



SURVEILLANCE REPORT

Measles and rubella monitoring

June 2013

Main developments

Measles

- The 30 contributing countries (29 EU/EEA countries and Croatia) reported 8 586 cases of measles during the last 12-month period (May 2012 to April 2013).
- The Netherlands did not report data between February and April 2013; Ireland, Italy, and Luxembourg did not report data for April 2013.
- France, Germany, Italy, Romania, Spain and the United Kingdom accounted for 95% of the cases in the last 12-month period.
- Fourteen countries met the elimination target of less than one case of measles per million population during the last 12 months.
- Sixty-nine per cent of the cases had a positive result in a measles laboratory test (serology, virus detection, or isolation).
- Of the 8 277 cases for which information on vaccination status was available, 81% were unvaccinated. In the target group for routine childhood MMR vaccination (1–4-year-olds), 76% of the cases were unvaccinated.
- One measles-related death was reported during the period May 2012–April 2013, and five cases were complicated by acute measles encephalitis.
- Epidemic intelligence reports:
 - The outbreak in Wales (United Kingdom) is slowing down.
 - An outbreak of more than 200 cases is reported from Munich, Germany.
 - There is an outbreak of as-of-yet-unknown size reported from Bolzano, Italy.

Rubella

- The 27 EU/EEA countries which contribute to enhanced rubella surveillance reported a total of 10 002 cases during the last 12-month period between May 2012 and April 2013. Of the 27 contributing countries, 22 reported data for the entire reporting period.
- Croatia only recently started reporting to ECDC and their data include January to April 2013. Italy did not report data for any of the months in the 12-month surveillance period. Ireland and Luxembourg did not report data for April 2013, the Netherlands did not report data for February to April 2013, and Poland did not report data for March and April 2013.
- Five percent of the cases had a positive result in a rubella laboratory test (serology, virus detection, or isolation).
- Poland and Romania accounted for 99% of all reported rubella cases in the 12-month period. Romania has reported an average of eight cases per month since August 2012, indicating that the nationwide epidemic that affected more than 20 000 people is over.
- Poland is experiencing a nationwide rubella epidemic and has reported over 95% of all rubella cases in the EU/EEA since August 2012. The highest notification has been among adolescents aged 15–19 years.
- Epidemic intelligence:
 - The rubella epidemic in Poland continues with approximately 30 000 cases reported so far. Two babies were born with congenital rubella syndrome as a result of their mothers becoming infected during pregnancy.

Measles

Surveillance data

The enhanced measles surveillance data were retrieved from The European Surveillance System (TESSy) on 27 May 2013. The analysis covered the 12-month period from May 2012 to April 2013. All the 30 contributing countries (29 EU/EEA countries and Croatia) reported case-based data for the period. Data were missing for four months (November, December, January, April) of the 12-month reporting period for Luxembourg, while the Netherlands did not report data for February, March and April 2013; Ireland and Italy did not report data for April 2013.

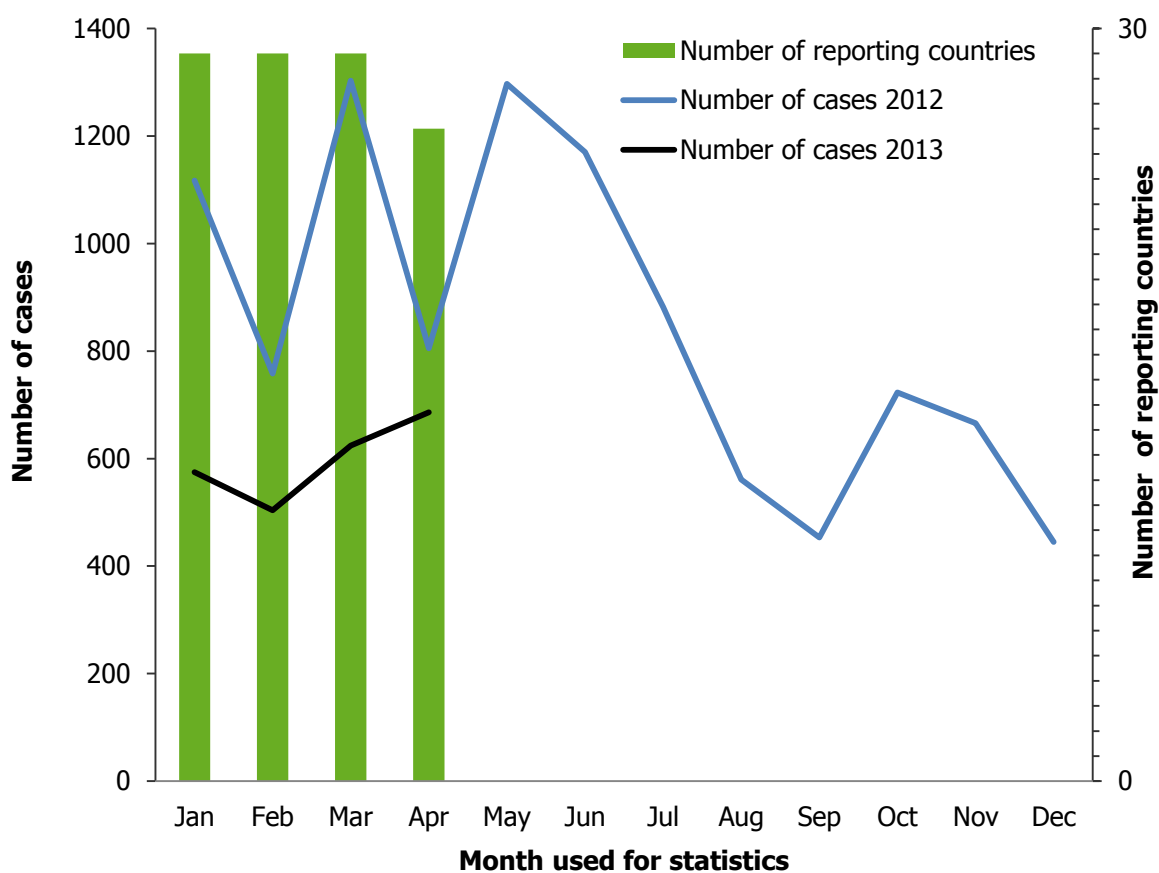
The number of cases and notification rates for the past 12 months are shown in Table 1. During the period May 2012 to April 2013, 8 586 cases of measles were reported (Figure 1). The highest notification rate was among infants under one year of age (230.1 cases per million population), followed by children aged between one and four years (105.9 cases per million population, Figure 2).

Sixty-nine percent of the cases had a positive result in a measles laboratory test (serology, virus detection or isolation), but there are large variations in laboratory confirmation rates between countries.

Vaccination status was known for 8 277 (96%) of the 8 586 reported cases. Of these, 81% (6 720 cases) were unvaccinated, 12.5% (1 040) had received one dose of measles vaccine, 2.9% (243) had received two or more doses, and 3.3% (274) had received an unknown number of doses. The proportion of unvaccinated cases was high across all age groups (Figure 3). Among the 1–4-year-olds, which is the age group targeted by routine childhood vaccination programmes, 76% of the cases were unvaccinated.

Over the last 12 months, five cases were complicated by acute measles encephalitis.

One measles-related death due to pneumonia was reported in an unvaccinated 36-year old adult with laboratory-confirmed measles infection.

Figure 1. Number of measles cases in 2012 and 2013 and number of European countries reporting, by month**Table 1.** Number of measles cases by month and notifications rates (cases per million), May 2012–April 2013, EU/EEA countries and Croatia

Country	2012								2013				Total cases	Lab positive	Cases per million
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
Austria	2	4	1	3	1	2	0	0	4	8	8	11	44	23	4.2
Belgium	30	17	11	3	4	4	6	4	4	1	7	2	93	21	9.0
Bulgaria	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0.1
Croatia	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0.5
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Czech Republic	7	4	1	2	1	0	0	0	0	3	3	1	22	22	2.2
Denmark	1	0	0	0	0	0	0	0	3	0	7	3	14	10	2.0
Estonia	1	0	0	0	0	0	0	1	0	0	1	1	4	4	3.7
Finland	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0.7
France	103	92	75	31	10	25	27	17	26	22	23	46	497	222	8.6
Germany	56	17	19	11	3	3	5	6	9	9	45	136	319	229	2.5
Greece	1	1	1	0	0	0	0	0	2	1	0	0	6	6	0.5
Hungary	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0.2
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Ireland	53	18	3	2	9	9	1	0	1	5	0	NR	101	24	23.0
Italy	105	59	28	6	13	74	11	21	31	55	20	NR	423	179	8.6
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Lithuania	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0.6
Luxembourg	0	1	0	0	0	0	NR	NR	NR	0	0	NR	1	1	2.0
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0

Country	2012								2013				Total cases	Lab positive	Cases per million
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
Netherlands	0	1	2	2	0	0	0	0	0	NR	NR	NR	5	4	0.5
Norway	0	0	0	2	1	0	0	0	0	0	1	0	4	4	1.0
Poland	11	9	4	6	1	2	4	8	4	8	8	21	86	51	2.1
Portugal	4	0	0	1	0	0	0	0	0	0	0	1	6	5	0.6
Romania	620	608	495	267	182	371	336	269	208	105	133	64	3658	1933	170.0
Slovakia	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0.0
Slovenia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Spain	86	60	35	12	5	10	3	3	5	15	9	12	255	186	5.5
Sweden	1	0	1	1	1	1	0	1	4	8	9	1	28	27	3.3
United Kingdom	216	278	206	210	221	222	273	115	273	264	349	386	3013	3012	54.7
Total	1297	1170	882	561	453	723	666	445	575	504	624	686	8586	5966	14.0

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 per year are highlighted in green. Progress toward elimination is measured against meeting the incidence target of less than one confirmed case per million population per year, excluding cases confirmed as imported.

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.

Cases were defined laboratory positive if at least one of the following variables is reported as positive: serologic test for IgG, serologic test for IgM, virus detection or isolation.

For tables relating to the 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, May 2012 to April 2013, EU/EEA countries and Croatia (N=8 530 cases with known age)

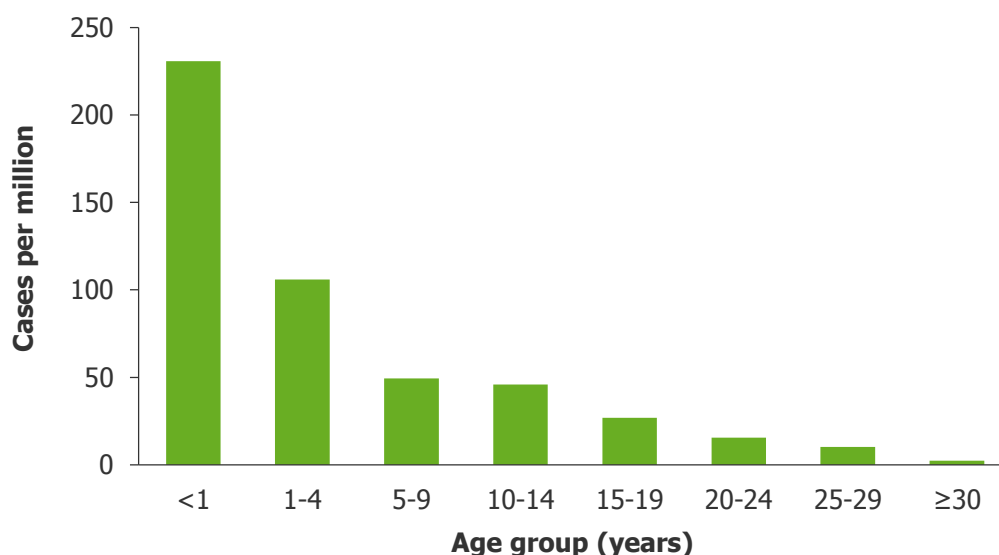


Figure 3. Proportion of vaccination status among measles cases by age group, May 2012 to April 2013, EU/EEA countries and Croatia (N=8 277 cases with known age and vaccination status)

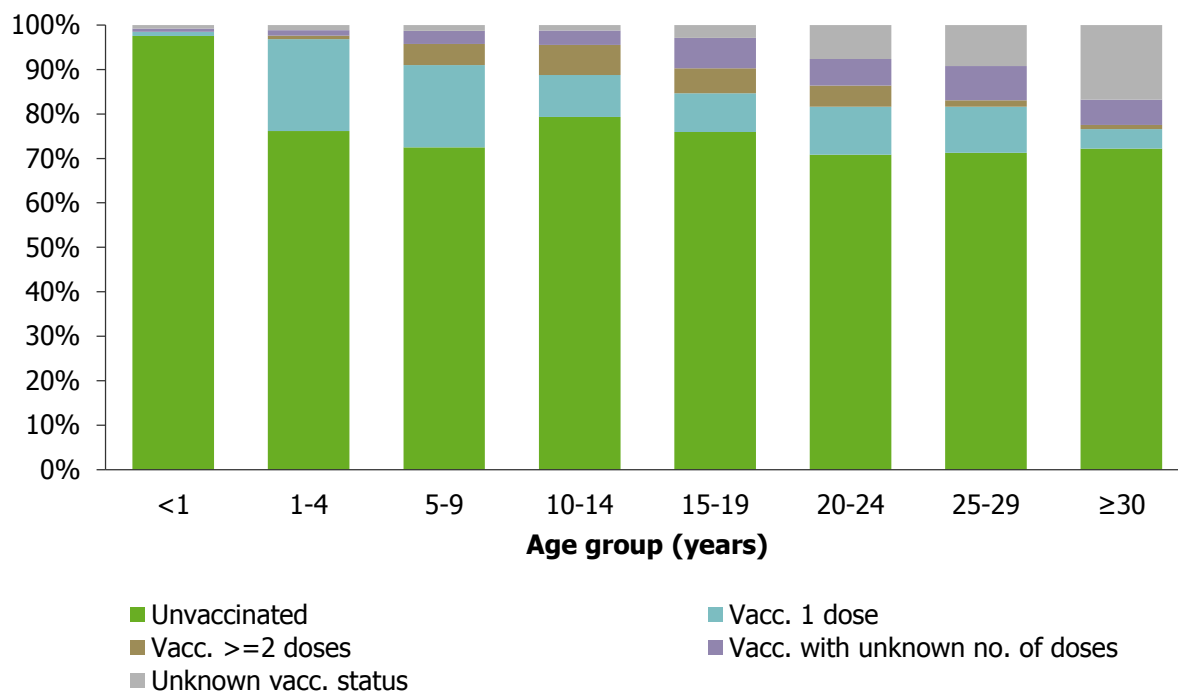
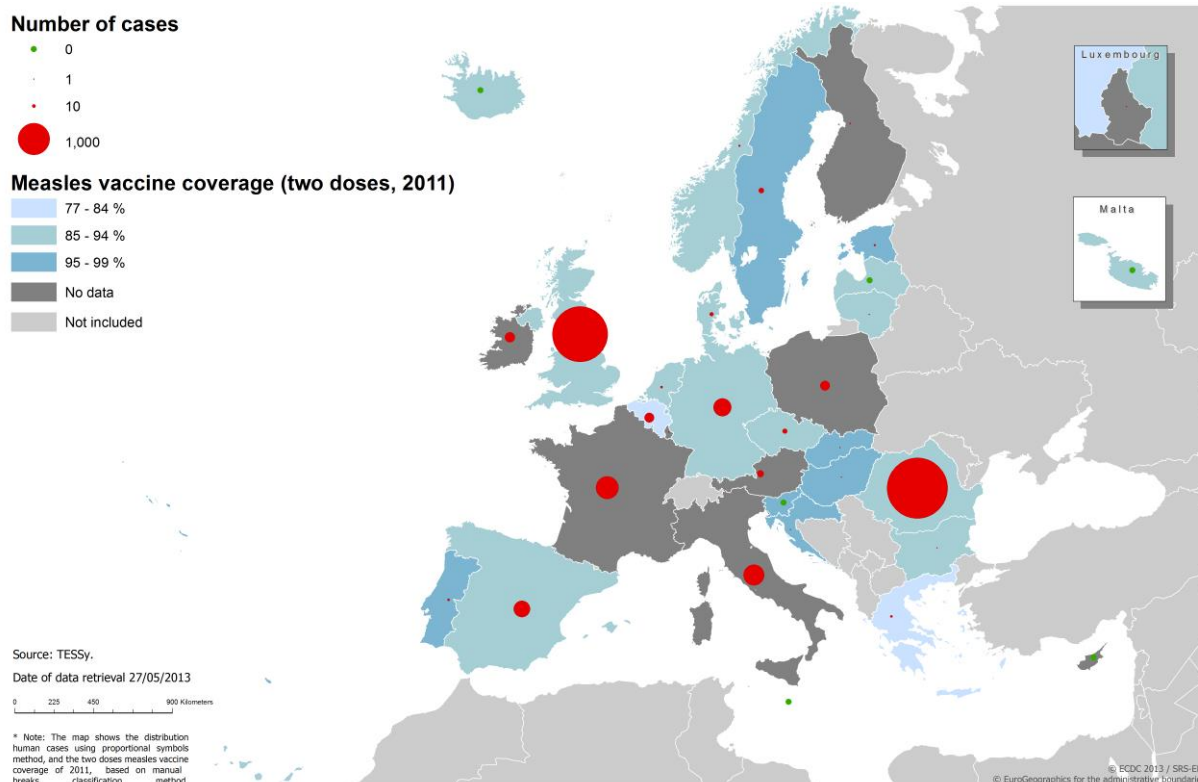
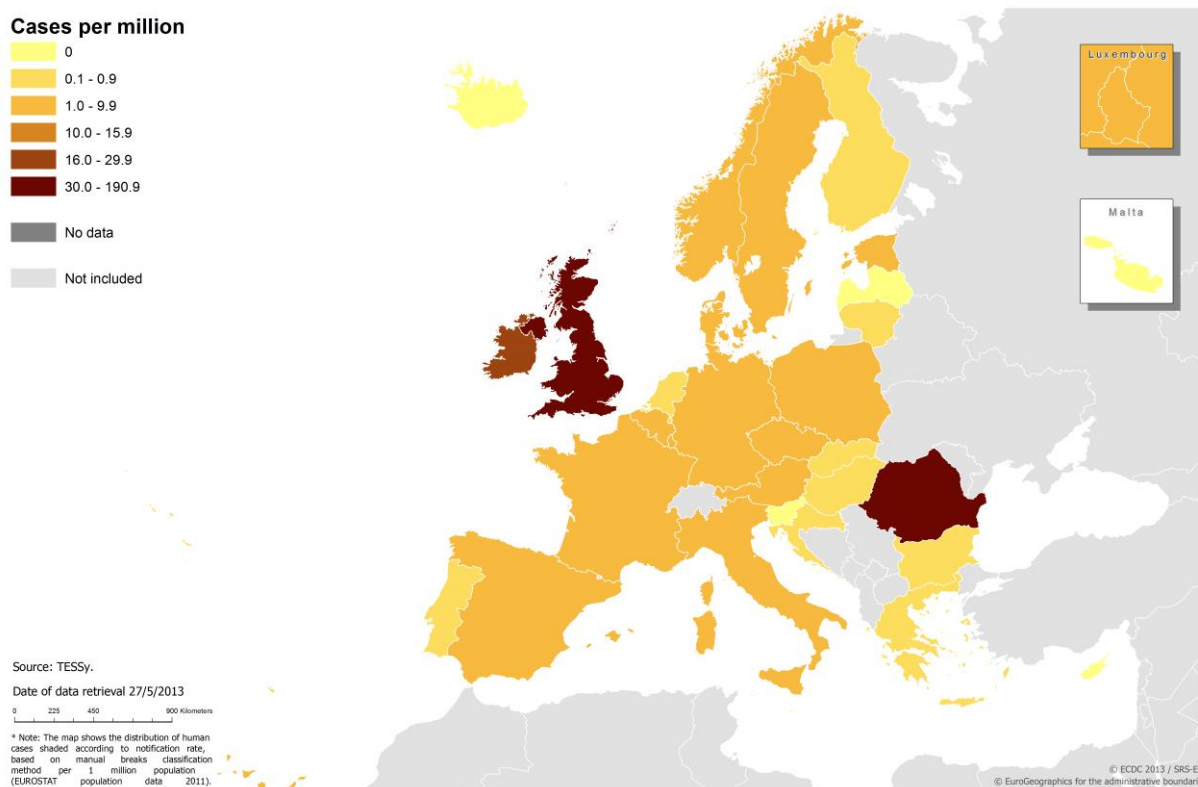


Figure 4. Number of measles cases by country, May 2012–April 2013, EU/EEA countries (N=8 586), and two-dose measles vaccine coverage* (2011 CISID), EU/EEA countries and Croatia



* 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, May 2012–April 2013, EU/EEA countries and Croatia (N=8 586)



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 30 April 2013. The analysis covers the 12-month period between May 2012 and April 2013.

Of the 27 contributing countries, 22 reported data for the entire reporting period. Croatia started reporting to ECDC only recently and its data covers the period from January to April 2013. Italy did not report data for any of the months in the 12-month surveillance period and were excluded from the analysis. Ireland and Luxembourg did not report data for April 2013. The Netherlands did not report data for February, March and April 2013. Poland did not report data for March and April 2013.

Three EU countries – Belgium, France and Germany – do not operate rubella surveillance systems with national coverage and hence do not contribute incidence data to the EU/EEA enhanced surveillance for rubella.

The number of cases and notification rates for the past 12 months are shown in Table 2.

During the period April 2012 to March 2013, 10 002 cases of rubella were reported. Poland and Romania accounted for 99% of the reported cases.

It is of importance to note that the data available in TESSy underestimate the total number of cases reported in EU/EEA countries. Poland is currently experiencing a large outbreak (see epidemic intelligence section) and is facing delays in reporting data at the European level.

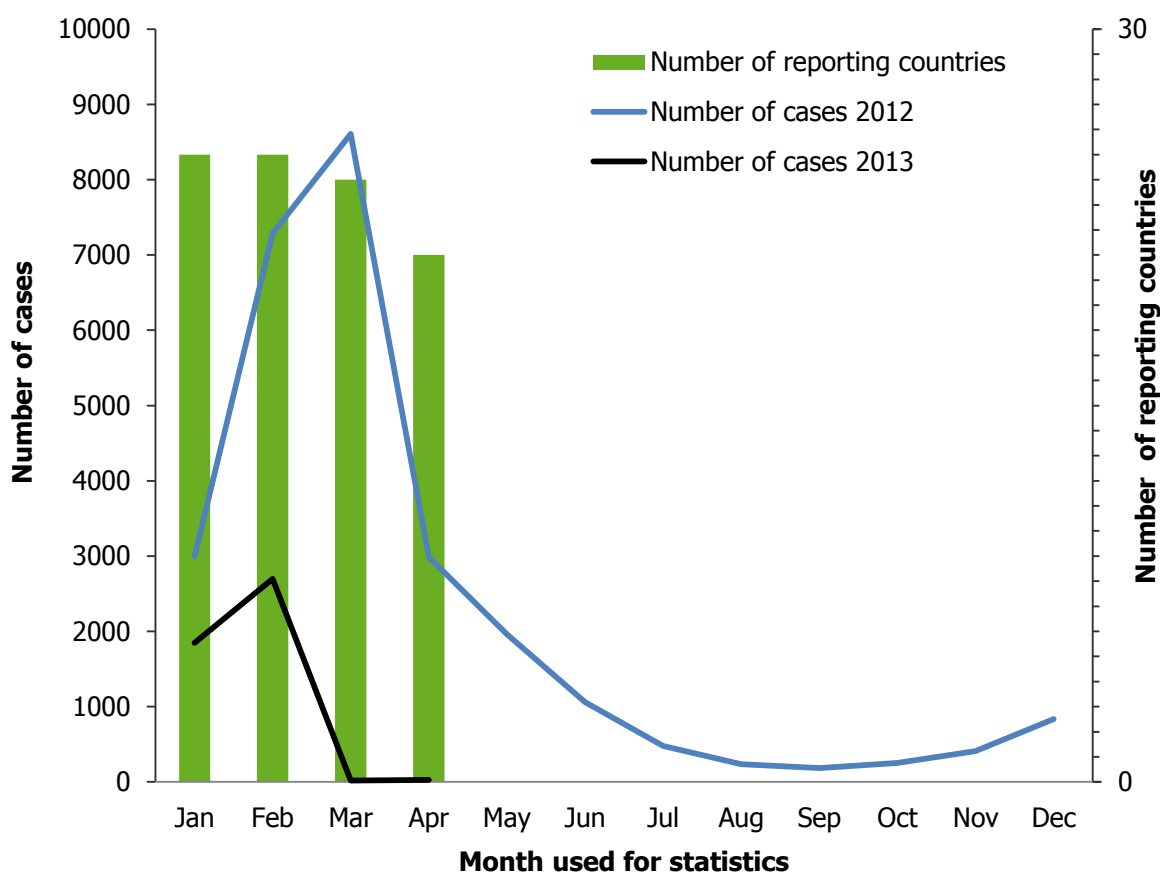
Five per cent of the cases were reported to have had a positive result in a rubella laboratory test (serology, virus detection or isolation). Eighteen of the 8 555 rubella cases reported by Poland, and 30% of the cases reported by Romania, had a positive confirmatory laboratory test.

Romania has reported an average of eight cases per months since August 2012, indicating that the nationwide epidemic that affected more than 20 000 people in the country is now over [1].

Since August 2012, Poland has reported over 95% of all rubella cases as the country is experiencing a nationwide rubella epidemic. From January to April 2013, Poland reported 21 283 rubella cases (55.2 per 100 000 inhabitants), the highest number since 2007 [data not yet reported to ECDC] [2]. The male to female ratio was 10:1. The most affected groups were males aged 15–19 years (12 220 cases, reported rate: 1 044.9 per 100 000 inhabitants, 57% of cases), males 20–24 years (4 000 cases, reported rate: 286.8 per 100 000 inhabitants, 19% of cases) and males 25–29 years (992 cases, reported rate: 61.1 per 100 000 inhabitants, 5% of cases). Eighty-one per cent of cases were among 15–29-year-old males.

This outbreak reflects the history of immunisation policies – selective vaccination of adolescent girls since 1989, and universal two-dose measles-mumps-rubella vaccination since 2004.

Figure 6. Number of rubella cases in 2012 and 2013, and number of EU/EEA countries reporting by month, 2013



Note: Belgium, France, and Germany do not have rubella surveillance with national coverage.

It is of importance to note that the data available in TESSy underestimate the total number of cases reported in the EU/EEA countries. Poland is currently experiencing a large outbreak and is facing delays in reporting data at the European level. Therefore the number of cases reported in 2013 in TESSy should be considered preliminary for the purposes of this report.

Table 2. Number of rubella cases by month and notifications rates (cases per million), May 2012–April 2013, EU/EEA countries

Country	2012								2013				Total cases	Lab. positive cases	Cases per million
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
Austria	2	0	0	3	0	0	0	0	0	0	1	4	10	6	1.2
Belgium	National rubella incidence data not collected in Belgium														
Bulgaria	2	2	1	0	0	1	3	0	1	1	1	0	12	1	1.6
Croatia	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	-
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0

Country	2012								2013				Total cases	Lab. positive cases	Cases per million
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
Czech Republic	1	0	0	1	0	0	0	0	0	0	0	0	2	2	0.2
Denmark ¹	0	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	0.0
Finland	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0.2
France	National rubella incidence data not collected in France														
Germany	National rubella incidence data not collected in Germany														
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Hungary	0	0	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	0.0
Ireland	4	2	0	1	0	0	2	0	0	0	2	NR	11	1	2.5
Italy	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	-
Latvia	3	2	0	2	1	0	0	0	0	0	0	0	8	7	3.6
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Luxembourg	0	0	0	0	0	0	NR	NR	NR	0	0	NR	0	0	0.0
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Netherlands	0	0	0	0	0	0	0	0	0	NR	NR	NR	0	0	0.0
Norway	0	0	0	0	0	0	0	0	1	1	0	0	2	2	0.4
Poland	1032	732	407	214	178	239	402	831	1833	2687	NR	NR	8555	0	224.0
Portugal	0	0	0	0	1	0	1	0	0	1	0	NR	3	0	0.3
Romania	899	299	34	9	4	11	1	0	10	9	10	19	1305	399	60.9
Slovakia	0	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	0.0
Spain	8	3	4	2	1	0	0	1	0	0	0	1	20	16	0.4
Sweden	2	15	29	3	0	0	0	0	0	0	0	0	49	37	5.2
United Kingdom	7	5	4	0	0	0	2	2	1	0	3	0	24	22	0.5
Total	1960	1060	479	235	185	251	411	834	1846	2699	17	25	10002	493	44.8

¹ The national surveillance system for rubella in Denmark currently only captures rubella infections during pregnancy; therefore the true incidence of rubella in the Danish population will be underestimated.

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. Progress toward elimination is measured against meeting the incidence target of less than one confirmed case per million population per year, excluding cases confirmed as imported.

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.

Cases were defined as laboratory positive if at least one of the following rubella tests was positive: serologic test for IgG or IgM, virus isolation, virus nucleic acid detection, or IgG avidity test.

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 7. Rubella notification rates (cases per million) by age group, May 2012–April 2013, EU/EEA countries (N=9,948 cases with known age)

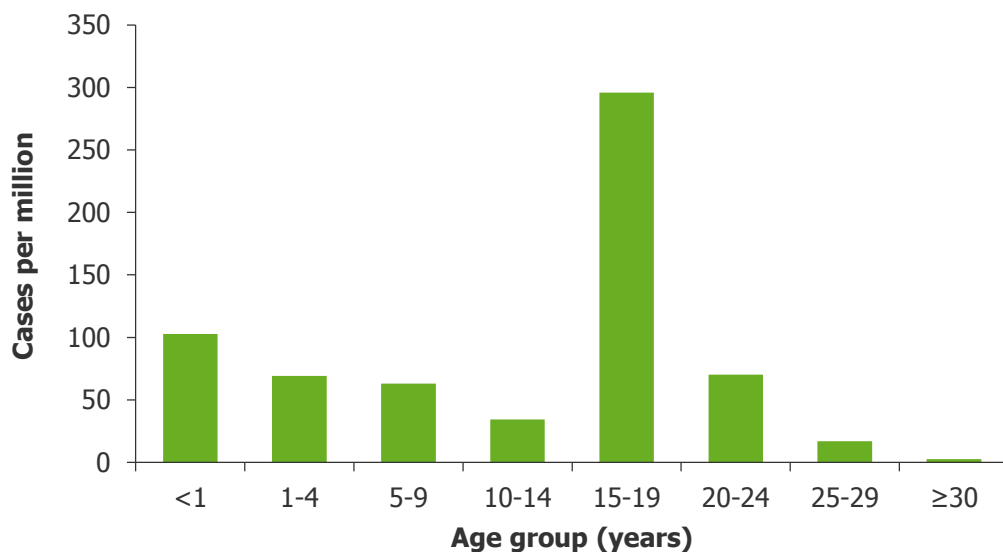
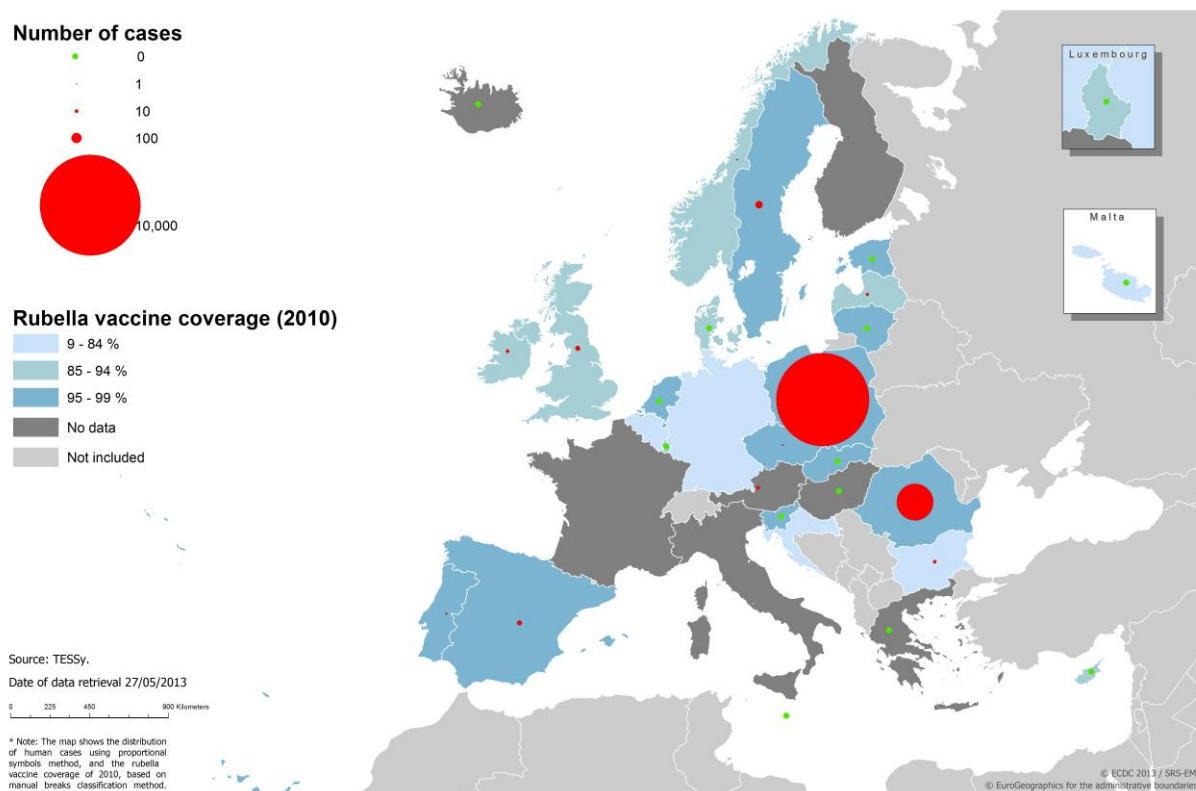
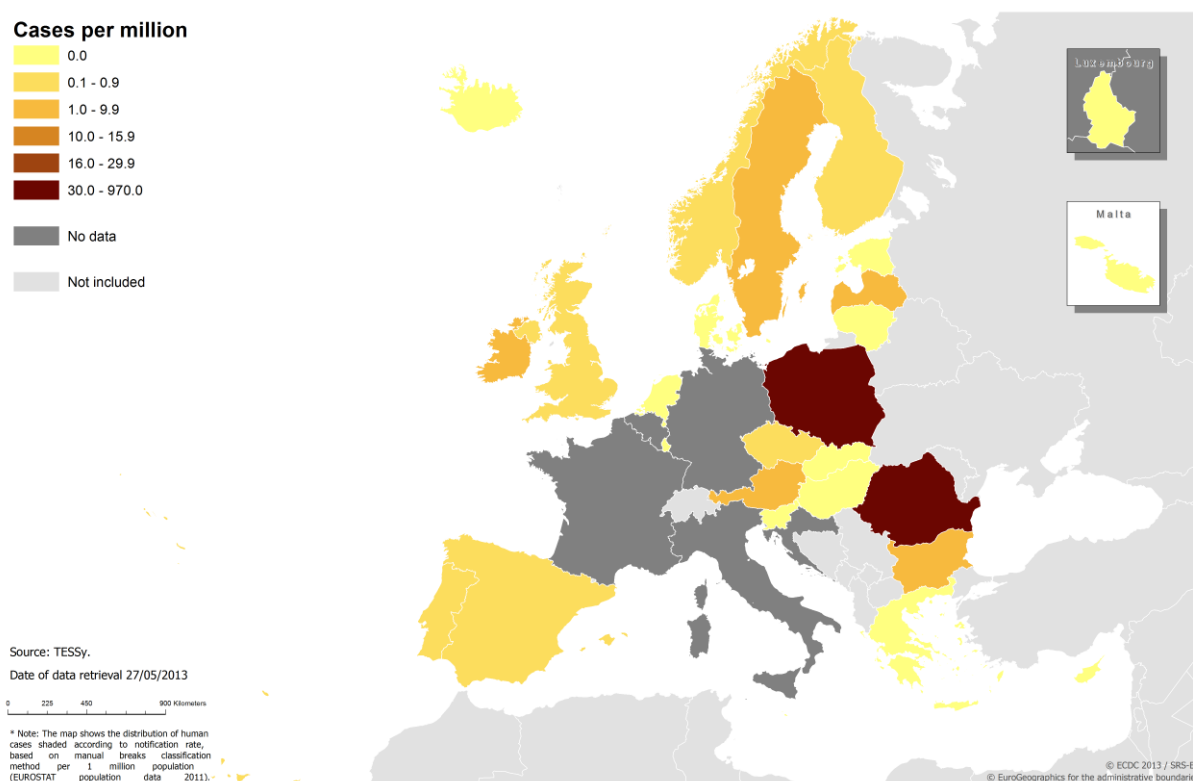


Figure 8. Number of rubella cases by country, May 2012–April 2013, EU/EEA countries (N=10 002), and two-dose rubella vaccine coverage* (2010 CISID), EU/EEA countries



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

Figure 9. Rubella notification rates (cases per million) by country, May 2012–April 2013, EU/EEA countries (N=10 002)



Epidemic intelligence

Measles

Germany

A measles outbreak has been affecting the Munich area since May, with over 200 cases reported as of 5 June 2013 [3]. As many as 60% of the cases were hospitalised. The age group most affected is the 15–45-year-olds.

Italy

The number of cases for the ongoing outbreak in the Bolzano area (South Tyrol) is still unknown [4].

Lithuania

Lithuania reported 27 laboratory-confirmed measles cases in an ongoing outbreak [5]. Last year, Lithuania reported only two cases of measles. Both cases, a mother and her daughter, became ill while abroad.

UK

The outbreak in Wales is slowing down. Since the start of the outbreak in November last year, 1 336 cases have been reported. During the period 18 March to 20 May, nearly 60 000 'non-routine' doses of MMR were administered in response to the outbreak.

USA

Orthodox Jewish communities in Borough Park and Williamsburg, Brooklyn, are affected by an ongoing measles outbreak. To date, 48 confirmed cases have been confirmed, 28 in Borough Park and 20 in Williamsburg. Additional suspected cases are being investigated. In recent weeks, cases have begun occurring in younger children [6]. During the past month, the median age of cases has declined to two years (age range 10 months to 17 years), with 19% aged less than 12 months, 52% aged 12 months to 4 years, and 29% aged 5 to 18 years.

All cases were in persons who were unvaccinated at the time of exposure, either because they were too young to have been vaccinated or because their parents delayed or refused vaccine for their children. Over 2 000 identified people have been exposed to measles in households (through relatives or friends), apartment buildings, and offices of medical providers.

Measles transmission has been sustained by two factors: a large pool of susceptible children under 12 months of age and large family and communal gatherings. To interrupt the spread of measles in this community, the local health authorities recommend that the first dose of measles-mumps-rubella vaccine (MMR) should be given at 6 months of age to all orthodox Jewish children living in Borough Park, Williamsburg, and Crown Heights.

Syria

The World Health Organization (WHO) is concerned about an increasing number of cases of measles and other communicable diseases in Syria and among displaced Syrians in neighbouring countries. So far, 139 confirmed cases of measles have been reported. The national vaccination coverage is estimated to have dropped from 95% in 2010 to 45% in 2013. At least 35% of the country's public hospitals are out of service, and in some governorates, up to 70% of the health workforce has fled. Measles, tuberculosis and cutaneous leishmaniasis have been reported among displaced Syrians in Jordan, Lebanon, Iraq and Turkey.

More at: <http://www.emro.who.int/press-releases/2013/disease-epidemics-syria.html> [7]

Georgia

According to the National Centre for Disease Control and Public Health of Georgia, the number of reported measles cases as of 19 June 2013 has reached 5 369 [8], including 1 230 hospitalisations and two fatalities.

Rubella

Poland

Poland's large rubella epidemic is still ongoing. From 1 January to 31 May 2013, 29 741 cases were reported (notification rate 77.18 cases per 100 000 population), compared with 3 256 cases (8.45 cases per 100 000 population) during the same time period in 2012.

More at: http://www.pzh.gov.pl/oldpage/epimeld/2013/INF_13_05B.pdf

Publications

Ongoing outbreak of rubella among young male adults in Poland

Paradowska-Stankiewicz I, Czarkowski M, Derrough T, Stefanoff P. Ongoing outbreak of rubella among young male adults in Poland: increased risk of congenital rubella infections. Euro Surveill. 2013 May 23;18(21). Available from <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20485>

This rapid communication describes the ongoing rubella outbreak in Poland and discusses the increased risk of congenital rubella infections associated with a shift towards higher age among the cases. The authors conclude that the proportion of laboratory-investigated cases should be increased (as should be surveillance of congenital rubella infections), emergency catch-up vaccination of young adults should be considered to stop further transmission, screening for rubella antibodies as part of pre-conception or antenatal care should be considered, and seroprevalence examined.

Previous vaccination modifies both the clinical disease and immunological features in children with measles

Mitchell P, Turner N, Jennings L, Dong H. Previous vaccination modifies both the clinical disease and immunological features in children with measles. J Prim Health Care. 2013 Jun 1;5(2):93-8. Available from: <https://www.rnzcp.org.nz/assets/documents/Publications/JPHC/June-2013/JPHCOSPMitchellJune2013.pdf>

This study of measles cases in a community outbreak in New Zealand confirms observations that children previously vaccinated with MMR who develop measles are likely to have less severe disease. Primary vaccine failure occurs in around 5% of measles vaccine recipients, and this is the main reason behind the global two-dose vaccination policy. Secondary vaccine failure is the loss of protective antibodies over time. It has been proposed that the secondary failure rate is increasing because of the reduced exposure to wild measles virus in highly vaccinated populations (lack of natural 'boosting'). The proportion of vaccinated measles cases is expected to be high in highly vaccinated populations and may result in the paradox of having more vaccinated than unvaccinated cases in some outbreaks. This study shows that individuals with secondary failure still benefit from their vaccinations because they develop less severe disease. The study also identifies the importance of using PCR to diagnose acute measles, both for surveillance purposes and to inform the response to outbreaks.

2011 Quebec measles outbreak online

Pereira JA, Quach S, Dao HH, Kwong JC, Deeks SL, Crowcroft NS, et al. Contagious comments: What was the online buzz about the 2011 Quebec measles outbreak? *PLoS One*. 2013 May 15;8(5):e64072. Available from: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0064072>

The authors of this article analysed readers' online responses to Canadian news articles regarding the 2011 measles outbreak in Quebec. Although they found that vaccination proponents were in the majority, they also concluded that the larger volume of communications by the anti-vaccine minority meant that they had a disproportionately high representation on the online boards.

Vaccine-supportive themes involved the success of vaccination in preventing disease spread, societal responsibility to vaccinate for herd immunity, and refutation of the autism link. Those against measles vaccination felt it was a personal rather than societal choice, and conveyed a distrust of vaccine manufacturers, believing that measles infection is not only safe but safer than vaccination.

Public health messages should address concerns by emphasising that immunisation is always a personal choice in Canada, and that the pharmaceutical industry is strictly controlled. Illustrating the dangers of measles through personal stories, rather than scientific data only, may also serve to strengthen the message.

Measles vaccination campaign among vulnerable populations

Laurence S, Chappuis M, Rodier P, Labaume C, Corty JF. [Measles vaccination campaign among vulnerable populations during the peak of the 2011 epidemic in Marseille]. [Article in French] *Rev Epidemiol Sante Publique*. 2013 Jun;61(3):199-203.

This French language article describes a vaccination campaign organized by *Medicin du Monde* among Roma living in camps in the south of France in response to the surge of measles in France in 2010 and 2011. Two doses of MMR vaccine one month apart were offered to all people born after 1980 and over the age of one year. Between 15 May and 15 September 2011, 326 primary doses were administered during 34 camp visits covering 45% of the targeted population. Of those who had a first dose of MMR vaccine, only 37 people received a second dose because the Roma were evicted from the camps during the same period.

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>

ECDC measles atlas to monitor progress toward elimination: <http://emmageocase.ecdc.europa.eu/atlas/measles>

Compare vaccination schedule in EU/EEA countries: <http://vaccine-schedule.ecdc.europa.eu/Pages/Scheduler.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 of the 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 used for reporting in individual countries. The date varies from country to country according to national surveillance practices and indicates one of the following: 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 will influence the numbers presented in this report. For this reason, the date of data retrieval is indicated in the text for each issue. Later retrievals of data may result in both higher and lower numbers as countries have the possibility to update data in the European Surveillance System retrospectively.

References

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