An 'imported case' is defined as a case in which the source of infection was outside the country of residence, and the person in question was travelling abroad during the incubation period prior to the onset of the rash (measles: 7–18 days; rubella: 12–23 days). Classification as an imported case is also supported by epidemiological and/or virological evidence of foreign-acquired infection. An 'import-related case' is a case epidemiologically linked to an imported case, as supported by epidemiological and/or virological evidence. All import-related cases are considered as indigenous cases. See also: WHO. Surveillance guidelines for measles, rubella and congenital rubella syndrome in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2009.

Table 1: Distribution of measles cases by month, notifications per 100 000 population and comparison with previous reporting period in 2010; EU and EEA countries, 2011.

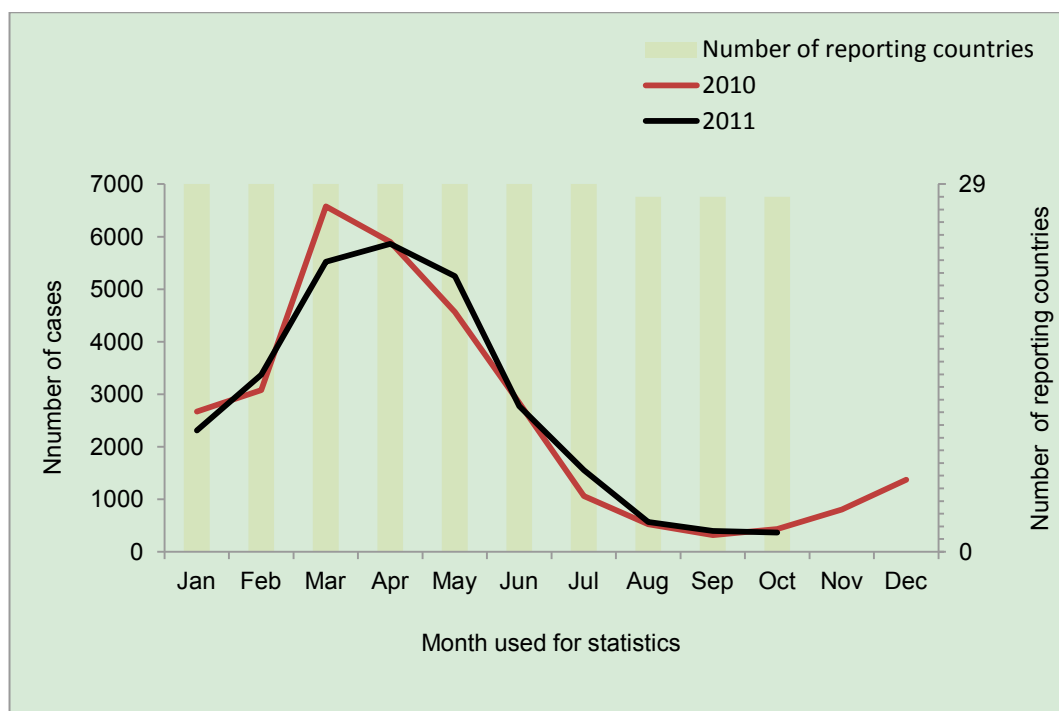
Country	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Jan–Oct 2011		Jan–Oct 2010	
											No. cases	Notification rate per 100 000 population	No. cases	Notification rate per 100 000 population
Austria	7	5	5	9	18	33	16	4	2	0	99	1.2	41	0.5
Belgium	6	23	142	98	122	86	39	10	10	2	538	5.0	40	0.4
Bulgaria	76	28	23	6	18	1	0	0	1	0	153	2.0	21 888	289.4
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	18	2.2
Czech Republic	0	0	4	4	4	0	1	3	0	0	16	0.2	0	0
Denmark	7	13	23	19	19	0	2	0	0	0	83	1.5	4	0.1
Estonia	0	0	4	1	1	1	0	0	0	0	7	0.5	0	0
Finland	1	1	1	4	12	2	0	5	1	0	27	0.5	5	0.1
France	1 545	2 462	3 722	3 313	2 271	925	410	147	86	70	14 951	23.0	3 521	5.4
Germany	69	95	195	428	434	167	92	nr	nr	nr	1 480	1.8	659	0.8
Greece	0	2	6	17	10	2	0	3	0	0	40	0.4	148	1.3
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	5	11	17	12	30	33	65	72	33	278	6.2	394	8.8
Italy	329	334	568	897	1 232	733	307	116	33	4	4 553	7.5	655	1.1
Latvia	0	0	0	0	0	0	0	1	0	0	1	0.04	0	0
Lithuania	0	0	0	1	2	4	0	0	0	0	7	0.2	2	0.1
Luxembourg	0	0	1	0	2	1	0	1	1	0	6	1.2	0	0
Malta	0	1	0	1	0	0	0	1	1	0	4	1.0	0	0
Netherlands	2	1	10	16	11	5	0	1	0	0	46	0.3	12	0.1
Norway	4	12	7	2	3	5	1	1	2	1	38	0.8	3	0.1
Poland	1	2	1	3	8	7	3	10	5	0	40	0.1	12	0.03
Portugal	0	0	1	0	0	0	0	0	0	0	1	0.01	5	0.05
Romania	131	192	402	396	514	455	377	46	59	137	2 709	12.6	65	0.3
Slovakia	0	0	0	1	0	1	0	0	0	0	2	0.04	0	0
Slovenia	0	0	0	2	1	7	12	0	0	0	22	1.1	2	0.1
Spain	98	159	251	448	362	174	157	93	74	60	1 876	4.1	173	0.4
Sweden	4	1	1	8	4	1	2	1	0	0	22	0.2	6	0.1
United Kingdom	31	33	143	171	186	133	105	60	52	57	971	1.6	374	0.6
Total	2 311	3 369	5 521	5 862	5 246	2 773	1 557	568	399	364	27 970	5.5	28 027	5.5

Data source: The European Surveillance System (TESSy). Notifications rates were calculated per 100 000 population, using the most recent population estimates available from Eurostat (2011). nr = no data reported

Table 2: Distribution of fatal measles cases and cases with complications; EU and EEA countries, January–October 2011

Outcome	Number of cases	%
Deaths	8	0.03
Record with information on outcome status	20 965	75
No information provided / unknown	6 997	25
Complications		
Encephalitis	24	0.1
Pneumonia	979	4
Diarrhoea	62	0.2
Otitis media	210	0.8
Other complications	1 760	6
No complications	2 863	10
No information provided/unknown	22 072	79
Total cases	27 970	100

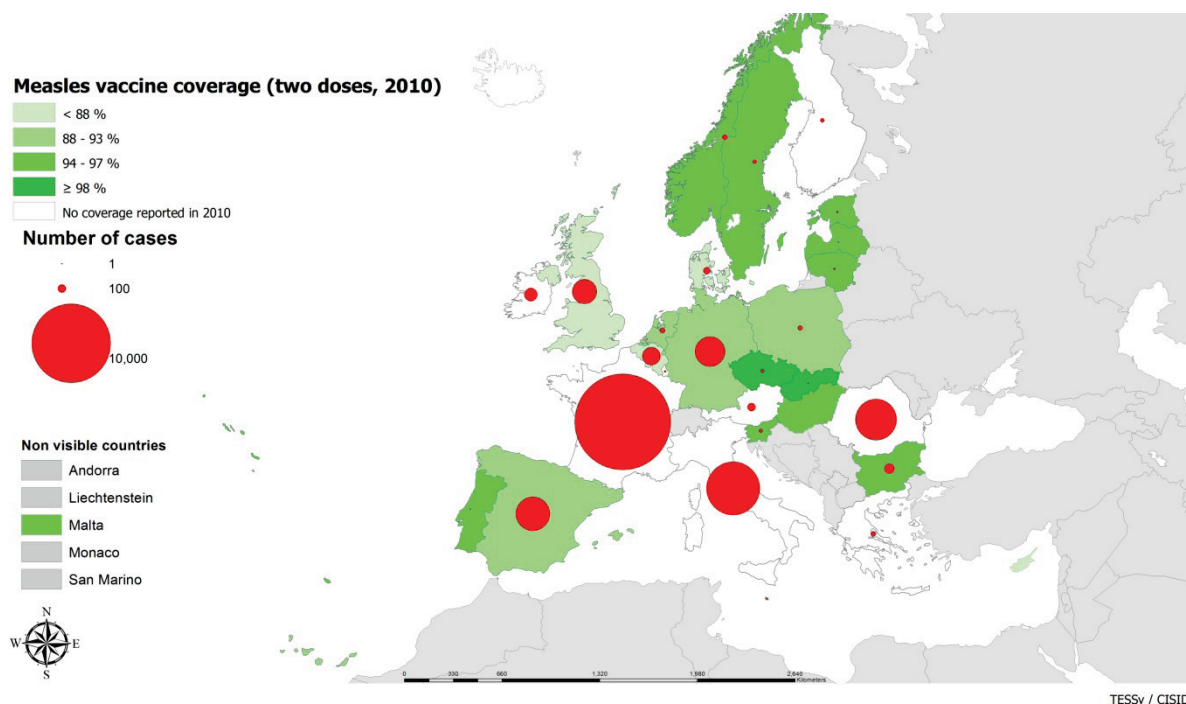
Figure 1: Distribution of measles cases in 2011 and 2010 and number of countries reporting measles surveillance data in 2011, by month



Source: TESSy

Reporting countries: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2: Distribution of measles cases in EU and EEA countries reported to TESSy (January–October 2011) and two-dose measles vaccination coverage (2010 CISID*)



* Coverage figures (%) are official national figures reported via the annual WHO/UNICEF Joint Reporting Form and WHO Regional Office reports (as of 1 September 2011).

Figure 3: Distribution of notification rate (cases per 100 000 population) by country reported through TESSy, EU and EEA countries, January–October 2011

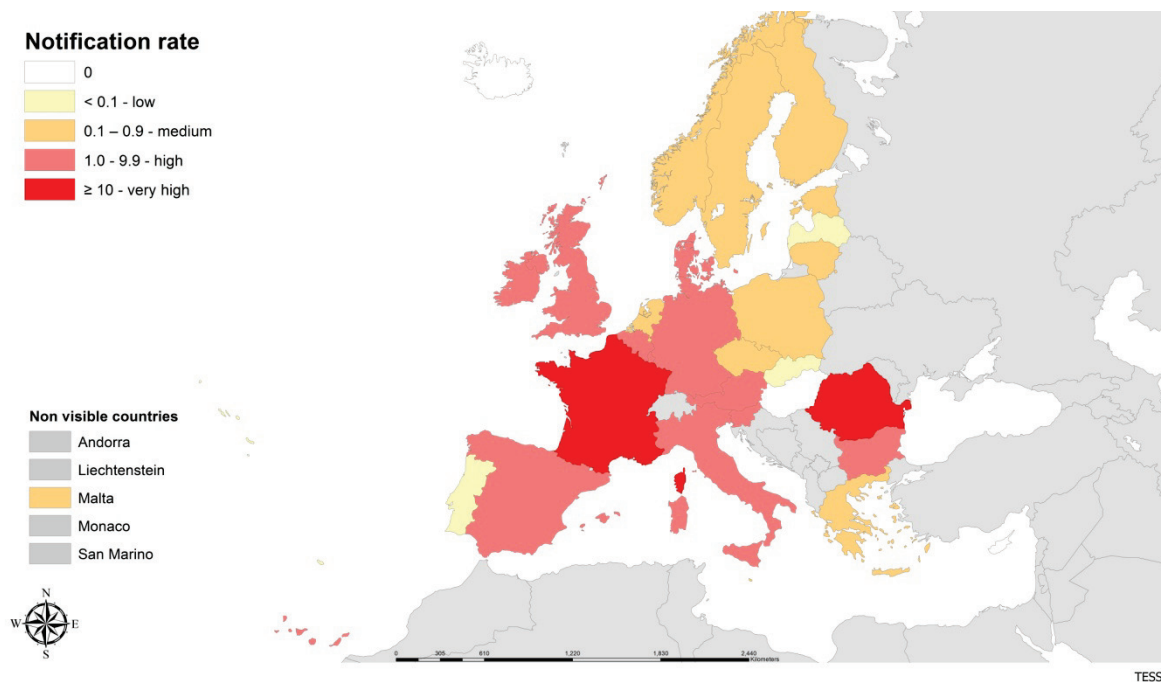
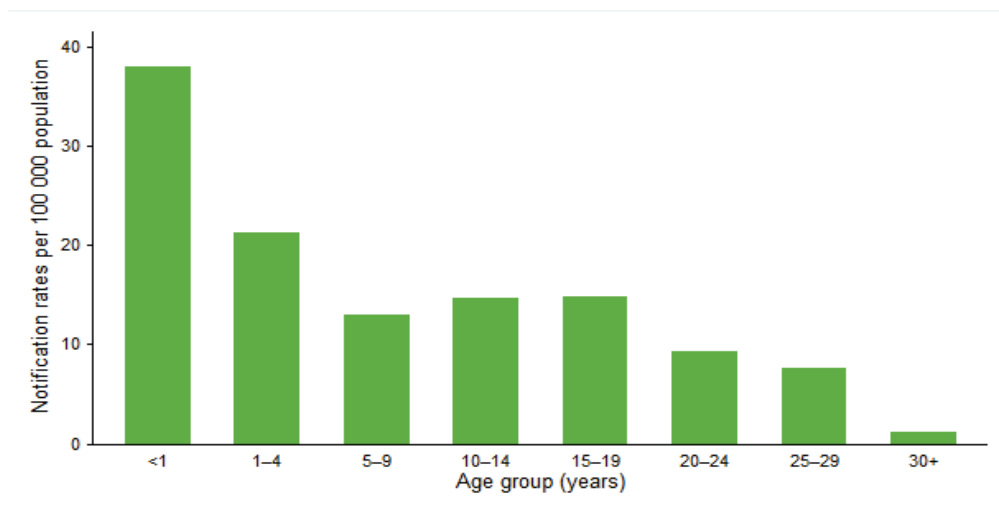


Figure 4: Distribution of notification rates per 100 000 population by age group, January-October 2011, EU and EEA countries



Note: Number of cases with known age is 27 608.

Source: TESSy

Epidemic intelligence section

ECDC continuously monitors measles transmission and measles outbreaks in the EU and Europe. Epidemic intelligence at ECDC recorded an additional 2 947 cases. So far in 2011, 30 917 cases of measles have been identified in the 29 EU and EEA/EFTA countries. Transmission of measles in Europe has been slow in the last six months. This is explained by the annual cyclic pattern of measles transmission. An expected increase in transmission following the opening of schools has not materialised, with the exception of a limited outbreak in Ireland. The peak transmission period for measles is from February to June.

Updates on outbreaks and endemic transmission

France

Source: *French Ministry of Health*

There is no update on the outbreak in France.

France has launched an information campaign including a dedicated website in response to the measles epidemic which is now in its third year. The campaign is aimed primarily at health professionals, young adults, parents of young children and adolescents, but also the general public. It provides information about the outbreak and the national recommendations on measles vaccination. The campaign objectives are tailored to targeted groups. Special attention is given to adolescents and young adults aged 15–30 years, a group which has been particularly affected since the epidemic started in 2008.

Romania

Source: *Ministry of Health, Romania*

In a press release dated 7 December 2011, the Romanian Ministry of Health indicated that so far in 2011 there had been 3 270 cases of measles. Between January and October 2011, Romania reported 2 709 measles cases to TESSy, which translates into an incidence rate of 12.6 per 100 000 populations. This is the second highest incidence in Europe in 2011 after France (23.0 per 100 000) and it is clear that Romania is experiencing a major measles outbreak. At the same time Romania is experiencing an outbreak of rubella. The same press release reports 1 064 cases of rubella, a tripling of the numbers compared to 2010. Romania introduced rubella-containing vaccine to the routine immunisation programme for children (MMR) in 2004 and has had a rubella vaccination programme for girls aged 13–14 years since 2003. The most affected age group in the current outbreak is 15–19 year-olds, with a male to female ratio of 2:1. Rubella is teratogenic and the biggest concern with rubella outbreaks is the risk of Congenital Rubella Syndrome among children born to mothers infected with rubella during pregnancy. The Ministry has initiated a vaccination campaign with MMR in response to the mixed measles and rubella outbreak.

Spain

Source: *Eurosurveillance*

There is no update on the outbreak in Spain.

During a three-month period in spring 2011, 23 cases of measles occurred in the form of seven independent outbreaks in the Basque region bordering France. The region has a population of about 700 000 people and the last recorded measles outbreak was in 1997. High measles vaccination coverage, rapid diagnosis and good surveillance allowed for the implementation of effective containment measures which have so far prevented the disease from spreading. With the exception of the first outbreak, which affected 10 people, none of the other six outbreaks resulted in more than three secondary cases.

Ireland

Source: *Epi-Insight, a disease surveillance report of the Health Protection Surveillance Centre*

There is no update on the outbreak in Ireland.

The measles outbreak in Ireland, which has mainly affected the eastern part of the country, is now subsiding. Since early October there has been a gradual decline in the number of new cases. As of 22 October 2011, 265 measles cases had been reported in Ireland during 2011. Eighty six percent (227 cases) are from the eastern part of the country. The peak of the outbreak was in August and September when 139 cases were reported. The largest number of cases was among 5–9 year-old children. Almost 70% of cases were unvaccinated or incompletely vaccinated. Eleven patients required hospitalisation, three of whom were treated for seizures. A combination of factors is likely to have facilitated the spread of measles in the affected area including suboptimal MMR uptake, social deprivation, high population density and the absence of a school-based immunisation service.

Control measures included:

- A catch-up MMR vaccination campaign in September at all the primary schools in the affected areas.
- Prompt follow-up of all reported measles cases by public health staff, including liaising with general practitioners, managing clusters of measles, arranging swabs for diagnosis, staffing vaccination clinics and advising on appropriate follow-up.
- Informing all Dublin GPs by letter and email of the measles outbreak and requesting opportunistic MMR vaccination of all children, including infants from 6 months of age.
- Providing information on the outbreak to hospitals, pharmacists and the Department of Education.
- Releasing multiple messages via print media and local and national radio informing the public of the outbreak and the benefits of MMR vaccination.

Changes to immunisation recommendations in response to the outbreak of measles in Europe

France

Source: [Weekly Epidemiological Record \(WER\)](#)

Children in childcare or in daily close contact with other children are recommended to receive the first MMR dose at the age of 9 months instead of 12 months.

All persons born after 1980 are recommended to have two doses of MMR vaccine (previous recommendation was one dose for adults born between 1980 and 1991).

Portugal

Source: [Media](#)

Recommendations for post-exposure prophylaxis revised to include use of monovalent measles vaccine for exposed children aged 6–8 months; revision also recommends immunoglobulin for exposed infants aged <1 year, immunocompromised patients and pregnant women. Portugal will reduce the recommended age for the first dose of MCV from 16 months to 12 months as of January 2012.

Spain

Source: [Weekly Epidemiological Record \(WER\)](#)

The national immunisation schedule was modified to recommend the first dose of MMR at the age of 12 months instead of 12–15 months as previously.

Sweden

Source: [Smittskyddsinstitutet \(Swedish Institute for Communicable Disease Control\)](#)

Families who travel abroad, including travel to other EU countries, are advised to vaccinate infants against measles from 9 months of age. When reaching 18 months of age (the recommended age for measles vaccination in Sweden) the child re-enters the 'routine' Swedish vaccination schedule and the dose given at 9 months does not contribute to the total number of recommended doses.

Other news

Measles disproportionately affects Roma

In Europe there are large variations in the incidence of measles among countries and also within population groups in the countries. This is caused by differences in measles vaccination uptake, both at the national level and between ethnic and socio-economic groups within countries. Marginalised groups less likely to be vaccinated. With a population of 10–12 million, Roma is the largest such marginalised and under-vaccinated group in Europe today. This situation was highlighted on 28–29 November 2011, when ECDC convened a meeting in Vienna on *Communicable Disease Prevention among Roma*. Ethnic Roma represent a diverse group in Europe with considerable linguistic, cultural, social and religious differences both within and among countries. Published research on the health of Roma is very limited. A review conducted for the meeting confirmed that Roma, as a group, are disproportionately affected by communicable diseases and that they are systematically less well protected against measles and other vaccine-preventable diseases.

Table 3: Recent measles outbreaks affecting the Roma population, EEA countries, 2011*

Country	Total number of cases	Percentage of Roma	Year
Bulgaria	24 409	About 90% [†]	2009–2011
Croatia	49 reported	41% (among “migrant” Roma)	2008
England (Irish Travellers)	51	100% of probable cases	2007
Germany	216 in Hamburg 72 in Lower Saxony	“Several” in Hamburg “Many” in Lower Saxony	2008–2009
Greece	171 reported	55%	2006
Greece	126	29% Bulgarian Roma; 33% Greek Roma	2010
Italy	449 cases reported	23%	2006–2007
Poland	214 reported	79%	2008–2009
Romania	17 laboratory confirmed cases	37.5% of laboratory-confirmed cases	2010
Romania	2072 cases notified	About 50%	2011

Sources: Mankertz et al., 2011; Pervanidou et al., 2010; Cohuet et al., 2007; Stanescu et al., 2010; Spadea et al., 2011; Orlikova et al., 2010; Stanescu et al., 2011; Rogalska et al., 2010; Kaic et al., 2008; Stefanoff, et al., 2010; Georgakopoulou, et al., 2006

The age distribution of measles cases among the Roma indicates that poor vaccine coverage is an ongoing problem (Pervanidou et al., 2010; Stanescu et al., 2011). In some cases, the median age of cases differs substantially between Roma and non-Roma, suggesting that routine vaccination is less effective at reaching the Roma population. For example, in Italy the median age among the non-Roma cases was 15 years, but among the Roma it was two years (Curtale et al., 2010). When non-immunised groups are geographically or socio-culturally concentrated, outbreaks are especially likely (Lopalco & Martin, 2010). There are several common explanations as to why non- (or less) immunised groups exist, including lack of access to health care, specific cultural or religious beliefs, concerns about vaccine safety and lack of perceived risk (Lopalco & Martin, 2010).

* This table is not complete. For a more detailed review including a list of outbreaks by population, see: Muscat, M. (2011). Who gets measles in Europe? *Journal of infectious diseases*, 204:S353-S365.

[†] These figures were reported by unpublished sources. Svetla Tsoлова, personal communication with the author of data from the National Centre for Infectious and Parasitic Diseases, 20 November 2011, and Niklas Danielsson, personal communication with the author, 19 November 2011.

Weekly Epidemiological Record on measles in Europe

Source: [Weekly Epidemiological Record \(WER\)](#)

The December 2 issue of WER covers the increased transmission of measles in Europe in 2011. The report demonstrates that transmission in the western part of the WHO European region is driving the epidemic. An editorial note to the article concludes: 'The increase in measles virus transmission in EUR [Europe] poses a serious challenge to achieving the regional measles elimination goal by 2015.'

Acknowledgements

ECDC would like to thank the Member States for reporting measles and other vaccine-preventable diseases in a timely manner in the TESSy database.

Related links

More information about measles is available on the ECDC website:

<http://ecdc.europa.eu/en/healthtopics/measles/Pages/index.aspx>

Information about vaccines and immunisation from the World Health Organization's Regional Office for Europe website is available at:

<http://www.euro.who.int/en/what-we-do/health-topics/communicable-diseases/measles-and-rubella>

Website for WHO CISID database:

<http://data.euro.who.int/cisid/>

Notes

- 1) The European Surveillance System (TESSy) uses a variable called 'date used for statistics', which is date chosen by the country for reporting purposes. Such date may indicate the onset of disease, date of diagnosis, date of notification, or date of laboratory confirmation.
- 2) Countries report on measles and other vaccine-preventable diseases to TESSy at their own convenience and they can amend already uploaded data retrospectively as more information becomes available. This means that the date of data retrieval from TESSy will have an impact on overall case numbers and that the number of cases for given geographical areas and time periods may differ between EMMO issues. The date of retrieval of data for this issue of EMMO was 29 November 2011.