

## SURVEILLANCE REPORT

# Measles and rubella monitoring

October 2014

Reporting on October 2013 – September 2014 surveillance data  
and epidemic intelligence data to the end of October 2014

## Main developments

### Measles

- During the 12-month reporting period (October 2013 to September 2014), 30 EU/EEA countries conducting measles surveillance reported 4 735 cases. Twenty-six of the 30 contributing countries reported consistently for the 12-month period.
- Germany, Italy and the Netherlands accounted for 61.1% of the cases in this 12-month period.
- In eight of the 26 countries, the measles notification rate was less than one case per million population including six countries reporting 0 cases during the 12 month-period.
- Of all cases, 59.4% tested positive for measles (serology, virus detection or isolation).
- Of all cases, 92.2% had a known vaccination status and of these, 85.1% were unvaccinated. In the target group for routine childhood MMR vaccination (1–4-year old children), 75% of the cases were unvaccinated.
- One measles-related death was reported during the period October 2013 to September 2014, and five cases were complicated by acute measles encephalitis.
- Since the previous bulletin, small outbreaks have been reported in Austria, Denmark, Germany and the United Kingdom.
- Outside of the EU, large outbreaks have been reported in the USA and the Solomon Islands.

### Rubella

- Twenty-eight EU/EEA countries reported a total of 6 996 rubella cases during the period October 2013 to September 2014. Twenty-three countries reported consistently for the 12-month period.
- In 18 of the 21 consistently reporting countries, the rubella notification rate was less than one case per million population, including 12 countries reporting 0 cases during the 12-month period.
- Poland accounted for 97.3% of all reported rubella cases in the 12-month period; data were reported in an aggregated format and were most complete for 2014. The highest number of cases was observed in males in the 15–24-year age group. Forty percent of the cases were unvaccinated; however, this figure needs to be interpreted with caution as only 1% of the cases tested positive for rubella.
- No outbreaks of rubella have been detected by epidemic intelligence since the last report.
- In December 2013, rubella was made a notifiable disease in Germany.

# Measles

## Surveillance data

The enhanced measles surveillance data were retrieved from The European Surveillance System (TESSy) on 27 October 2014. The analysis covered the 12-month period from October 2013–September 2014. Twenty-six EU/EEA countries reported case-based data for the 12-month period. Croatia and the Netherlands have not reported any data since July 2014. Luxembourg reported aggregated data in January 2014 (Figure 1, Table 1).

During the 12-month period, 4 735 cases of measles were reported (Table 1), which is low compared to the epidemic years of 2010 (n=32 480), 2011 (n=32 033), as well as 2012 (n=11 316) and 2013 (n=10 533) (Figure 2). The number of cases observed in September 2014 and the notification rates for the 12-month period are shown in Figures 3 and 4. The measles notification rate was less than one case per million population in 8 of the 26 countries that reported consistently over the 12-month period, including six countries which reported zero cases (Table 1). The countries that reported the most cases were Italy (43.5% of all cases), the Netherlands (18.9%) and Germany (7.9%) (Table 1).

The highest notification rate was among infants under one year of age (43.3 cases per million population), followed by children aged 1–4 years (33.4) and adolescents aged 15–19 years (21.4) (Figure 5). Of all cases, 59.4% tested positive for measles (serology, virus detection or isolation) although there were large variations between countries in the proportion of laboratory-confirmed cases, which can be attributed to the large variation in the number of cases reported by the countries as well as different laboratory capacities.

Vaccination status was known for 4 368 (92.2%) of the 4 735 cases reported. Of these, 85.1% (3 719 cases) were unvaccinated, 9.2% (402) had received one dose of measles vaccine, 4.9% (214) had received two or more doses, and 0.8% (33) had received an unknown number of doses. The proportion of unvaccinated cases was high across all age groups and highest among children aged 10–14 years (89%) and under one year of age (93%). Cases in this latter age group are often too young to be eligible for vaccination. Among children aged 1–4 years, the age group targeted by routine childhood vaccination programmes, 76.5% of cases were unvaccinated (Figure 6). The measles vaccination coverage (two doses) for each country is presented in Figure 3.

The notification rate by age group was calculated for the three countries reporting most cases (Figure 7a–f). The notification rates revealed a very heterogeneous pattern, with Italy showing higher rates among adolescents aged 15–19 years and children aged 1–4 years, and Germany showing higher rates in infants below the age of one and children aged 1–4 years, while the Netherlands reported higher rates in children aged 5–14 years. In all three countries, the majority of cases were unvaccinated (Figures 7a–f).

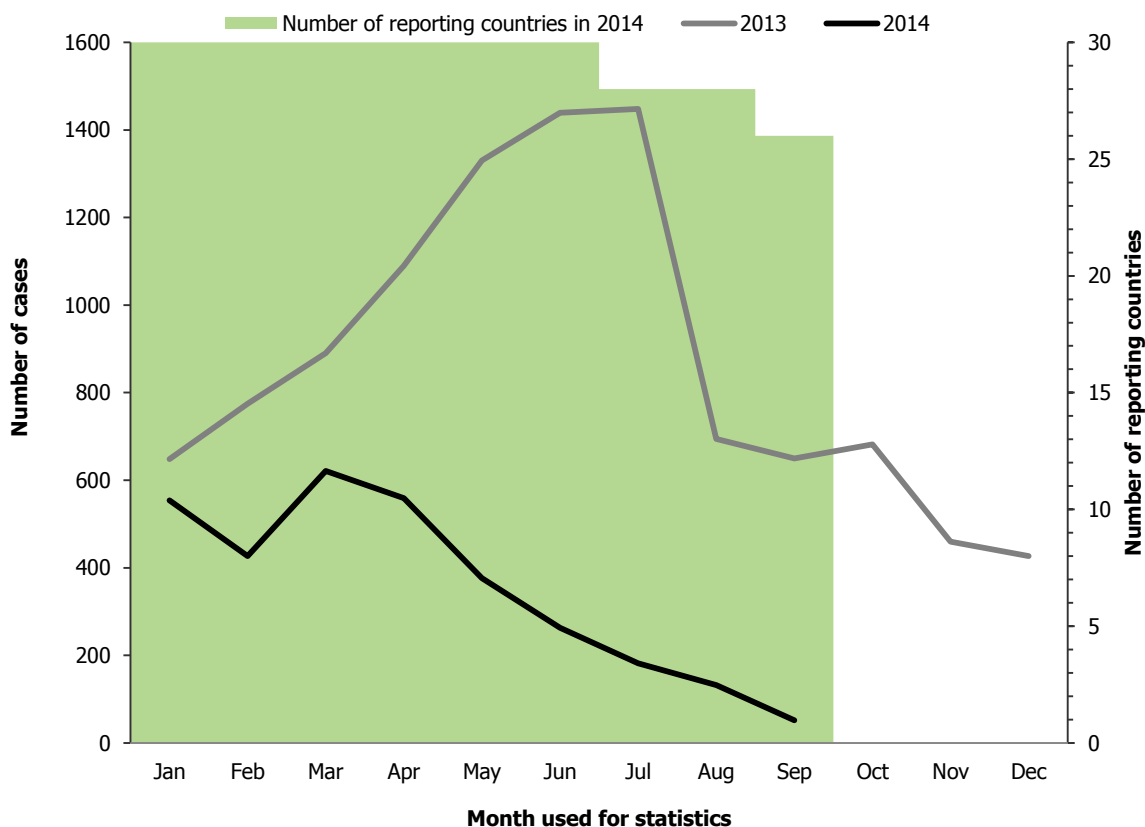
Over the 12-month period, five cases were complicated by acute measles encephalitis, and there was one death attributed to measles.

The number of cases of measles in the European Union was low compared to recent years. This is most likely attributable to the dynamics of the transmission of infection in the population following the epidemic years in 2010 and 2011. However, the number of cases remains high, considering that measles and rubella are targeted for elimination in Europe by 2015. High population immunity and high-quality surveillance are essential to achieving this goal. To interrupt the circulation of the virus, vaccination coverage of at least 95% must be reached, with two doses of measles-containing vaccine administered through routine vaccination\*. Data from 2013 (WHO) show that coverage rates in 22 EU/EEA Member States are below this target, while pockets of susceptible individuals still exist throughout the EU, even in countries with high vaccine coverage. Measures implemented in the Member States must be expanded and accelerated if the elimination target is to be reached.

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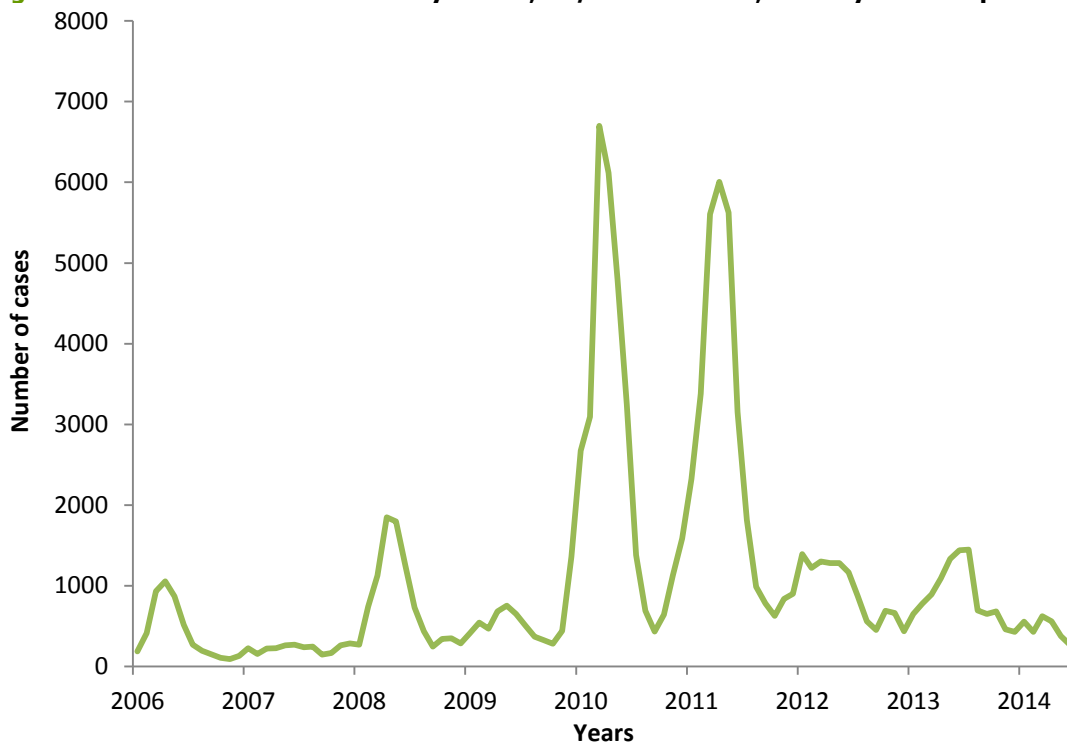
\* World Health Organization, Regional Committee for Europe. Renewed commitment to elimination of measles and rubella and prevention of congenital rubella syndrome by 2015 and sustained support for polio-free status in the WHO European Region. World Health Organization, Regional Office for Europe: Copenhagen; 2012.

**Figure 1. Number of measles cases in 2013 and 2014 and number of countries reporting in 2014, by month, EU/EEA**



Note: All countries reported data for all months during 2013

**Figure 2. Number of measles cases by month, EU/EEA countries, January 2006–September 2014**



Note: During the period 2006–2014, 29 EU/EEA countries consistently reported data on measles for every month. Delays in reporting were observed only from July 2014 onwards. All 30 countries are included in the figure; Croatia is included from 2012 onwards.

**Table 1. Number of measles cases by month and notification rate (cases per million) by country, October 2013–September 2014, EU/EEA countries**

Country	2013 Oct	2013 Nov	2013 Dec	2014 Jan	2014 Feb	2014 Mar	2014 Apr	2014 May	2014 Jun	2014 Jul	2014 Aug	2014 Sep	Total cases	Cases per million	Total lab- positive cases
Austria	9	3	5	33	11	8	5	8	17	4	0	0	103	12.2	75
Belgium	2	2	2	2	7	6	10	32	2	0	0	0	65	5.8	36
Bulgaria	0	0	0	0	0	0	0	0	0	0	0	NR	0	0.0	0
Croatia	0	0	0	0	1	0	1	0	0	NR	NR	NR	2	0.5	1
Cyprus	0	0	0	0	0	4	6	0	0	0	0	0	10	11.6	8
Czech Republic	0	0	1	0	2	34	62	29	57	22	12	4	223	21.2	221
Denmark	0	0	0	0	5	8	7	1	1	1	2	0	25	4.5	14
Estonia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Finland	0	0	0	2	0	0	0	0	1	0	0	0	3	0.6	0
France	15	11	7	41	38	26	34	47	45	16	8	NR	288	4.4	127
Germany	76	47	20	22	26	37	45	22	33	17	30	0	375	4.6	245
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	1	0	0	0	0	0	0	1	3.1	1
Ireland	16	6	1	2	6	15	11	1	0	1	0	2	61	13.3	36
Italy	35	178	265	314	203	303	270	193	92	91	72	44	2 060	34.5	1 069
Latvia	0	0	0	0	0	0	25	9	0	2	0	0	36	17.8	35
Lithuania	0	0	0	0	0	2	1	2	5	1	0	0	11	3.7	11
Luxembourg	0	0	0	1	0	0	0	1	0	0	0	0	2	3.7	1
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Netherlands	473	177	106	46	24	42	21	5	1	NR	NR	NR	895	53.3	404
Norway	0	0	0	0	0	0	2	0	1	0	0	0	3	0.6	3
Poland	1	1	1	15	27	27	19	7	2	4	4	0	108	2.8	82
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Romania	23	22	12	25	17	5	1	5	0	0	0	0	110	5.5	98
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	1	0	1	0	0	2	1.0	2
Spain	4	0	3	10	26	77	27	8	1	1	1	0	158	3.4	153
Sweden	0	0	0	2	7	0	0	3	2	4	1	1	20	2.1	20
United Kingdom	28	13	4	39	27	26	12	2	3	17	2	1	174	2.7	171
<b>Total</b>	<b>682</b>	<b>460</b>	<b>427</b>	<b>554</b>	<b>427</b>	<b>621</b>	<b>559</b>	<b>376</b>	<b>263</b>	<b>182</b>	<b>132</b>	<b>52</b>	<b>4 735</b>	<b>9.2</b>	<b>2 813</b>

NR: Data not reported. Liechtenstein does not report.

Countries with a notification rate  $\geq 1$  per million population are highlighted in green. The target for monitoring progress towards elimination is an incidence of less than one case per million population per year (including confirmed, probable and possible cases, but excluding imported cases).

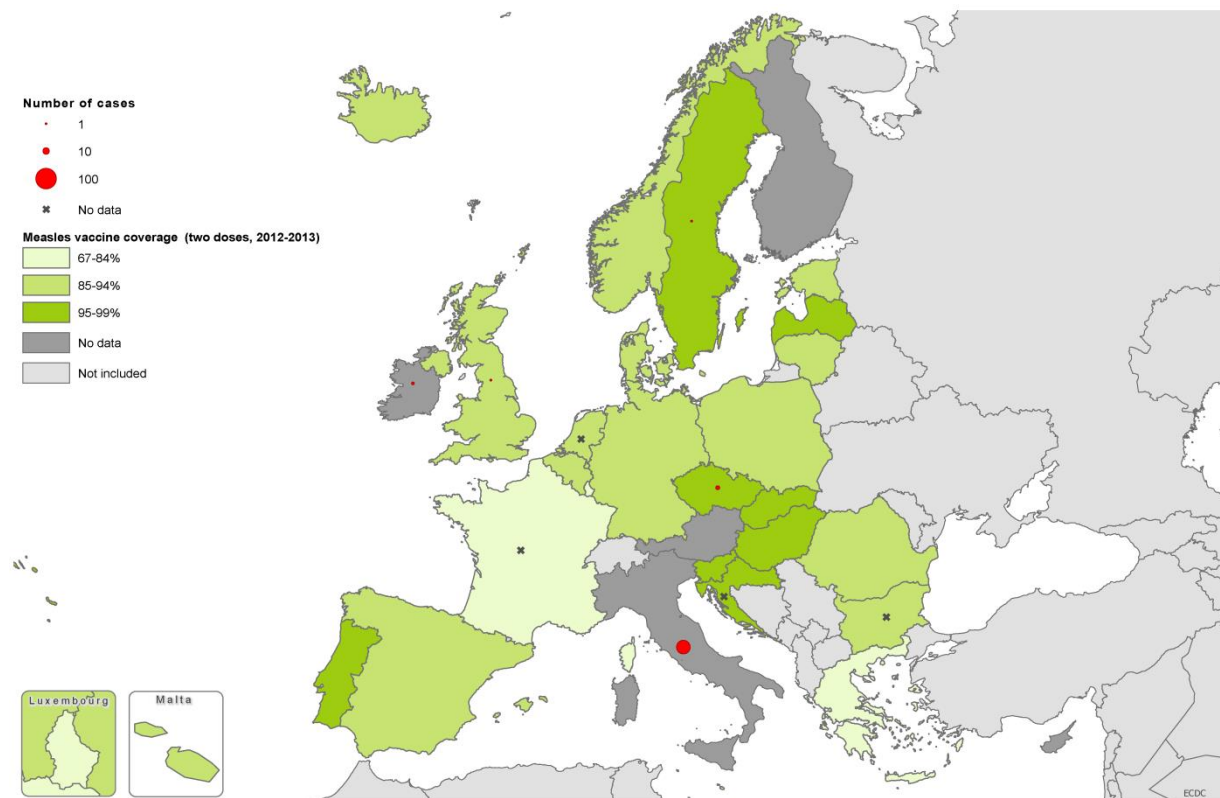
Achieving this target is consistent with progress towards elimination but does not define elimination or confirm that it has been achieved. In the table, all cases (endemic, imported, import-related) are included for the calculation of the notification rate. For the countries that did not report data 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.

Tables on measles cases in previous years are available from:

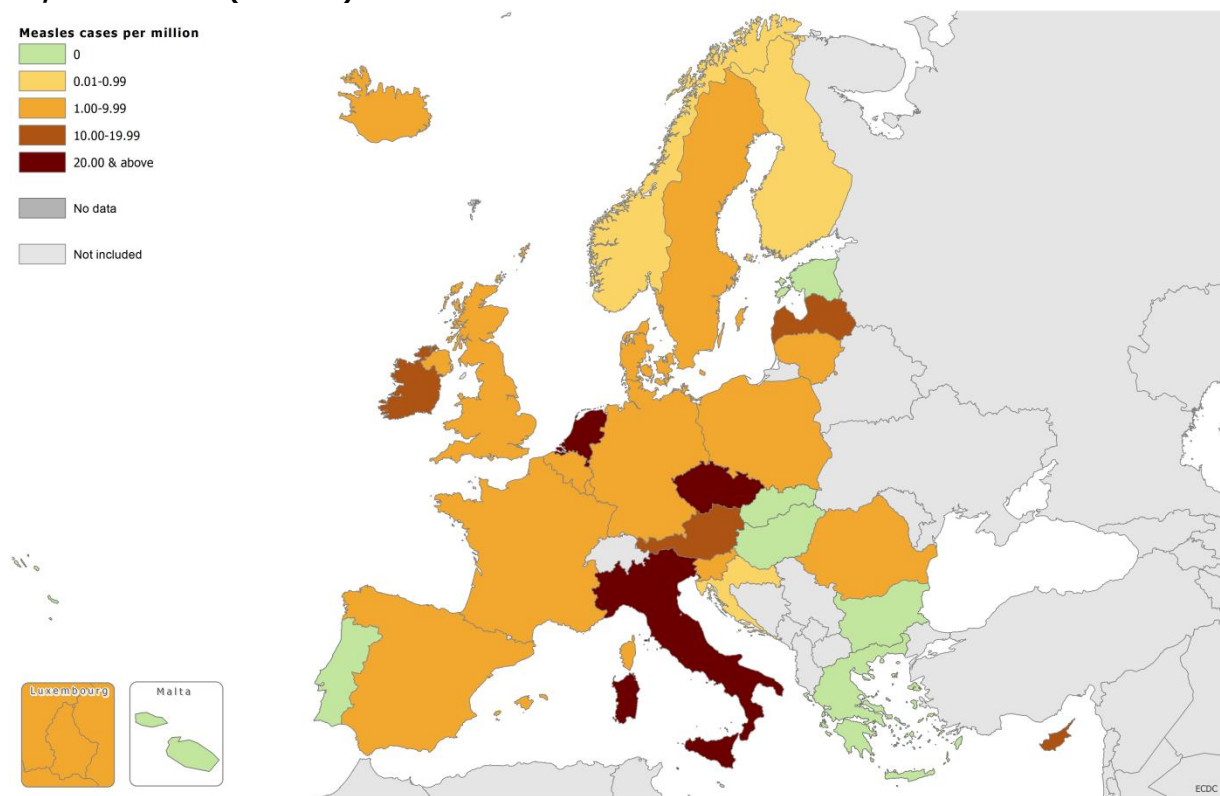
[http://www.ecdc.europa.eu/en/healthtopics/measles/epidemiological\\_data/pages/annual\\_epidemiological\\_reports.aspx](http://www.ecdc.europa.eu/en/healthtopics/measles/epidemiological_data/pages/annual_epidemiological_reports.aspx)

**Figure 3. Number of measles cases by country, September 2014 (N=52), and vaccine coverage (two doses, 2013–2012, WHO\*), EU/EEA countries**



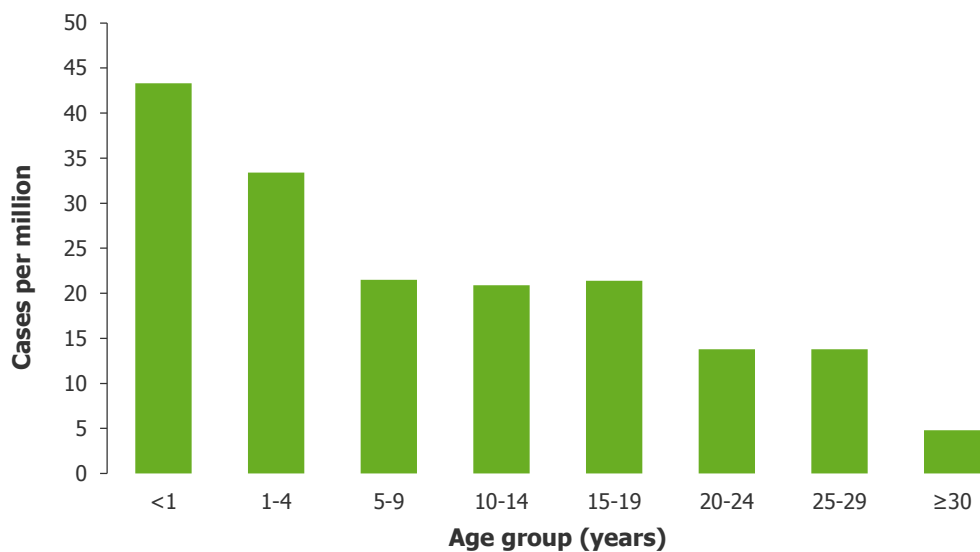
\* Coverage figures (%) are official national figures reported via the annual WHO/UNICEF Joint Reporting Form. See notes at the end of this report for further explanations.

**Figure 4. Measles notification rate (cases per million) by country, October 2013 – September 2014, EU/EEA countries (n=4 735)**

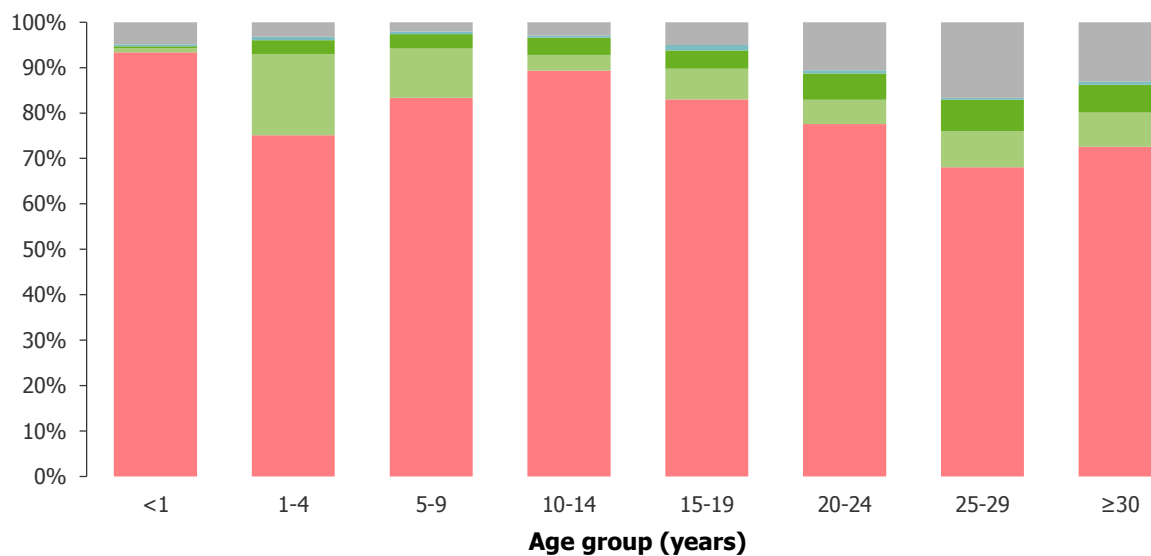


For interactive maps relating to measles see <http://emmaqeocase.ecdc.europa.eu/atlas/measles>

**Figure 5. Measles notification rate (cases per million) by age group, October 2013–September 2014, EU/EEA countries (n=4 734 cases with known age)**



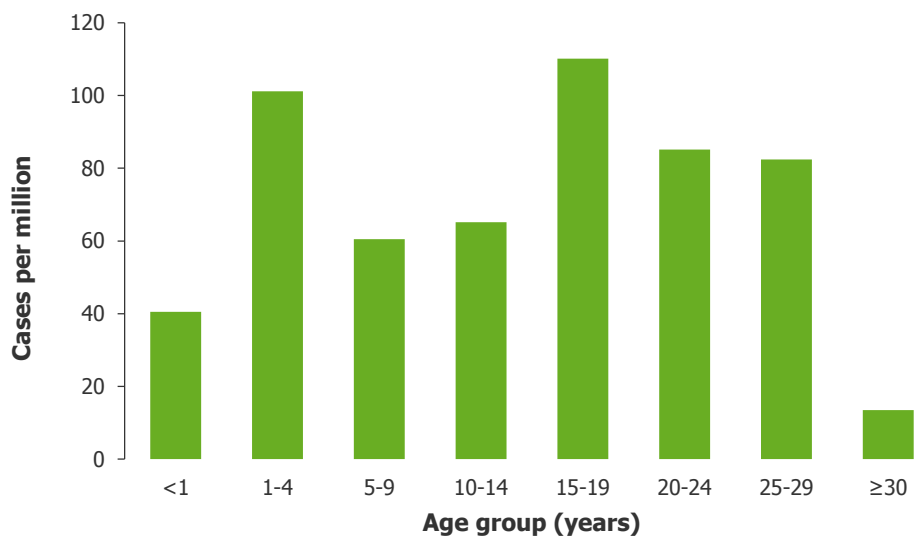
**Figure 6. Percentage distribution of vaccination status among measles cases by age group, October 2013–September 2014, EU/EEA countries (n=4 734, cases with known age)**



- Unvaccinated
- Vacc. 1 dose
- Vacc. ≥2 doses
- Vacc. with unknown no. of doses
- Unknown vacc. status

**Figure 7. Notification rate of measles cases and vaccination status for the three countries with the highest proportion of cases (Italy, Germany, the Netherlands), by age group, October 2013–September 2014**

*Figure 7a. Measles notification rate (cases per million) by age group, Italy, October 2013–September 2014*



*Figure 7b. Number of measles cases by age group and vaccination status, Italy, October 2013–September 2014*

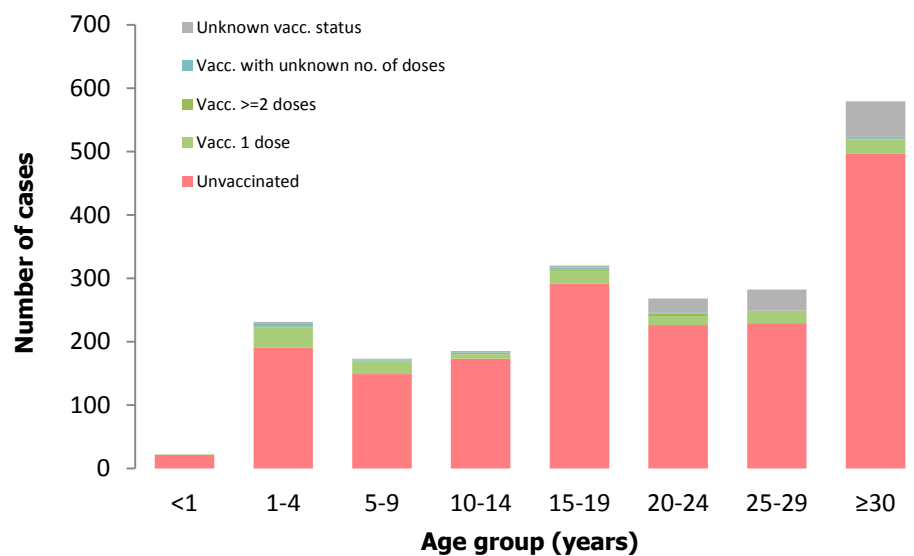


Figure 7c. Measles notification rate (cases per million) by age group, Germany, October 2013–September 2014

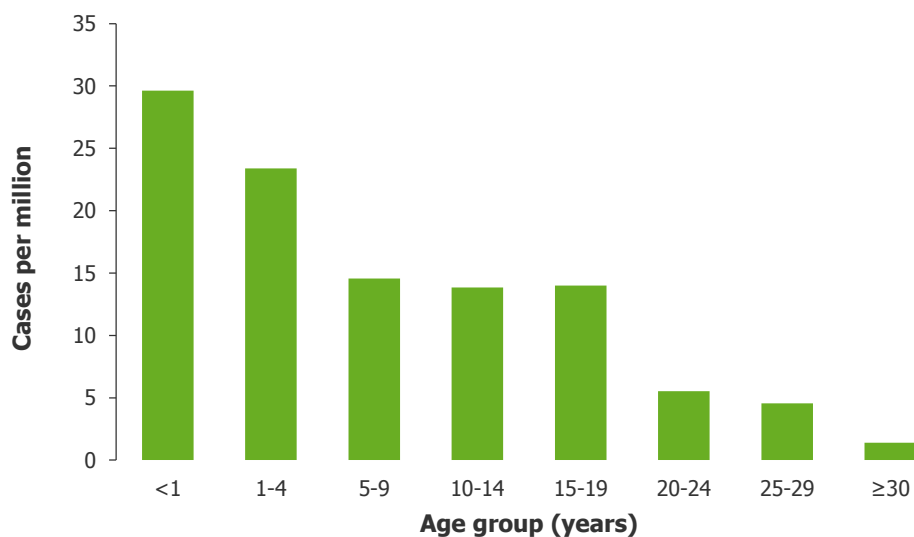


Figure 7d. Number of measles cases by age group and vaccination status, Germany, October 2013–September 2014

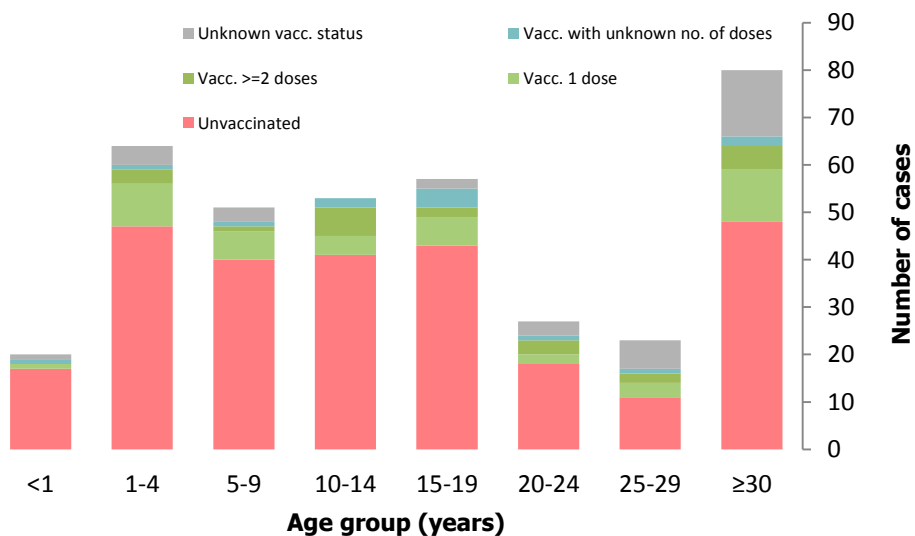




Figure 7e. Measles notification rate (cases per million) by age group, the Netherlands, October 2013–September 2014

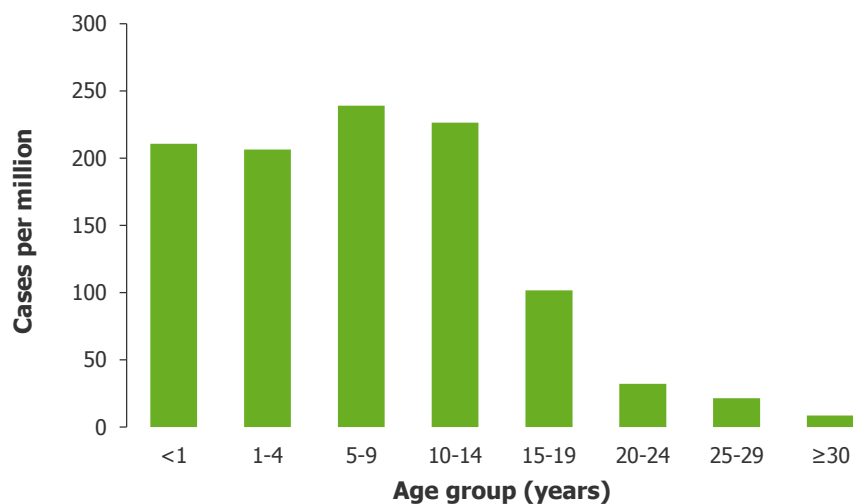
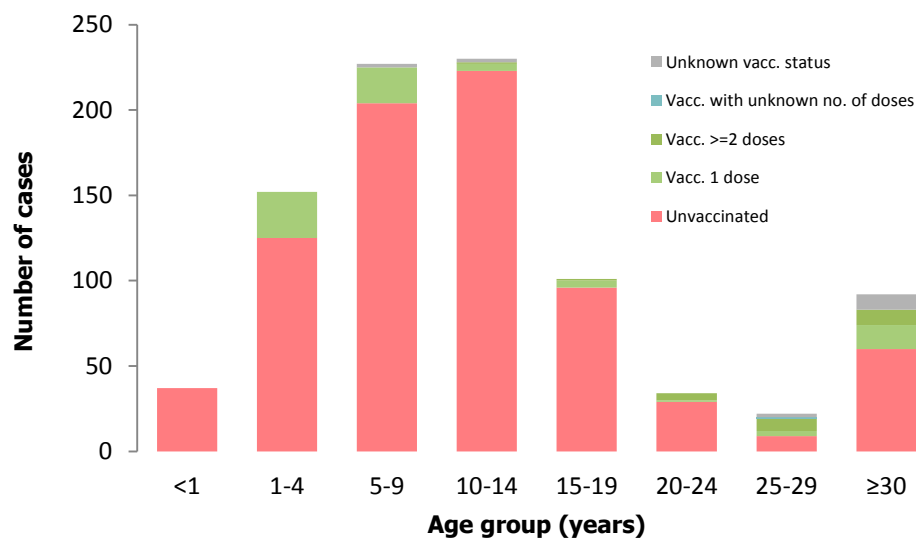


Figure 7f. Number of measles cases by age group and vaccination status, the Netherlands, October 2013–September 2014



# Epidemic intelligence – updates since the last report<sup>†</sup>

## EU Member States

### Germany

In August 2014, the media reported a measles outbreak in a camp for Syrian refugees in Bavaria. There were four measles cases in adult asylum seekers aged between 23 and 27 years. The camp was temporarily closed and did not accept new refugees for the calculated length of the incubation period for measles. People staying in the centre were planned to receive measles vaccination.

### UK (Wales)

An outbreak was reported in the beginning of August at a nursery school in Port Talbot with two confirmed cases and five suspected cases. A vaccination session was conducted for children who had not received the MMR vaccine. According to Public Health Wales, vaccination uptake at the nursery was good, but some children remained at risk because they were too young to receive one or both doses of the MMR vaccine.

In July 2014, Public Health Wales announced the end of Wales' biggest measles epidemic, which resulted in 1 200 reported cases and one death.

### Denmark

Four cases of measles were reported on the Danish island of Bornholm in August 2014. One case occurred in a child returning from holidays abroad. The primary case was an adult returning from holidays in Turkey. In the first eight months of 2014, eight children aged between 11 months and four years of age and 17 persons aged 15–43 years were laboratory-confirmed with measles in Denmark. An additional two children had contact with a laboratory-confirmed case and fell ill with clinically diagnosed measles infection.

### Austria

In October 2014, two cases of measles were identified at the University of Innsbruck. Students who attended the lectures were reminded to ensure that they were immunised against measles. The university announced that those that had not received two doses of a measles-containing vaccine and had not had measles should not attend lectures until the end of the incubation period.

## Rest of the world

### Hawaii, USA

Three unvaccinated adults on the Hawaiian islands of Maui and Kauai were infected with measles at the end of October 2014. All three cases were unvaccinated young adults who had recently travelled to either the Philippines, Indonesia, or Malaysia. This brings up the total number of confirmed measles cases in Hawaii to five this year. According to the US Centers for Disease Control and Prevention, 594 cases of measles have been reported in 22 states since January 2014.

### Solomon Islands

Media report an ongoing measles outbreak with 4 000 reported cases, including seven fatalities.

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<sup>†</sup> <http://www.ecdc.europa.eu/en/publications/Publications/measle-rubella-monitoring-july-2014.pdf>

# Rubella

## Enhanced surveillance data

The enhanced rubella surveillance data were retrieved from The European Surveillance System (TESSy) on 27 October 2014. The analysis covered the 12-month period from October 2013 to September 2014.

Two EU countries – Belgium and France – do not operate rubella surveillance systems with national coverage and therefore do not contribute data to the EU/EEA enhanced rubella surveillance. Of the 28 contributing countries, 21 reported data for the entire 12-month period. Italy did not report for the entire period; Bulgaria, Croatia, the Netherlands, Romania and the United Kingdom did not report data for up to three months in 2014. Germany reported data on rubella for the first time in December 2013<sup>†</sup> (Figure 8, Table 2).

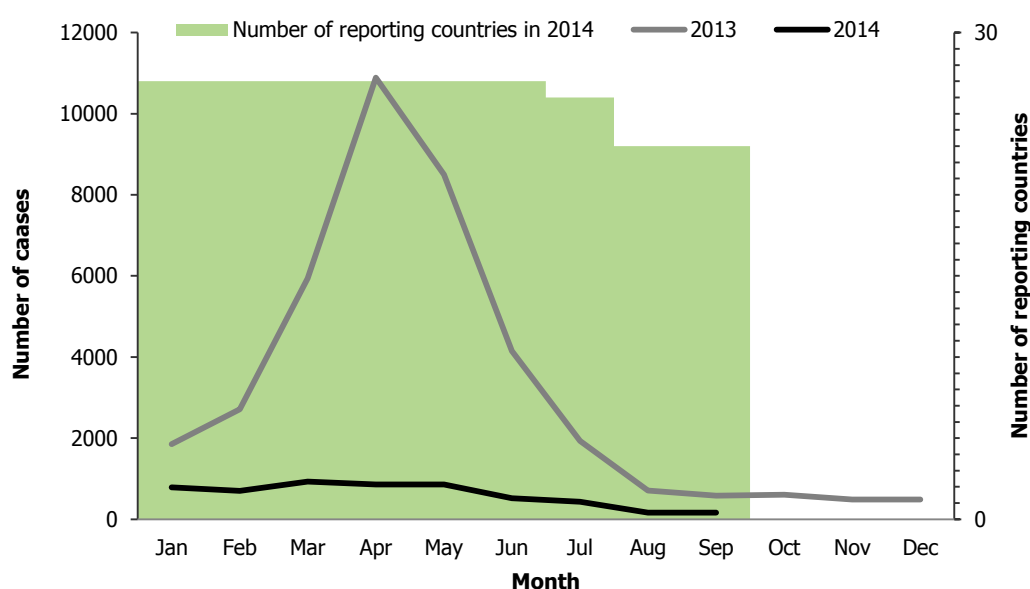
During the period October 2013–September 2014, 6 996 cases of rubella were reported. Just over 1% of the cases were reported as laboratory-confirmed (by serology, virus detection or isolation) (Table 2). The number of cases reported up to September 2014 and the notification rates for the 12-month period are shown in Figures 9 and 10. The rubella notification rate was less than one case per million population in 18 of the 21 countries which reported consistently over the 12-month period, including 12 countries which reported zero cases.

The highest notification rate was observed in cases aged 5–9 years (83.1 cases per million population) and children aged 1–4 years (64.1) (Figure 11).

Poland accounted for 97.3% (n= 6 805) of all reported rubella cases in the 12-month period. Data were reported in an aggregated format. For all cases reported by Poland in 2013 (n=4 708), age was reported as unknown. Among Polish cases reported in 2014 (n=5 233), the highest number was observed in males aged 15–19 years (n=857). The ratio of males to females in this age group was greater than 15:1, and greater than 11:1 among 20–24-year-olds (Table 3). The high proportion of cases observed among males aged 15–24 years compared to females reflects previous immunisation policies in Poland, where adolescent girls were selectively vaccinated between 1989 and 2004. A universal two-dose MMR vaccination programme has been in place since 2004. The one-dose coverage rate was reported to be 98% in 2013.

A total of 2 058 cases (39.3%) reported in 2014 in Poland were unvaccinated, 2 008 (38.4%) cases were vaccinated with one dose, 334 (6.4%) cases with two or more doses, and 833 (15.9%) cases had an unknown vaccination status. However, these figures need to be interpreted with caution as only 25 cases were reported with a positive laboratory test.

**Figure 8. Number of rubella cases in 2013 and 2014, and number of European countries reporting in 2014, by month**



*Note: Belgium and France do not have rubella surveillance with national coverage. Of the countries that have rubella surveillance with national coverage, only Italy did not report data for all months in 2013. Germany reported data on rubella for the first time in December 2013.*

<sup>†</sup> Matysiak-Klose D. Hot spot: epidemiology of measles and rubella in Germany and the WHO European Region. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2013 Sep;56(9):1231-7

**Table 2. Number of rubella cases by month and notification rate (cases per million) by country, October 2013–September 2014, EU/EEA countries**

Country	2013	2013	2013	2014	2014	2014	2014	2014	2014	2014	2014	2014	Total cases	Cases per million**	Total lab-positive cases
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Austria	0	0	1	1	1	0	0	1	3	1	0	2	10	1.2	10
Belgium	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	-
Bulgaria	0	1	0	1	5	0	0	0	1	0	0	NR	8	1.1	2
Croatia	0	0	0	0	0	0	0	0	0	NR	NR	NR	0	0.0	0
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Czech Republic	0	0	0	1	0	0	0	0	0	0	0	0	1	0.1	1
Denmark*	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	0	0	0.0	0
France	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	-
Germany	NR	NR	0	12	19	14	18	22	17	20	4	0	126	1.5	18
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	0	0	0	0	0	0	0	1	1	2	1	0	5	1.1	0
Italy	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	-	-
Latvia	0	0	0	0	0	0	0	0	0	1	0	0	1	0.5	1
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Luxembourg	0	0	0	0	0	0	0	0	0	0	0	0	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	1	0	0	0	0	0	NR	NR	1	0.1	1
Norway	0	0	0	1	2	0	0	0	0	0	0	0	3	0.6	2
Poland	606	481	485	770	672	913	837	822	493	410	157	159	6 805	176.6	25
Portugal	0	0	0	0	0	0	0	0	0	0	2	1	3	0.3	0
Romania	2	1	3	0	0	0	0	13	1	1	NR	2	23	1.1	19
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	0	0	0	0	1	2	0	0	0	0	1	1	5	0.1	3
Sweden	0	0	0	0	0	1	0	0	0	0	0	0	1	0.1	1
United Kingdom	1	2	0	0	0	0	0	0	1	0	NR	NR	4	0.1	4
<b>Total</b>	<b>609</b>	<b>485</b>	<b>489</b>	<b>786</b>	<b>701</b>	<b>930</b>	<b>855</b>	<b>859</b>	<b>517</b>	<b>435</b>	<b>165</b>	<b>165</b>	<b>6 996</b>		<b>87</b>

NR: Data not reported. Liechtenstein does not report.

Countries with a notification rate  $\geq 1$  per million population are highlighted in green. The target for monitoring progress towards elimination is an incidence of less than one case per million population per year (including confirmed, probable and possible cases but excluding imported cases). Achieving this target is consistent with progress towards elimination but does not define elimination or confirm that it has been achieved. In the table, all cases (endemic, imported, import-related) are included for the calculation of the notification rate. 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 definition, are included.

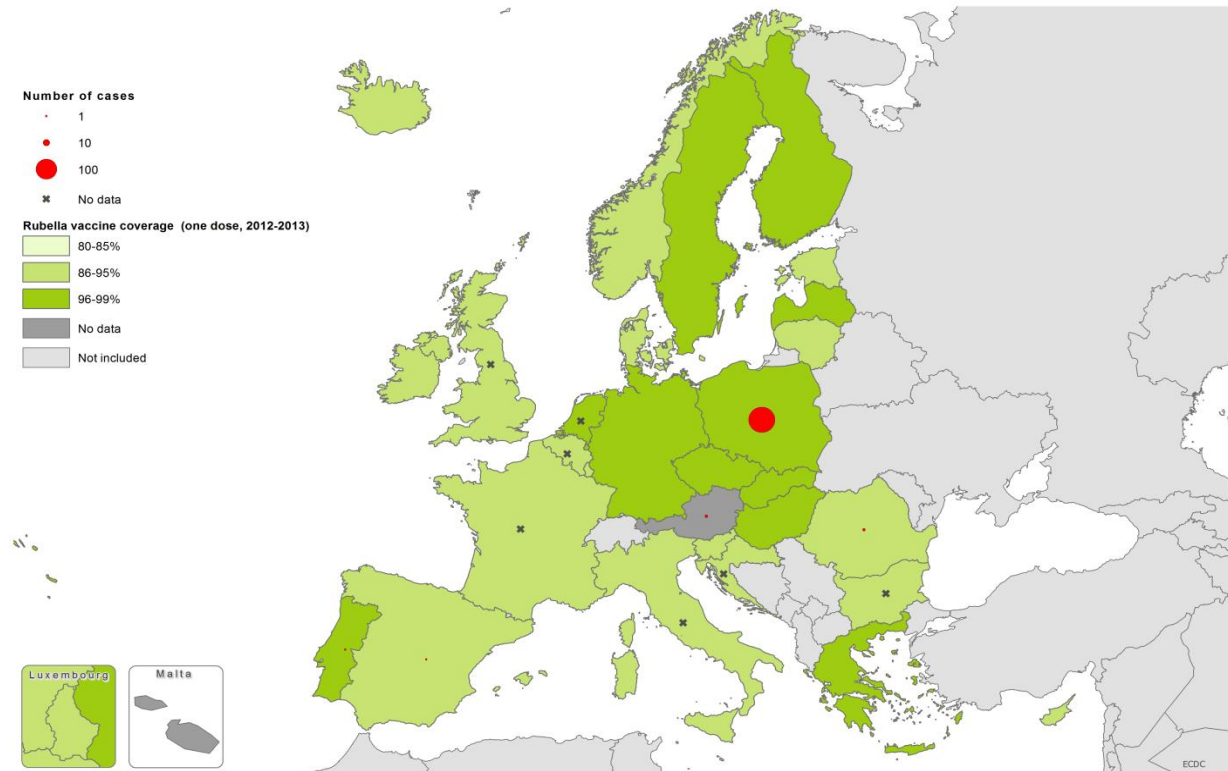
\* The national surveillance system for rubella in Denmark currently only captures rubella infections during pregnancy; therefore the true incidence of rubella in the Danish population will be underestimated.

\*\* Due to the high proportion of cases reported by Poland, an overall notification rate for Europe is not presented.

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

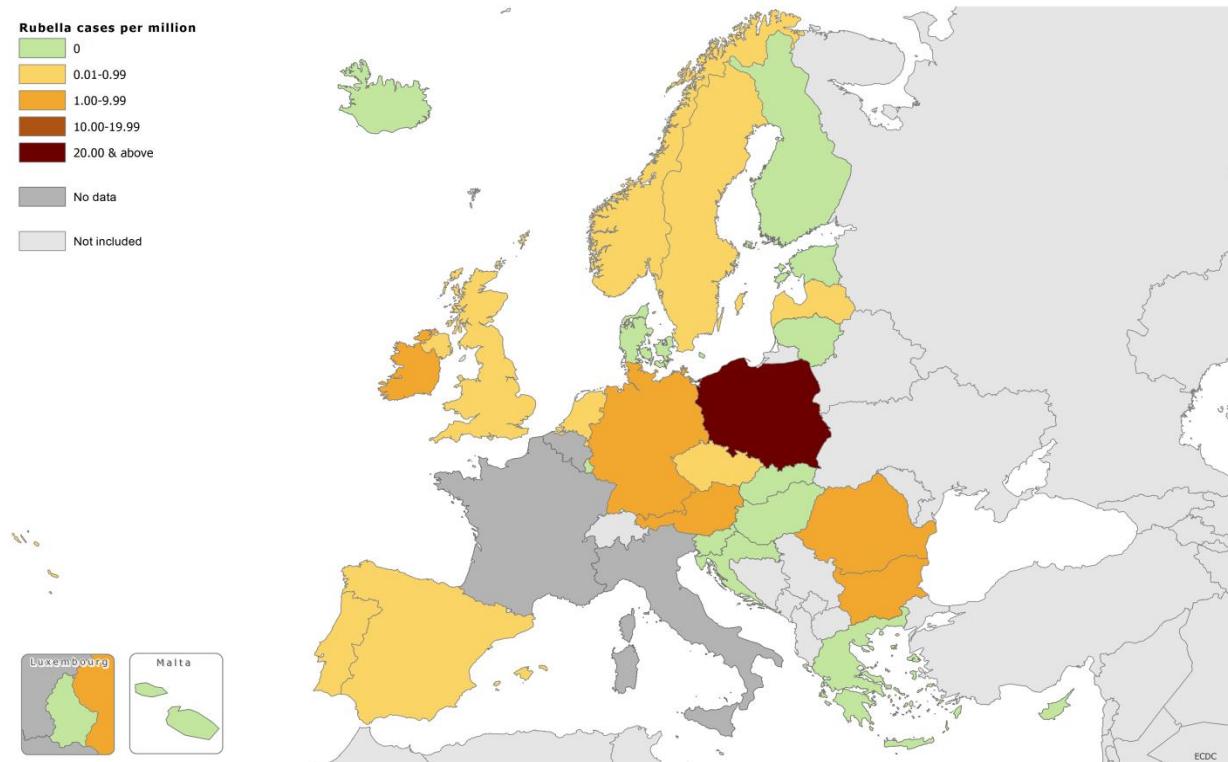
[http://www.ecdc.europa.eu/en/healthtopics/rubella/epidemiological-data/pages/epidemiological\\_data.aspx](http://www.ecdc.europa.eu/en/healthtopics/rubella/epidemiological-data/pages/epidemiological_data.aspx)

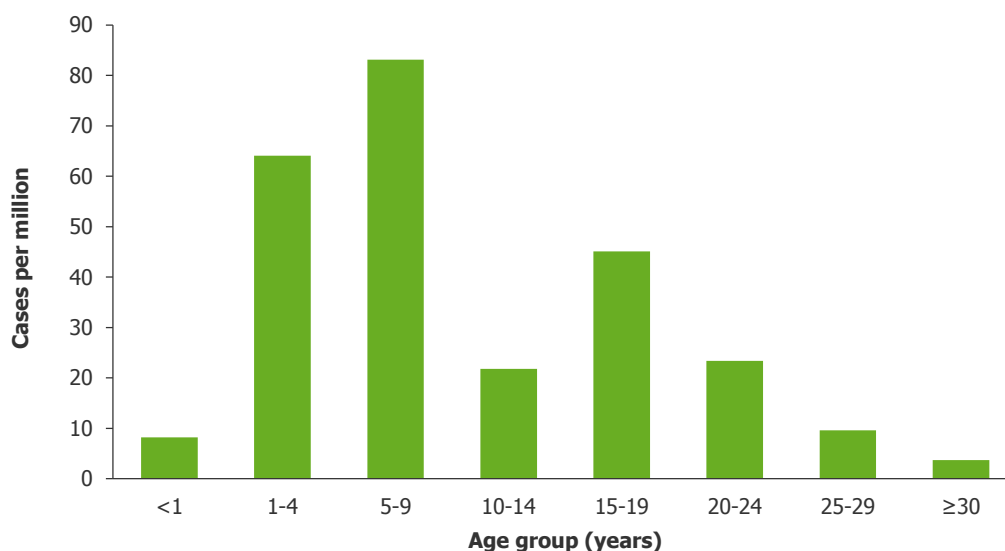
**Figure 9. Number of rubella cases by country, September 2014 (n=165), and rubella vaccine coverage (one dose, 2012–2013, WHO\*), EU/EEA countries**



\* Coverage figures (%) are official national figures reported via the annual WHO/UNICEF Joint Reporting Form. See notes at the end of this report for further explanation.

**Figure 10. Rubella notification rate (cases per million) by country, October 2013–September 2014, EU/EEA countries (n=6 996)**



**Figure 11. Rubella notification rate (cases per million) by age group, October 2013–September 2014, EU/EEA countries (n=5 424 cases with known age)****Table 3. Number of rubella cases by age group and gender, Poland, January–September 2014\***

Age group (years)	Males	Females	Total number of cases
<1	136	108	244
1–4	512	437	949
5–9	825	737	1 562
10–14	256	147	403
15–19	857	55	912
20–24	503	44	547
25–29	153	76	229
≥30	136	251	387
<b>Total</b>	<b>3 378</b>	<b>1 855</b>	<b>5 233</b>

\* No data on age group were reported by Poland in 2013.

## Epidemic intelligence

No rubella outbreaks have been detected by epidemic intelligence since the previous report<sup>§</sup>.

## Useful links

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

Measles health topic page, ECDC: <http://ecdc.europa.eu/en/healthtopics/measles/Pages/index.aspx>

Rubella health topic page, ECDC: <http://ecdc.europa.eu/EN/HEALTHTOPICS/RUBELLA/Pages/index.aspx>

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

Vaccination schedules in EU/EEA countries, ECDC: <http://vaccine-schedule.ecdc.europa.eu/Pages/Scheduler.aspx>

Let's talk about protection, ECDC: <http://www.ecdc.europa.eu/en/healthtopics/immunisation/comms-aid/Pages/protection.aspx>

Information about vaccines and immunisation from the website of the World Health Organization's Regional Office for Europe: <http://www.euro.who.int/en/health-topics/communicable-diseases/measles-and-rubella>

Website of the WHO CISID database: <http://data.euro.who.int/cisid/>

Immunisation health topic page, ECDC: <http://ecdc.europa.eu/en/healthtopics/immunisation/pages/index.aspx>

<sup>§</sup> <http://www.ecdc.europa.eu/en/publications/Publications/measle-rubella-monitoring-july-2014.pdf>

## Notes

The European Surveillance System (TESSy) uses a 'date used for statistics', which is a date chosen by the country for reporting purposes. This date may indicate onset of disease, date of diagnosis, date of notification, or date of laboratory confirmation, depending on reporting practices in the respective countries.

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. Later retrievals of data relating to the same period may result in slightly different numbers, as countries have the possibility to update data in TESSy retrospectively.

The vaccine coverage figures displayed in the maps of this report were retrieved from the WHO Global Database available from: [http://apps.who.int/immunization\\_monitoring/globalsummary/timeseries/tscoveragerubella1.html](http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tscoveragerubella1.html) and [http://apps.who.int/immunization\\_monitoring/globalsummary/timeseries/tscoveragemcv2.html](http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tscoveragemcv2.html)

Measles. 2013 vaccine coverage (estimate) of two doses of measles-containing vaccine was used; if estimates from 2013 were not available, estimates from 2012 were used. Some countries only report the coverage of one dose of measles-containing vaccine. For more information, please check the above link to the WHO Global Database.

Rubella. 2013 vaccine coverage (estimate) of one dose of rubella vaccine was used; if estimates from 2013 were not available, estimates from 2012 were used.

Notification rates were calculated using the most recent population estimates available from Eurostat (2013).