

SURVEILLANCE REPORT

Measles and rubella monitoring

October 2015

Reporting on surveillance data collected from October 2014 to September 2015
and epidemic intelligence data to the end of October 2015

Main developments

Measles

- During the 12-month period from October 2014 to September 2015, 4 202 cases were reported by 30 EU/EEA countries. Twenty-five countries reported consistently throughout this period.
- Germany accounted for 62.6% of the cases reported during this period.
- Measles is targeted for elimination in Europe. In 12 of the countries reporting consistently, the measles notification rate was less than the elimination target of one case per million population, including seven countries which reported zero cases during the 12-month period. Thirteen consistently reporting countries had a notification rate above this target, the highest reported by Croatia (50.4 cases per million).
- The diagnosis of measles was confirmed by positive laboratory results (serology, virus detection or isolation) in 65.7% of all cases.
- Of all cases, 88.7% had a known vaccination status, with 74.7% of all cases reported as unvaccinated. In the target group for routine childhood MMR vaccination (1–4-year-old children), 77.0% of all cases were unvaccinated.
- One measles-related death was reported during the period October 2014–September 2015, and six cases were complicated by acute measles encephalitis.
- In 2014, 16 EU/EEA countries were above the measles vaccination coverage target of 95% for the first dose and six countries were above this target for the second dose. A coverage of 95% in both the first and the second dose is necessary to achieve the level of population immunity required to interrupt endemic transmission. Fourteen countries have coverage rates of <95% for the first dose and 20 countries for the second dose.
- Since the previous report, no new outbreaks of measles have been detected in Europe. The outbreaks in Alsace, France and Berlin, Germany are over.
- Outside of Europe, large outbreaks have been reported in Mongolia, China, the Democratic Republic of Congo (DRC), Sudan and Kazakhstan, while smaller outbreaks have also been reported in Africa, Asia and the Americas.

Rubella

- Twenty-eight EU/EEA countries reported 2 427 rubella cases during the period October 2014 to September 2015. Twenty-three countries reported consistently for the 12-month period.
- Rubella is targeted for elimination in Europe. In 20 of the countries reporting consistently, the rubella notification rate was less than the elimination target of one case per million population, including 15 countries reporting zero cases during the 12-month period. Three consistently reporting countries had a notification rate above this indicator, the highest reported by Poland (59.6 cases per million).
- Poland accounted for 93.3% of all reported rubella cases in the 12-month period. Data were reported in an aggregated format. The highest number of cases was observed in 1–4 and 5–9-year-olds. A total of 29.8% of all cases were unvaccinated. However, this figure needs to be interpreted with caution as only 26 cases were confirmed through laboratory testing.
- In 2014, 16 EU/EEA countries reported a first-dose rubella vaccination coverage rate of $\geq 95\%$, the level of population immunity considered to be required to interrupt endemic transmission. Fourteen countries have a coverage rate of $< 95\%$.
- No outbreaks of rubella have been detected by epidemic intelligence since the last report.

Measles

Enhanced surveillance data

Measles surveillance data were retrieved from The European Surveillance System (TESSy) on 26 October 2015. Case-based data reported from October 2014 to September 2015 by 30 EU/EEA countries were included in the analysis (Table 1).

During the 12-month period, 4 202 cases of measles were reported (Figure 1, Table 1). The country which reported the most cases was Germany (62.6% of all cases) (Table 1). The number of cases observed in September 2015 by country and the notification rates for the 12-month period are shown in Figures 2 and 3.

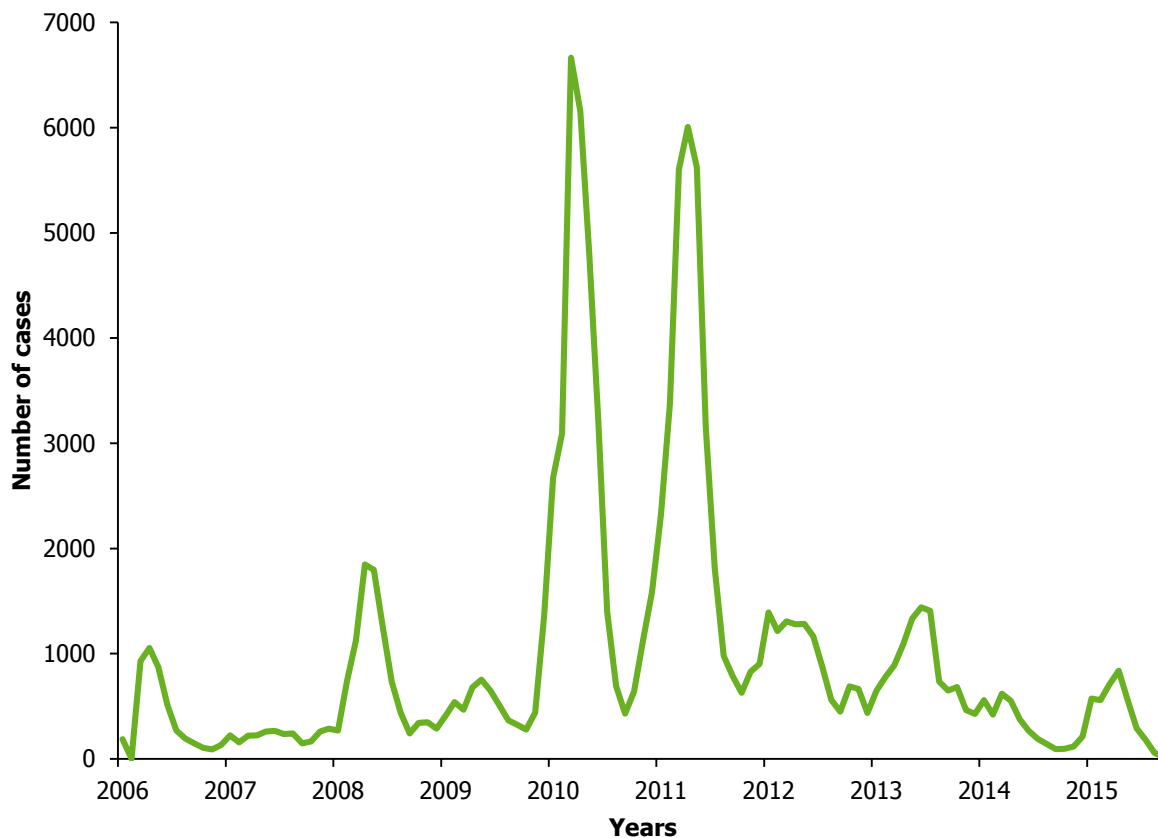
Measles is targeted for elimination in Europe. The measles notification rate was less than the elimination target of one case per million population in 12 of the 25 consistently reporting countries, including seven countries reporting zero cases. Thirteen consistently reporting countries had a notification rate above this indicator, the highest reported by Croatia (50.4 cases per million) (Table 1).

The highest notification rate was among infants under one year of age (57.9 cases per million population), followed by children aged 1–4 years (32 cases per million population) (Figure 4). The diagnosis of measles was confirmed by positive laboratory results (serology, virus detection or isolation) in 65.7% of all cases, although there were large variations between countries in the proportion of laboratory-confirmed cases. This can be attributed to the significant variation in the number of cases reported by the countries, different laboratory capacities, and the fact that laboratory confirmation may not be considered necessary for all cases during an outbreak because of the higher positive predictive value of a clinical diagnosis in such a context.

Vaccination status was known for 88.7% (3 724/4 197) of the cases, whereby 74.7% (3 136/4 197) were unvaccinated, 9.4% (393) had received one dose of measles vaccine, 3.4% (142) had received two or more doses, and 1.3% (53) had received an unknown number of doses. The proportion of unvaccinated cases was high in all age groups and highest among infants under one year of age (93.6%) and children 10–14 years of age (85.0%). Cases in the former age group are often too young to be eligible for vaccination. Among children between one and four years of age – the age group targeted by routine childhood vaccination programmes – 77.0% of all cases were unvaccinated (Figure 5). Measles vaccination coverage with the second dose of a measles-containing vaccine for each country is presented in Figure 2.

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

Figure 1. Distribution of measles cases by month, EU/EEA countries, January 2006–September 2015



Note: During the period January 2006–September 2015, 25 EU/EEA countries consistently reported data on measles every month. Data were not reported by the Netherlands for March 2015, Croatia has not reported since June 2015 and Bulgaria, France and Italy have not reported data for September 2015. 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 2014–September 2015, EU/EEA countries

Country	2014			2015									Total cases	Cases per million	Total confirmed cases
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Austria	3	6	17	37	27	51	63	59	47	10	2	1	323	38.0	245
Belgium	2	5	8	5	7	6	3	18	3	0	0	0	57	5.1	44
Bulgaria	0	0	0	0	0	0	0	0	0	0	0	NR	0	0.0	0
Croatia	0	1	13	52	38	55	37	18	NR	NR	NR	NR	214	50.4	137
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Czech Republic	0	0	0	1	3	1	0	3	1	0	0	0	9	0.9	9
Denmark	0	0	0	0	2	1	1	5	0	0	0	0	9	1.6	9
Estonia	0	0	0	0	0	0	1	0	0	0	0	0	1	0.8	1
Finland	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2	1
France	3	7	7	7	5	13	94	150	53	16	8	NR	363	5.5	131
Germany	35	34	116	432	420	537	577	238	118	91	20	12	2630	32.6	1716
Greece	0	1	0	0	0	0	0	0	0	0	0	1	2	0.2	2
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	1	2	0	0	1	0	1	2	3	0	0	10	2.2	2
Italy	45	30	21	13	18	13	30	33	16	17	12	NR	248	4.1	159
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Lithuania	0	0	0	0	0	4	4	0	16	26	1	0	51	17.3	51
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	1	0	0	0	0	1	2.4	1
Netherlands	0	0	0	0	0	NR	1	0	2	2	0	0	5	0.3	4
Norway	0	0	0	0	0	2	3	4	0	1	4	0	14	2.7	14
Poland	2	0	2	1	7	10	10	4	6	1	2	0	45	1.2	29
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Romania	0	0	1	1	2	0	0	0	0	0	0	0	4	0.2	1
Slovakia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Slovenia	0	28	22	6	8	2	2	0	0	0	0	0	68	33.0	67
Spain	0	0	1	9	8	7	4	5	7	3	1	1	46	1.0	38
Sweden	4	1	1	3	2	1	1	6	6	3	0	0	28	2.9	27
United Kingdom	2	2	0	6	11	3	7	14	13	7	5	3	73	1.1	73
Total	96	116	211	573	558	708	838	559	290	180	55	18	4202	8.2	2761

NR: Data not reported. Liechtenstein does not report.

The target 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.

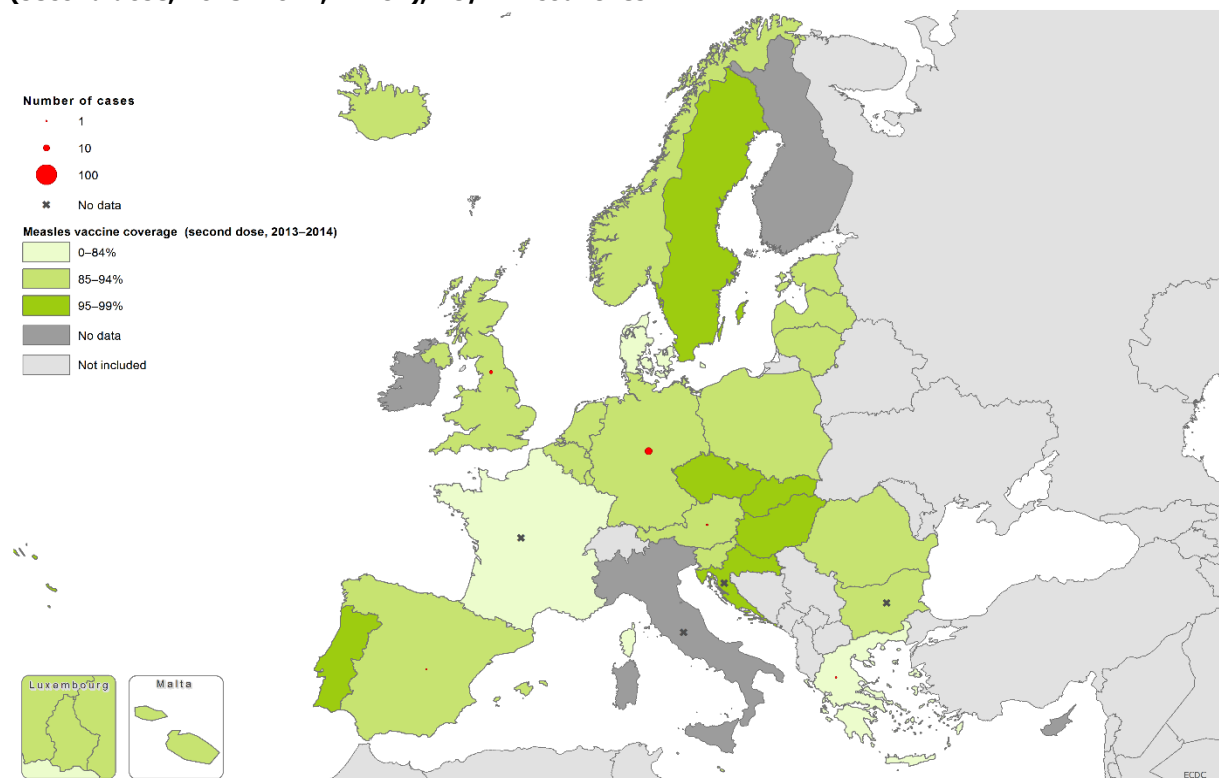
In the table, countries with a notification rate of ≥ 1 per million population are highlighted in green. However, all cases (endemic, imported, import-related) are included for the calculation of the notification rate. Also included are all confirmed, probable, possible or unknown cases, as defined by the EU 2012 case definitions.

Notification rates might be underestimated for countries that did not report data for all 12 months.

Tables on measles cases in previous years are available from:

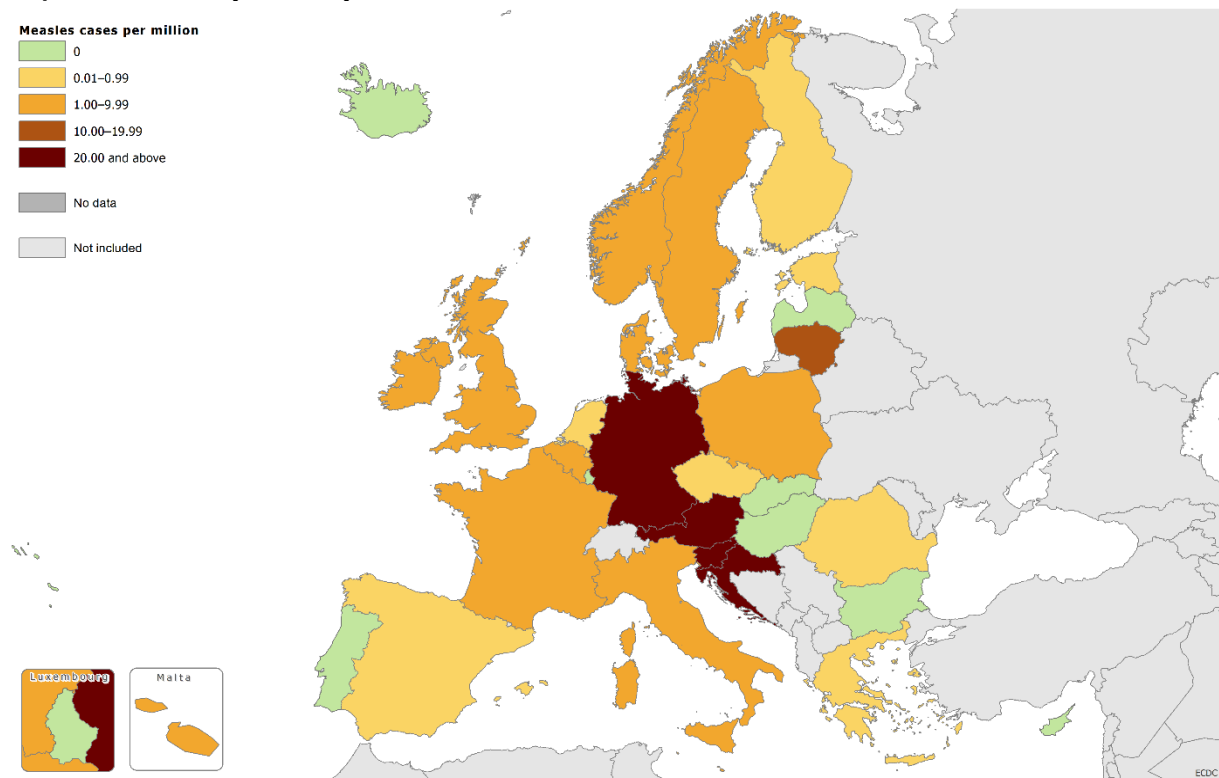
http://www.ecdc.europa.eu/en/healthtopics/measles/epidemiological_data/pages/annual_epidemiological_reports.aspx

Figure 2. Distribution of measles cases by country, September 2015 (N=18), and vaccine coverage (second dose, 2013–2014, 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 3. Measles notification rate (cases per million) by country, October 2014–September 2015, EU/EEA countries (n=4 202)



Note: Notification rate is also calculated for countries that have not reported consistently for the past 12 months.

Figure 4. Measles notification rate (cases per million) by age group, October 2014–September 2015, EU/EEA countries (n=4 197 cases with known age)

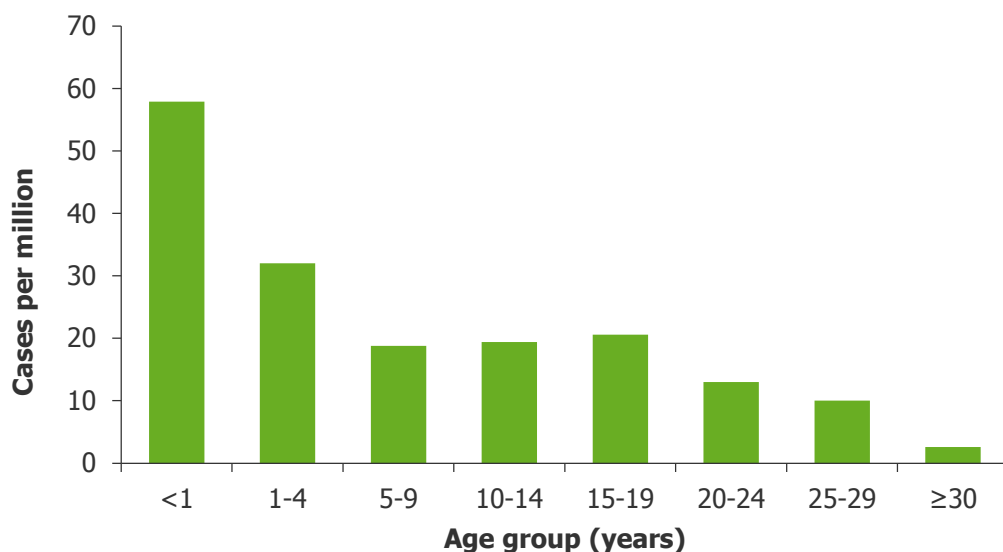
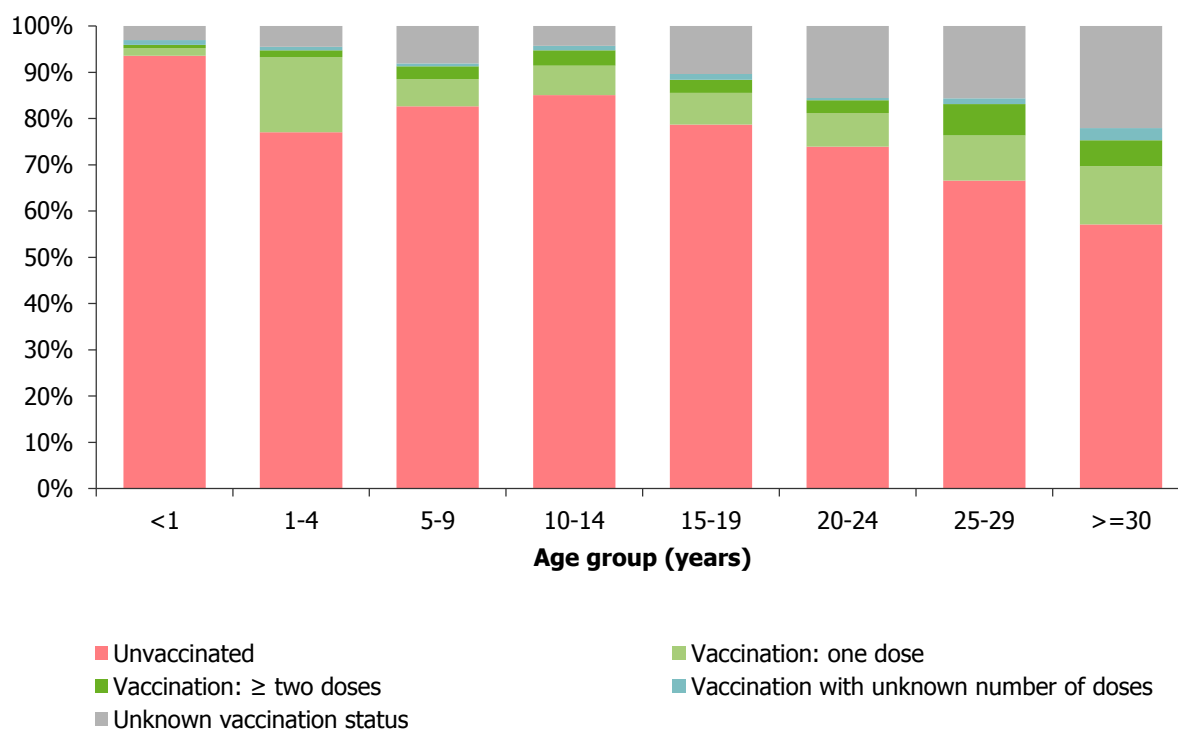


Figure 5. Percentage distribution of vaccination status among measles cases by age group, October 2014–September 2015, EU/EEA countries (n=4 197 cases with known age)



Epidemic intelligence

Updates since the last report*:

EU Member States

France –the Alsace outbreak is over

The outbreak in Alsace detailed in the last report is over. There were 365 measles cases reported to InVS in France between 1 January and 31 July 2015. Among these cases, 230 (63%) were linked to the outbreak in Alsace between March and July 2015.

Germany – the Berlin outbreak is over

The outbreak in Berlin is considered to be over. The last case attributed to the outbreak fell ill on 20 August 2015. Between week 41 in 2014 and the end of August 2015, 1 359 measles cases were reported (1 238 of them in 2015). Among these cases, 26% were hospitalised and one died. The majority of patients (86%) had not been vaccinated against measles.

Rest of the world

Kazakhstan

Measles outbreaks are ongoing in Kazakhstan. Since the beginning of the year and as of 27 October 2015, 2 283 cases have been reported, 17% of them below one year of age. A large immunisation campaign is currently being carried out.

USA – California-linked outbreak is over

The large multi-state outbreak linked to an amusement park in California that started at the end of 2014 has been declared over. From 1 January to 18 September 2015, 189 cases of measles were reported from 24 States and the District of Columbia, according to the US CDC. A total of 62% of the cases were linked to the California outbreak.

Brazil – Ceará outbreak is over

The measles outbreak in Ceará State was declared over in September 2015. From the start of the outbreak in December 2014 to its end, a total of 916 cases were recorded.

Mongolia

According to media, Mongolia reported 17 580 suspected measles cases during the first six months of 2015. This is a very significant increase compared to the same period last year when Mongolia reported 86 cases. WHO declared Mongolia measles-free in June 2014.

Australia

Six cases of measles were reported in South East Queensland at the end of August 2015 after they were exposed to a measles case at the University of Queensland's St Lucia campus.

Cambodia

Cambodia reported its first confirmed measles case since November 2011. The country was declared to have reached its measles-free elimination status by WHO on 27 March 2015.

Democratic Republic of Congo - update

As of 4 October 2015, Katanga province has recorded nearly 30 000 cases of measles, representing 80% of all cases in the country, including 428 fatalities. The number of cases has nearly tripled in 2015 compared to last year.

Sudan -update

As of 4 October 2015, the number of confirmed cases had reached 3 351, including 71 deaths. The outbreak that started in December 2014 has affected people in 71 localities across all 18 States. A total of 73 percent of the cases are children under 15 years, 55% of whom are children under five years.

* <http://ecdc.europa.eu/en/publications/Publications/measles-rubella-quarterly-surveillance-july-2015.pdf>

Iraq - update

According to media, the number of measles cases continues to increase. During the first six months of 2015, 976 cases were reported, compared to 834 cases in 2014 and 603 cases in 2013 for the same period.

China

During the first six months of the year, WHO reported 32 292 cases in China, compared to 9 708 cases notified in 2014 for the same period.

Rubella

Enhanced surveillance data

Rubella surveillance data were retrieved from The European Surveillance System (TESSy) on 26 October 2015. The analysis covered the 12-month period from October 2014 to September 2015.

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, 23 reported data for the entire 12-month period. Bulgaria, Croatia, Greece, Italy and Spain did not report data for September 2015 (Figure 6, Table 2).

During the period October 2014–September 2015, 2 427 cases of rubella were reported. Laboratory confirmation (by serology, virus detection or isolation) was available for 2.8% percent (n=69) of the cases (Table 2). The number of cases reported by country in September 2015 and the notification rates for the entire 12-month period are shown in Figures 6 and 7.

Rubella is targeted for elimination in Europe. The rubella notification rate was less than the elimination target of one case per million population in 20 of the 23 countries that reported consistently over the 12-month period, including 15 countries that reported zero cases. Three consistently reporting countries had a notification rate above this indicator, the highest reported by Poland (59.6 cases per million) (Table 2).

The highest notification rates were observed in infants under one year of age (66.6 cases per million population) and in cases aged between one and four years (45.9 cases per million population) (Figure 8).

Poland accounted for 93.3% (n= 2 264) of all reported rubella cases in the 12-month period. Polish data were reported in an aggregated format. The highest number of cases was observed among 1–4-year-olds (n=768) and 5–9-year-olds (n=639).

In Poland, a total of 674 cases (29.8%) reported over the 12-month period were unvaccinated, 1 101 (48.6%) cases were vaccinated with one dose, 182 (8.0%) cases had received two or more doses, and 307 (13.6%) cases had an unknown vaccination status. However, these figures need to be interpreted with caution as only 26 of the cases reported had a positive laboratory test.

Table 2. Number of rubella cases by month and notification rate (cases per million) by country, October 2014–September 2015, EU/EEA countries

Country	2014			2015									Total cases	Cases per million	Total confirmed cases
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
Austria	0	0	0	0	0	0	1	0	0	0	0	0	1	0.1	1
Bulgaria	0	0	0	0	1	0	0	2	0	0	2	NR	5	0.7	0
Croatia	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0.0	0
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
Germany	8	8	2	11	6	8	15	9	6	15	4	5	97	1.2	22
Greece	0	0	0	0	0	0	0	0	0	0	0	NR	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	0	1	4	0	6	1.3	0
Italy	3	0	1	2	1	9	4	4	7	2	1	NR	34	0.6	11
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	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	0	0	0	0	0	0	0	0	0	0.0	0
Norway	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
Poland	199	226	239	216	199	256	231	183	165	142	114	94	2264	59.6	26
Portugal	0	3	0	0	0	1	0	0	1	1	1	1	8	0.8	2
Romania	0	1	1	0	2	0	0	0	0	0	0	0	4	0.2	0
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	0	0	0	0	1	0	0	NR	1	0.0	0
Sweden	0	0	0	0	0	0	0	0	0	0	0	2	2	0.2	2
United Kingdom	0	0	0	0	1	3	1	0	0	0	0	0	5	0.1	5
Total	210	238	243	229	210	277	252	199	180	161	126	102	2427	**	69

NR: Data not reported. Liechtenstein, Belgium and France do not report.

The target 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, countries with a notification rate of ≥ 1 per million population are highlighted in green. However, all cases (endemic, imported, import-related) are included for the calculation of the notification rate. Also included are all confirmed, probable, possible or unknown cases, as defined by the EU 2012 case definitions.

Notification rates might be underestimated for countries that did not report data for all 12 months.

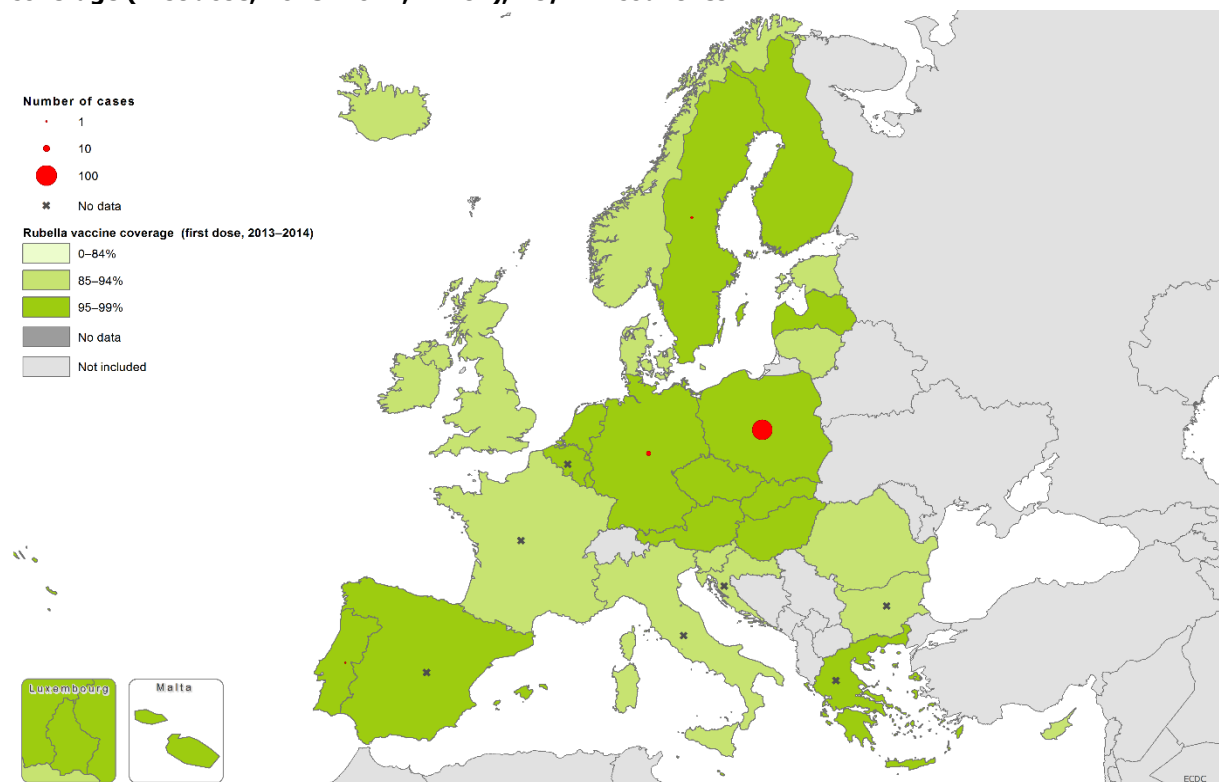
* The national surveillance system for rubella in Denmark currently only captures rubella infections during pregnancy; therefore the true incidence of rubella in the Danish population will be underestimated.

** 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:

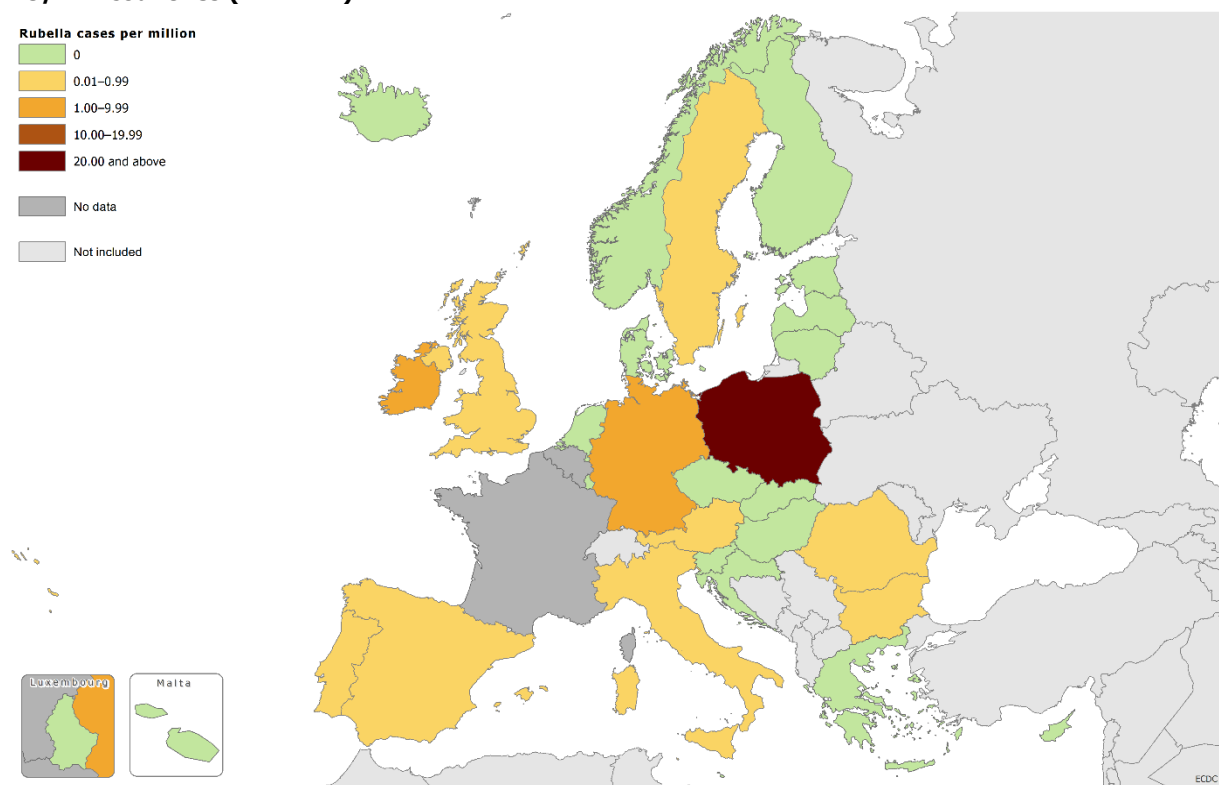
http://www.ecdc.europa.eu/en/healthtopics/rubella/epidemiological-data/pages/epidemiological_data.aspx

Figure 6. Number of rubella cases by country, September 2015 (n=102), and rubella vaccine coverage (first dose, 2013–2014, WHO*), EU/EEA countries



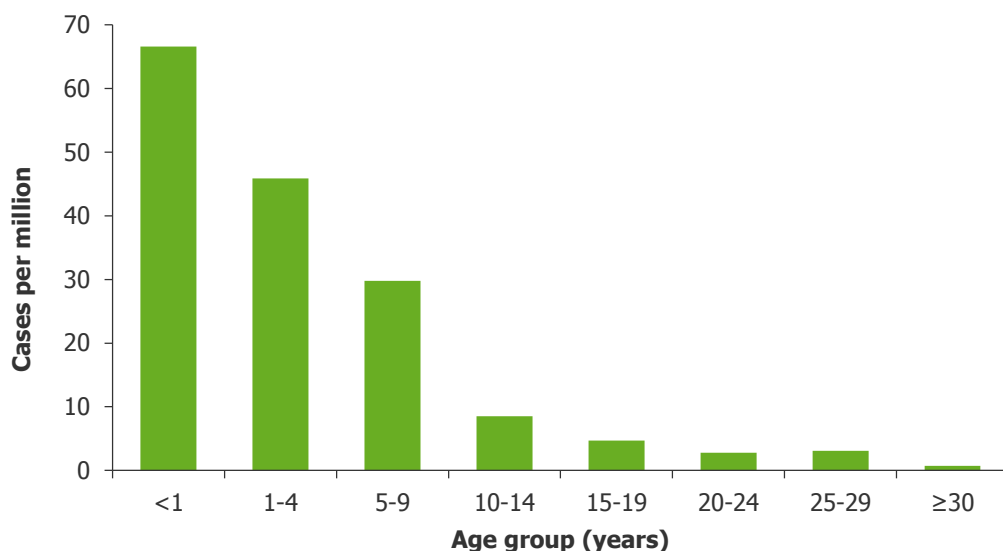
* Coverage figures (%) are official national figures reported via the annual WHO/UNICEF Joint Reporting Form. See notes at the end of this report for further explanations.

Figure 7. Rubella notification rate (cases per million) by country, October 2014–September 2015, EU/EEA countries (n=2 427)



Note: Notification rate is also calculated for countries that have not reported consistently for the past 12 months.

Figure 8. Rubella notification rate (cases per million) by age group, October 2014–September 2015, EU/EEA countries (n=2 427 cases with known age)



Epidemic intelligence

Updates since the last report

No new outbreaks have been detected since the last monthly update[†].

Progress towards the WHO elimination goals

WHO has targeted the elimination of measles and rubella in the 53 Member States of the WHO European Region. Elimination is defined as the absence of endemic cases in a defined geographical area for a period of at least 12 months, where there is a well-performing surveillance system. Regional elimination can be declared after 36 or more months' absence of endemic measles or rubella in all Member States[‡].

Although progress has been made towards elimination, this goal has not yet been achieved. At the third meeting of the Regional Verification Commission for measles and rubella in November 2014, based on country reports for 2013 data, 14 EU/EEA countries were declared to have interrupted measles transmission, five of which were classified as at risk of endemic transmission being re-established. Eight countries were classified as still having endemic transmission and seven countries were classified as inconclusive. For rubella, 16 EU/EEA countries were declared to have interrupted endemic transmission, six of which were classified as being at risk of reestablishment. Eight countries were classified as still having endemic transmission and five countries were classified as inconclusive[§].

The elimination target is an incidence of <1 endemic measles or rubella case per million population in a 12-month period. In the past 12 months, the overall notification rate for measles in EU/EEA countries was 8.2 cases per million. Twelve EU/EEA countries that consistently reported measles data over the past 12 months had <1 case per million (Table 1). Twenty countries who consistently reported rubella data over the past 12 months had <1 case per million (Table 2). These figures include imported and import-related cases and therefore the number of countries having reached the target may be underestimated for each disease.

To interrupt the circulation of the virus, measles and rubella first and second dose vaccination coverage of at least 95% must be reached and maintained in all countries. Data from WHO for 2014** show that vaccination coverage rates were above this target in 16 EU/EEA countries for the first dose of measles and rubella-containing vaccines and in six countries for the second dose of measles-containing vaccine (second-dose coverage was missing for four

[†] <http://ecdc.europa.eu/en/publications/Publications/measles-rubella-quarterly-surveillance-july-2015.pdf>

[‡] http://www.euro.who.int/_data/assets/pdf_file/0009/247356/Eliminating-measles-and-rubella-Framework-for-the-verification-process-in-the-WHO-European-Region.pdf?ua=1

[§] http://www.euro.who.int/_data/assets/pdf_file/0011/275519/3rd-Meeting-European-RVC-Measles-Rubella-Elimination.pdf

** http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tscoveragecmv2.html (If estimates from 2014 were not available, estimates from 2013 were used)

countries). WHO does not collect data on the coverage of the second dose of rubella-containing vaccine. It is clear that vaccination coverage rates must be increased for both measles and rubella if elimination is to be reached. This is relevant at both national and sub-national level as pockets of susceptible individuals still exist throughout the EU/EEA, even in countries with high vaccine coverage.

High-quality surveillance is also essential to achieving and accurately documenting progress towards the elimination goal. Surveillance systems must be highly sensitive and geographically representative to ensure the timely and sufficient investigation and management of suspected cases. Data reporting must be timely and complete, particularly with regard to the origin of case infection. Adequate laboratory investigation is also of paramount importance, especially data on genotyping which is used to track transmission chains. Given the progress towards the elimination goal, current surveillance and control measures in several EU Member States will need to be improved and expanded if the elimination target is to be reached. WHO Surveillance Guidelines for Measles, Rubella and Congenital Rubella Syndrome in the WHO European Region are available at: http://www.euro.who.int/_data/assets/pdf_file/0018/79020/e93035-2013.pdf.

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 and rubella atlases to monitor progress toward elimination, ECDC: <http://ecdc.europa.eu/en/data-tools/atlas/Pages/atlas.aspx>

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

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

Notes

The European Surveillance System (TESSy) collects 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 TESSy 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 and http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tscoveragemcv2.html

Measles

The estimate for 2014 vaccine coverage for the second dose of measles-containing vaccine was used. If estimates from 2014 were not available, estimates from 2013 were used. Some countries only report the coverage of the first dose of measles-containing vaccine. For more information, please check the above link to the WHO Global Database.

Rubella

The estimate for 2014 vaccine for the first dose of rubella-containing vaccine was used. If estimates from 2014 were not available, estimates from 2013 were used.

Notification rates were calculated using the most recent population estimates available from Eurostat (2015).