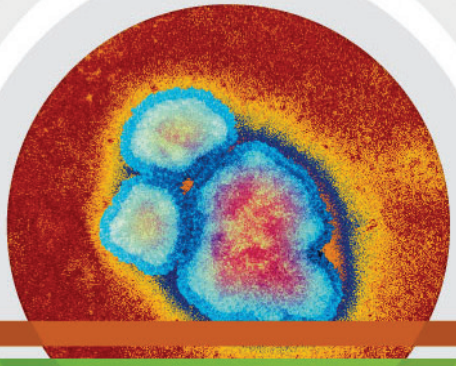


SURVEILLANCE REPORT

Measles and rubella monitoring

October 2012

Main developments

Measles and rubella are targeted for elimination in Europe by 2015. ECDC closely monitors progress towards interruption of endemic transmission of both diseases through enhanced surveillance and epidemic intelligence. Measles and rubella vaccinations are routinely delivered in the form of the measles-mumps-rubella (MMR) vaccine in Europe and the first of the two recommended doses is normally given during the second year of life.

Measles

- The 29 contributing EU and EEA countries reported 5 360 cases of measles from 1 January to 31 August 2012 and 8 547 cases during the last 12-month period from September 2011 to August 2012.
- Reporting was complete for the 12-month period, with the exception of Austria that did not report for September 2012.
- France, Italy, Romania, Spain and the United Kingdom accounted for 92% of the reported cases.
- The number of reported cases is substantially lower in 2012 compared to the same period in 2011, but the notification rate for the last 12-month period continues to exceed the elimination target.
- During the last 12 months, just nine countries reported less than one case of measles per million population and the aggregated notification rate for the EU/EEA countries was 16.8 cases per million.
- Of the cases reported in the last 12-month period for which vaccination status was available, 83% were unvaccinated.
- Twelve percent (1054) of the cases were under one year of age and of these, 99% were reported as being unvaccinated.
- There have been no measles-related deaths during the last 12 months but 10 cases were complicated by acute measles encephalitis.
- Measles transmission continued at European level but no new large outbreaks have been reported since the previous report.

Rubella

- 25 570 cases of rubella were reported from 1 January to 31 August 2012 by the 26 EU and EEA countries contributing to the enhanced surveillance for rubella.
- 30 128 cases were reported during the period September 2011 to August 2012.
- Poland and Romania accounted for 99% of all reported rubella cases in the 12-month period. Austria did not report for August.

Measles

Surveillance data

The enhanced measles surveillance data were retrieved from the European Surveillance System (TESSY) on 27 September 2012 and the analysis covers the 12-month period from 1 September 2011 to 31 August 2012. Twenty-nine countries reported case-based data for the entire period, with the exception of Austria that did not submit data for September.

The number of cases and notification rates for the past 12 months are shown in Table 1. Reported cases in 2012 are much lower than for the same period in 2011 and there was no increase in cases at the European level during the peak transmission season from February to June (Figure 1). The highest notification rate was among infants under one year of age (210.5 cases per 1 000 000 population), followed by children aged between one and four years (102.6 cases per 1 000 000 population) (Figure 2).

Vaccination status was known for 7 637 (89%) of the 8 547 reported cases and of these: 83% (6 331 cases) were unvaccinated; 13% (978) had received one dose of measles vaccine; 4% (303) had received two or more doses; and 0.3% (25) had received an unknown number of doses. The proportion of unvaccinated cases was high across all age groups, including those between one and four years old, the age group targeted by vaccination programmes (Figure 3).

Ten cases were complicated by acute measles encephalitis over the last 12 months but there were no measles-related deaths reported.

Figure 1. Number of measles cases in 2011 and 2012 and number of EU/EEA countries reporting by month in 2012

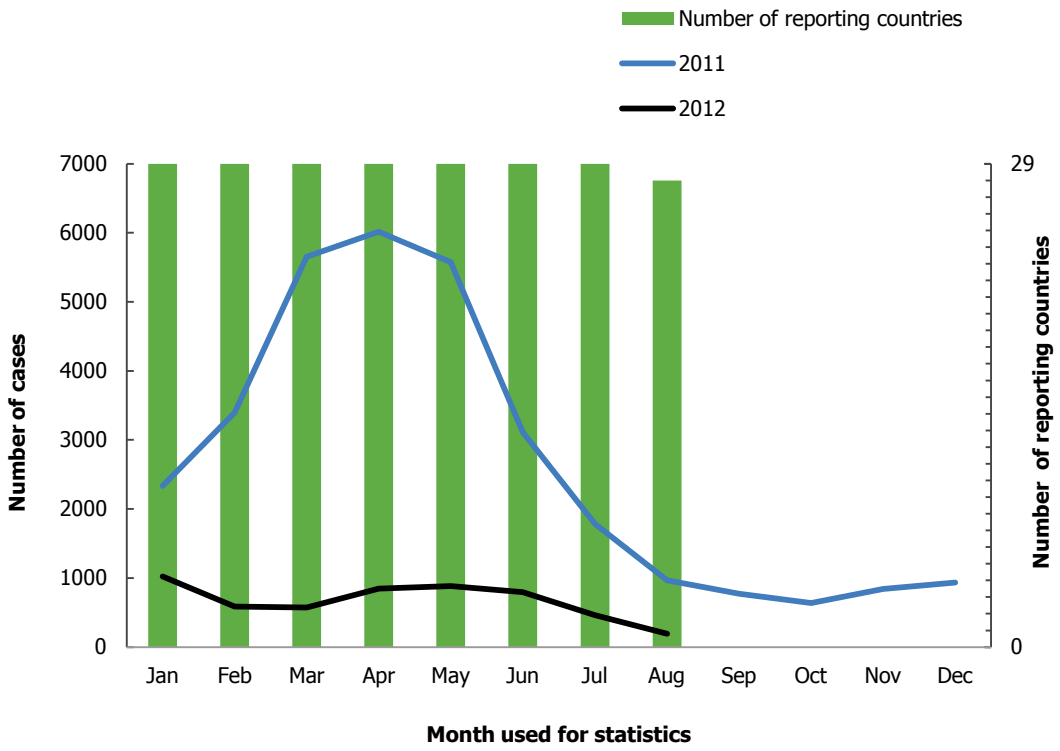


Table 1. Number of measles cases by month and notifications rates (cases per million), September 2011–August 2012, EU/EEA countries

	2011				2012									
Country	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total cases	Cases per million
Austria	3	1	12	6	3	1	0	2	2	4	0	NR	34	4.0
Belgium	10	3	12	2	6	6	3	9	4	9	5	0	69	6.4
Bulgaria	1	0	1	0	0	0	0	0	0	0	0	1	3	0.4
Cyprus	0	0	0	0	0	1	0	0	0	0	0	0	1	1.2
Czech Republic	0	0	0	1	3	2	0	2	7	4	1	1	21	2.0
Denmark	0	0	0	0	1	0	0	0	1	0	0	0	2	0.4
Estonia	0	0	0	0	0	0	0	2	1	0	0	0	3	2.2
Finland	2	0	0	0	1	0	0	3	0	0	0	0	6	1.1
France	80	71	100	126	106	123	140	110	103	89	75	29	1152	17.7
Germany	22	16	21	7	4	18	7	19	56	16	18	1	205	2.5
Greece	0	0	0	0	0	0	0	0	1	1	1	0	3	0.3
Hungary	0	0	0	5	0	1	0	1	0	0	0	0	7	0.7
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Ireland	61	27	15	3	3	5	5	3	53	19	4	3	201	44.9
Italy	99	61	56	54	62	122	88	99	105	56	26	4	832	13.7
Latvia	0	0	0	0	0	2	1	0	0	0	0	0	3	1.3
Lithuania	0	0	0	0	0	0	0	2	0	0	0	0	2	0.6
Luxembourg	1	0	0	0	0	0	1	0	0	1	0	0	3	5.9
Malta	1	0	0	0	0	0	0	0	0	0	0	0	1	2.4
Netherlands	0	0	0	0	0	0	1	4	1	1	2	1	10	0.6
Norway	2	1	0	0	0	0	0	1	0	0	0	2	6	1.2
Poland	5	1	0	0	1	1	1	13	11	9	4	6	52	1.4
Portugal	0	0	0	1	1	0	0	1	4	0	0	1	8	0.8
Romania	247	214	357	592	729	110	85	317	186	338	157	77	3409	158.8
Slovakia	0	0	0	0	0	0	0	0	0	0	0	1	1	0.2
Slovenia	0	0	0	0	1	0	1	0	0	0	0	0	2	1
Spain	185	168	203	108	60	69	88	64	56	53	20	3	1077	23.3
Sweden	0	0	4	0	2	14	4	4	1	0	1	1	31	3.3
United Kingdom	54	73	63	29	39	111	148	191	290	194	149	62	1403	22.5
Total	**773**	**636**	**844**	**934**	**1022**	**586**	**573**	**847**	**882**	**794**	**463**	**193**	**8547**	**16.8**

nr: data not reported.

Notification rates were calculated using the most recent population estimates available from Eurostat (2011).
Countries with a notification rate ≥ 1 per million population are highlighted in green. The elimination target is <1 case per million population.
For countries that did not report data for all 12 months, notification rates might be underestimated.
All confirmed, probable, possible or unknown cases as defined by the EU 2008 case definitions are included.

For tables relating to number of measles cases in previous years, see:

http://ecdc.europa.eu/EN/HEALTHTOPICS/MEASLES/EPIDEMIOLOGICAL_DATA/Pages/annual_epidemiological_reports.aspx

Figure 2. Measles notification rates (cases per million) by age group, September 2011–August 2012, EU/EEA countries (n=8 470 cases with known age)

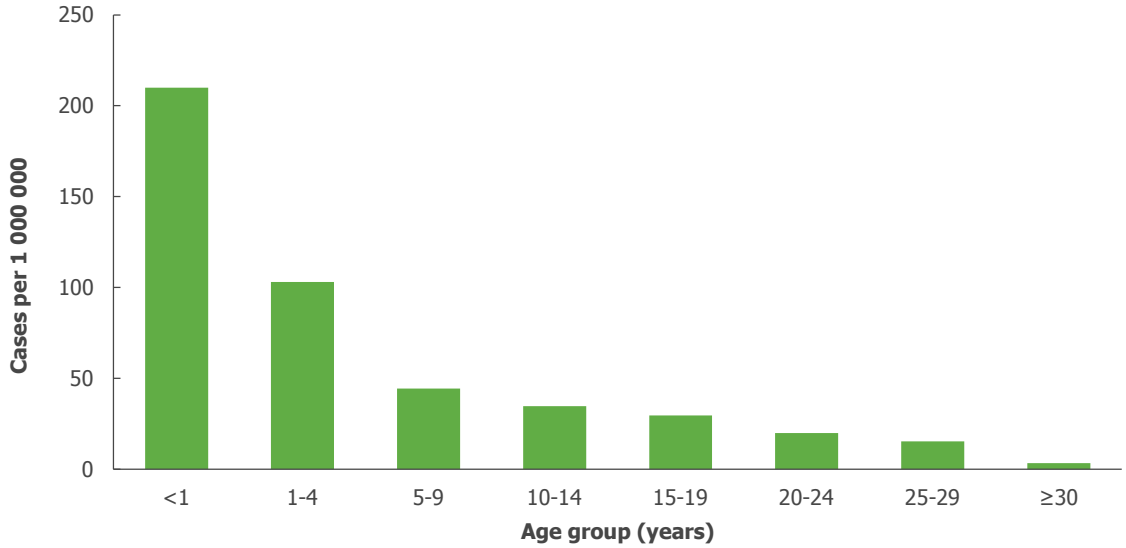


Figure 3. Proportion of vaccination status among measles cases by age group, September 2011–August 2012, EU/EEA countries (n=8 470 cases with known age)

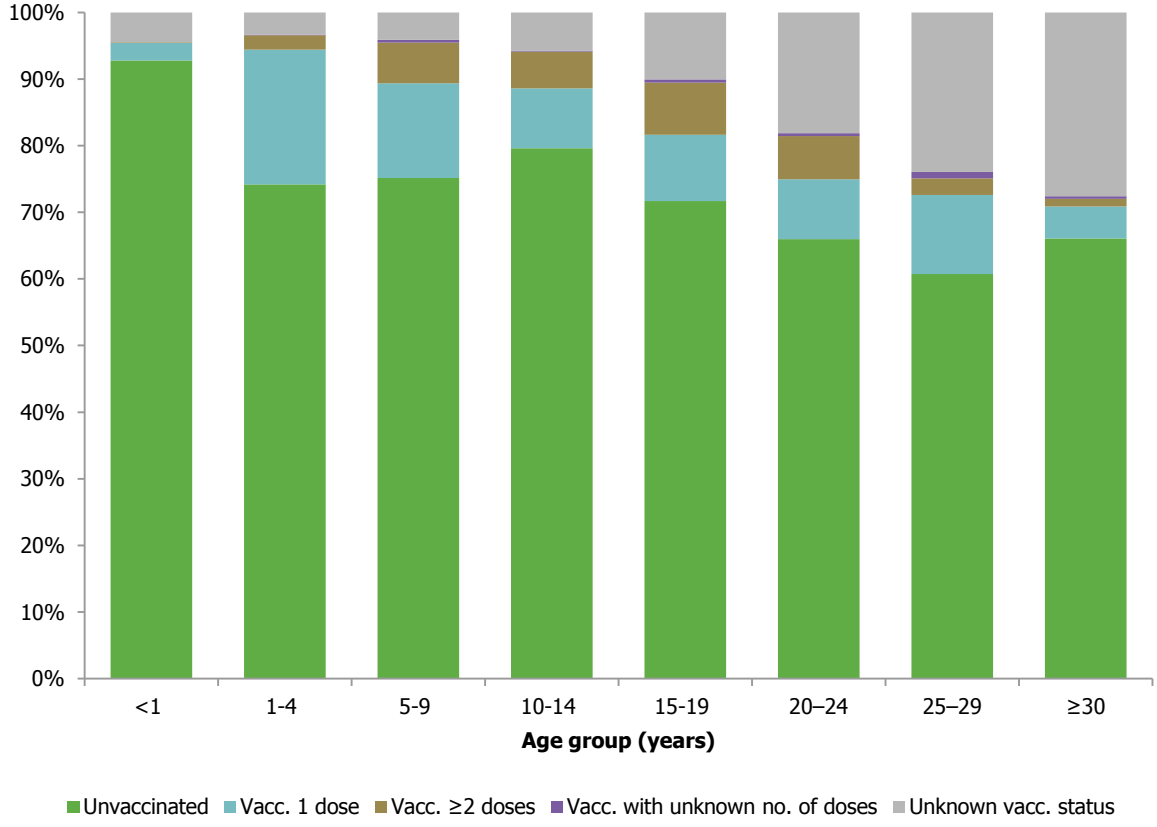
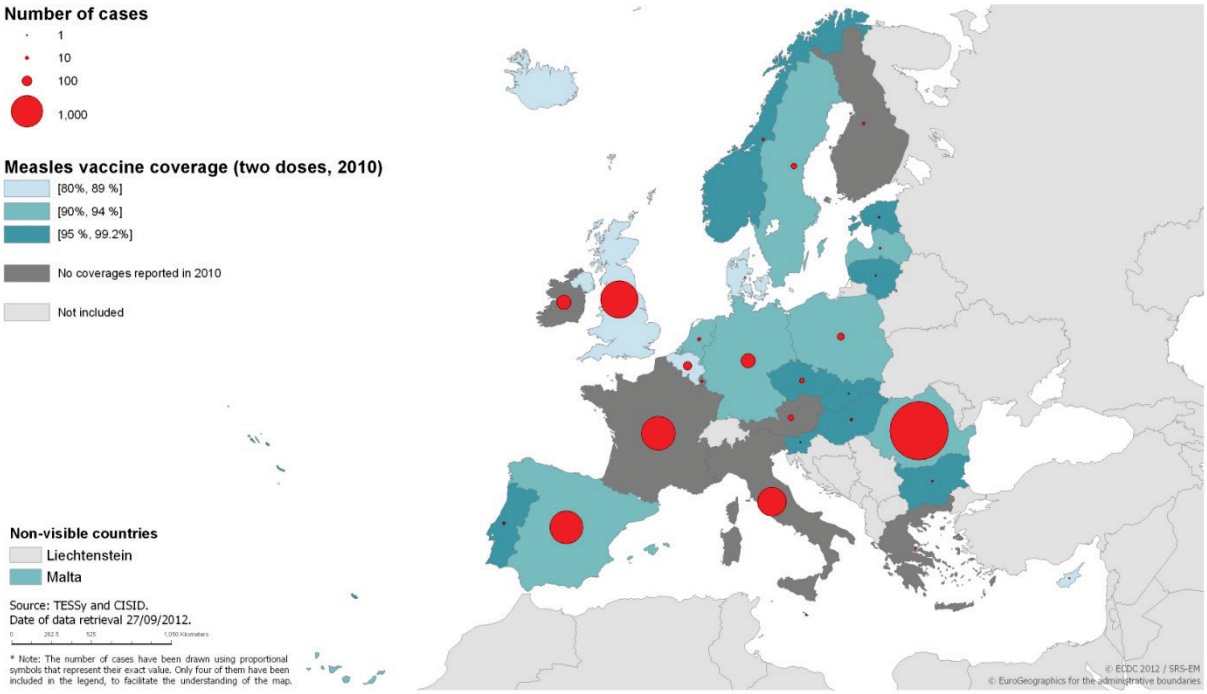
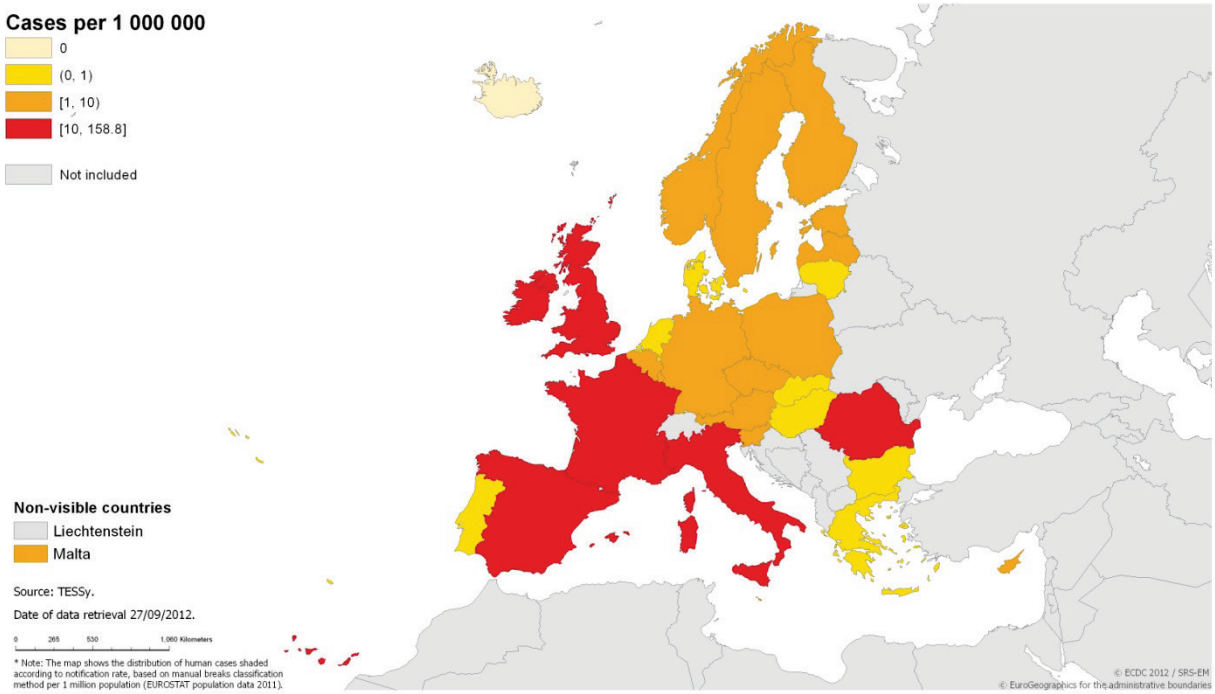


Figure 4. Number of measles cases by country, September 2011–August 2012 (n=8 547), and two-dose measles vaccine coverage* (2010 CISID), EU/EEA countries



** Coverage figures (%) are official national figures reported via the annual WHO/UNICEF Joint Reporting Form and WHO Regional Office for Europe reports.*

Figure 5. Measles notification rates (cases per million) by country, September 2011–August 2012, EU/EEA countries (n=8 547)



For maps relating to measles cases and notification rates in 2011, see:
http://ecdc.europa.eu/en/activities/surveillance/euvac/data/Pages/measles_maps.aspx

Rubella

Enhanced surveillance data

The enhanced rubella surveillance data were retrieved from the European Surveillance System (TESSy) on 27 September 2012 and the analysis covers the 12-month period from 1 September 2011 to 31 August 2012. Twenty-two countries reported case-based data for the entire period, Austria did not report for August. Belgium, France and Germany do not report population based rubella data. An overview of the number of cases and notification rates in the past 12 months is shown in Table 2. Poland and Romania accounted for 99% of the reported cases.

Table 2. Number of rubella cases by month and notifications rates (cases per million), September 2011–August 2012, EU/EEA countries

	2011				2012									
Country	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total cases	Cases per million
Austria	0	0	1	0	2	1	0	1	2	0	0	0	7	0.8
Belgium	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-
Bulgaria	2	0	1	1	1	2	4	1	2	2	1	0	17	2.3
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Czech Republic	0	0	2	0	2	0	2	1	1	0	0	0	8	0.8
Denmark	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Estonia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Finland	0	1	0	0	0	0	0	0	0	0	0	0	1	0.2
France	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-
Germany	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Hungary	0	0	1	0	0	1	1	4	0	0	0	0	7	0.7
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Ireland	0	0	0	0	0	0	2	0	5	2	1	3	13	2.9
Italy	3	1	4	0	NR	NR	NR	NR	NR	NR	NR	NR	8	0.1
Latvia	0	1	0	0	0	0	0	0	3	2	0	2	8	3.6
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Luxembourg	0	0	0	0	0	0	1	0	0	0	0	0	1	2.0
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Netherlands	0	0	0	0	0	0	0	1	0	0	0	0	1	0.1
Norway	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2
Poland	161	160	205	186	174	279	695	1071	1027	731	405	211	5305	138.9
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Romania	45	276	1595	1905	2806	6965	7870	1874	899	299	34	9	24577	1145.1
Slovakia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Slovenia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Spain	1	1	0	2	4	12	15	12	6	2	2	0	57	1.2
Sweden	0	2	1	0	0	0	0	1	2	15	29	3	53	5.6
United Kingdom	0	0	0	0	3	19	17	9	8	4	4	0	64	1.0
Total	**212**	**442**	**1810**	**2094**	**2992**	**7280**	**8607**	**2975**	**1955**	**1057**	**476**	**228**	**30128**	**86.1**

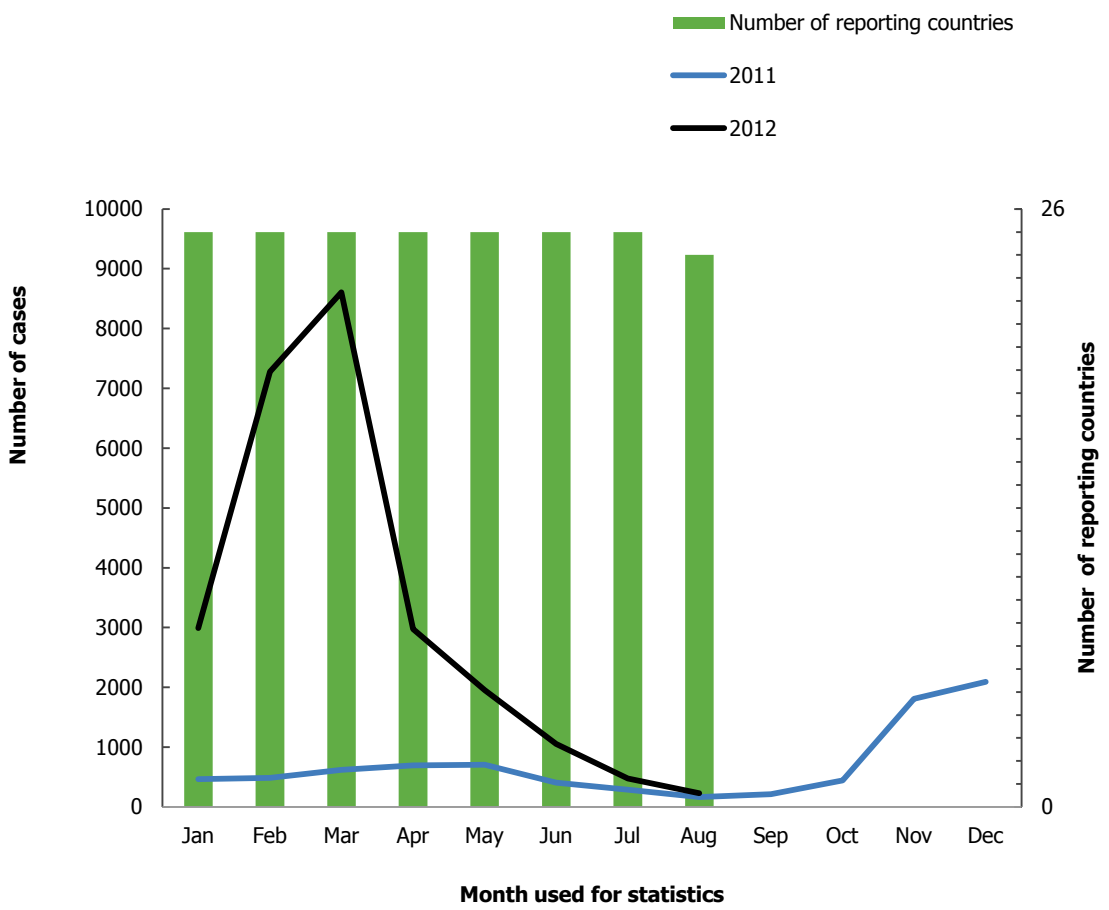
NR: data not reported.

Notification rates were calculated using the most recent population estimates available from Eurostat (2011).
Countries with a notification rate ≥ 1 per million population are highlighted in green.
For countries that did not report data for all 12 months, notification rates might be underestimated.
All confirmed, probable, possible or unknown cases as defined by the EU 2008 case definitions are included.

For tables relating to number of rubella cases in previous years, see:

http://ecdc.europa.eu/en/activities/surveillance/euvac/data/Pages/status-rubella-reporting.aspx

Figure 6. Number of rubella cases in 2011 and 2012 and number of countries reporting in 2012, by month, EU/EEA countries



Epidemic intelligence

Measles - United Kingdom (UK)

Source: Health Protection Report, volume 6 number 34, 24 August 2012

The Health Protection Agency (HPA) UK reports that the number of laboratory confirmed cases of measles in the UK has doubled in 2012 compared to 2011. By the end of June 2012, 964 cases had been reported compared to 497 in the same period of 2011. Measles outbreaks have been linked to events open to travelling communities. The increase in measles cases is being handled as a Level 3 Outbreak by HPA because of the potential for national spread.

Rubella - United Kingdom

Source: Health protection report, volume 6 number 34, 24 August 2012

The number of cases of confirmed rubella in the UK so far in 2012 (57) has been the highest in nine years. In one large cluster, the index case arrived from Romania where there has been a large outbreak ongoing since 2011, and in a second cluster unvaccinated siblings returning from a boarding school in France caused limited secondary transmission within the local community.

Country report — United Kingdom

Measles outbreak in a nursery in north-west England, August 2012

Hungerford D[1], Cleary P[1], Welfare W[2], and Lighton L[2].

1. North West Regional Epidemiology Unit, Health Protection Agency, England

2. Greater Manchester Health Protection Unit, Health Protection Agency, England

Background

England saw the introduction of the combined measles-mumps and rubella vaccine (MMR) in 1988 and the success of the vaccination has meant that confirmed cases are relatively rare. The vaccine is part of the routine immunisation schedule in England with the first dose being given from 13 months of age and a second dose normally offered between three years four months to five years of age. Uptake has varied over the years reaching a low of 80% coverage at 24 months of age in 2003/2004 and reaching a peak of approximately 92% in 2011[*†].

Confirmed cases of measles in England were as low as approximately 100 cases per year at the turn of the 21st century but have risen over the last twelve years. In 2008 it reached a peak of 1 330 cases, and after a drop in 2010 the number of cases rose to 1 067 in 2011.

Since January 2012 there has been an outbreak of measles in Merseyside, North West England, which has a population of approximately 1.4 million people. The first cases were seen in January 2012 and by the end of June there had been 391 laboratory confirmed cases of measles in North West England, 359 of which were in Merseyside. Children under five years of age and young adults over 15 made up the majority of cases and cases were predominately either too young for routine vaccination i.e. <13 months old or were unvaccinated[‡]. Although most of the cases were sporadic with a few outbreaks in nurseries and family clusters, health care settings have been identified by descriptive epidemiology and a case control study as a potential exposure source early in the outbreak.

The strain identified in many cases in Merseyside is B3, which is the predominant strain found on the African continent and distinct from strains identified in other parts of England during the same time frame[§]. As of the end of June a few sporadic cases of the measles virus genotype B3 had been identified in other parts of North West England but there were no outbreaks. However, in July 2012 there was an outbreak of measles B3 strain at a nursery in the metropolitan borough of Wigan, which borders Merseyside.

Outbreak in a nursery in Wigan, North-West England

The index case was a nine month old girl who had travelled during the onset period to visit family and friends in Merseyside and had measles illness with onset on July 16 2012. This was confirmed by PCR and characterised as B3 strain, the same as that identified in the Merseyside outbreak. A total of 17 confirmed and one probable case of measles were identified in the outbreak which focused on a nursery in Wigan; 13 cases were under one year of age. All cases were unvaccinated or under the age for routine immunisation.

The nursery had places for up to 123 children cared for in five groups: <9 months of age, 10 to 15 months, 16 to 24 months, two to three years, and three to four years. There were around 20 children in total in the two youngest groups, most of whom were below the usual age for MMR vaccination in England. Children aged two to four years were housed in a separate building from younger children. The groups came together at the entrance into the nursery for morning break, lunch time and at home time.

Following identification of the index case, letters were sent by the local health authority (Ashton, Wigan and Leigh Primary Care Trust (PCT)) to general medical practitioners and parents of children attending the nursery to alert them about the case and advising routine MMR vaccination. Targeted immunisation of children who had attended nursery was not thought to be necessary as it was believed that the index case had not attended nursery whilst

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[*] Health Protection Agency. Completed primary courses at two years of age: England and Wales, 1966-1977, England only 1978 onwards. London: HPA. 21 Oct 2011. Available at: www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733819251.

[†] Health Protection Agency. Quarterly Vaccine Coverage Data. Available at: www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1211441442288

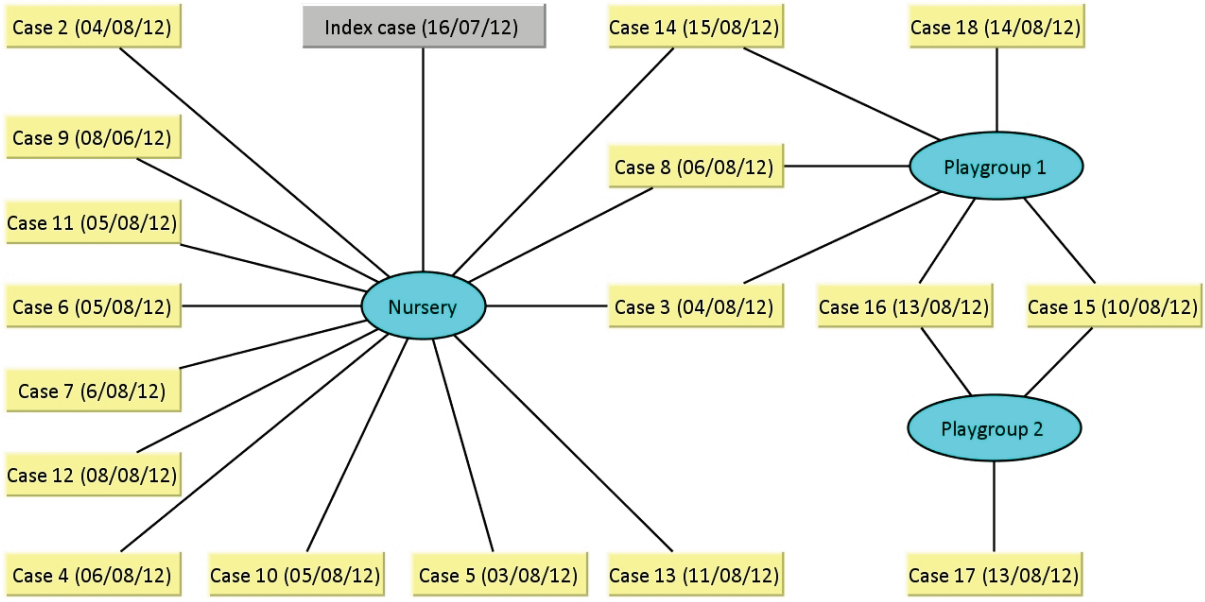
[‡] Vivancos R et al. An ongoing large outbreak of measles in Merseyside, England, January to June 2012. Eurosurveillance. 2012, 17, 29, Article 5.

[§] World Health Organization. Measles Virus Nomenclature Update: 2012. Weekly Epidemiological Record. 2012, 87, 9, 73-80.

being infectious. No further cases were identified until 6 August when the Health Protection Agency (HPA) was informed of two probable cases in children attending the nursery. An outbreak control team (OCT) was convened on 6 August, with members from the PCT and the HPA. It was agreed that MMR immunisation should be offered to all children attending the nursery who were over six months of age and who had not already had two doses of MMR. On 9 August, 54 children were immunised, 43 children were already fully vaccinated (two doses MMR), four children were on holiday and three children deferred. The nursery was reminded to exclude any children with a raised temperature.

On 10 August, one of the early confirmed cases was identified as having also attended a separate playgroup in Wigan on 3 August whilst infectious. A subsequent case was identified as having attended the playgroup but not the nursery. In response, the playgroup closed for two weeks to allow children to be vaccinated or to develop symptoms prior to the playgroup re-opening. Children over six months who attended the playgroup and who had not had any doses of MMR were offered immunisation.

Figure 1. Case network diagram, onset of illness is displayed in brackets.



Up to October 2012, there have been no further cases associated with the nursery or playgroup, leaving a total of 17 confirmed cases and one probable case. The last confirmed cases linked to these settings had an onset date of 15 August (Figure 1). Uptake of MMR among the general population of Wigan is good, with approximately 94% of children having their first MMR by their second birthday in 2011[*]. It is believed that a number of timely actions further helped contain the spread of the outbreak outside of these settings, particularly among children below the usual age for MMR. Clearly defining roles at the start of the OCT helped organisations to work well together and rapidly, and the nursery and playgroup staff were engaged and receptive to recommendations from the OCT. In an outbreak, communications are key, so clear and concise messages were produced for parents, health care workers, nurseries and childcare facilities in the area and the media. Social networking sites were also used to maximise dissemination of guidance to parents. Critically, the decision to immunise close family and nursery contacts is likely to have significantly reduced the severity of this outbreak and the spread to other localities.

Following the outbreak the OCT recommended that in future a full risk assessment should be undertaken prior to closure of services. There was concern that because the nursery and playgroup were closed, children who would normally have attended these services would be displaced and might attend other play or care facilities, increasing the risk of wider transmission.

ECDC welcomes reports on measles and rubella outbreaks, disease epidemiology and new interventions for measles and rubella elimination. Reports and updates on surveillance and epidemiology of congenital rubella infections are of particular interest. Authors should contact Niklas Danielsson at: *niklas.danielsson@ecdc.europa.eu*

[*] Health Protection Agency. Quarterly Vaccine Coverage Data. Available at: www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1211441442288

Publications

US states make opting out of vaccinations harder

Sources: Nature 5 October 2012
Scientific American 6 October 2012 (reprint)

An article in Nature of 5 October presents the background to why three US states, California, Washington and Vermont, have introduced legislation that requires parents who want their children to opt out of the vaccination programme to demonstrate that they have received factual information about the risks and benefits of vaccination from a health-care practitioner or the state's health department. The reasons for the new legislation include a steady increase in non-religious exemptions from vaccinations and a perception that some parents request exemption for convenience; 'It was easier to sign the exemption form than to track down records or to get your kid to an appointment.' All US states allow exemption from vaccination on religious grounds but many also recognise personal beliefs. Studies in the US have found an association between the existence of personal-belief exemption and the ease of getting them, and reduced vaccination rates and increased incidence of vaccine preventable disease.

Medical exemptions to school immunization requirements in the United States—Association of State Policies with Medical Exemption Rates (2004–2011)

Stadlin S, Bednarczyk A, Omer S; Medical Exemptions to School Immunization Requirements in the United States—Association of State

Policies with Medical Exemption Rates (2004–2011) JID 2012:206 (1 October)

The authors evaluated counts and rates of state level medical exemptions to kindergarten entry requirements for vaccinations over seven school years (2004–2005 through 2010–2011) and found an association between medical exemption criteria and the proportion of children who were exempted. In states with easier medical exemption criteria, medical exemption rates were significantly higher (adjusted incidence rate ratio: 6.4 [95% confidence interval: 2.7–15.6]). They conclude that the appropriate use of medical exemptions is important to maintaining herd immunity. It is herd immunity which protects children who cannot be vaccinated because of medical conditions and adverse reactions to vaccination. 'Medical exemption rates need to be monitored and continuously evaluated to ensure that medical exemptions are not granted solely because they are easier to obtain than other types of exemptions.'

Useful links

More information about measles and rubella is available on the ECDC website:

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

http://ecdc.europa.eu/EN/HEALTHTOPICS/RUBELLA/Pages/index.aspx

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

More information on the surveillance of vaccine-preventable diseases in the European Union is available from the EUVAC-Net website.

Notes

1) The European Surveillance System (TESSy) reports 'date used for statistics', which is a date chosen by the country for reporting purposes. Such date may indicate onset of disease, date of diagnosis, date of notification, or date of laboratory confirmation.

2) Countries report on measles, rubella and other vaccine-preventable diseases to the European Surveillance System at their own convenience. This means that the date of retrieval can influence the data presented in this report. For this reason, the date of data retrieval is indicated for each issue. For this issue, measles data and rubella data were retrieved on 27 September 2012Later retrievals of data may result in slightly different numbers as countries have the possibility to update data in the European Surveillance System retrospectively.

3) Starting with the September 2012 issue ECDC has been reporting measles and rubella notification rates per one million population and not as previously per 100 000 population. The reason is that the WHO incidence indicator for elimination is number of confirmed cases per one million population per year. The elimination target for both measles and rubella for Europe is less than one case per million population and year. Read more about the elimination verification process in: Surveillance Guidelines for Measles, Rubella and Congenital Rubella Syndrome in the WHO European Region, and Eliminating Measles and Rubella, Framework for the Elimination Process in the WHO European Region