

SURVEILLANCE REPORT

Measles and rubella monitoring

August 2012

Main developments

Measles and rubella are targeted for elimination in Europe by 2015. ECDC closely monitors progress towards interruption of endemic transmission through enhanced surveillance of both diseases 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 4 513 cases of measles from 1 January to 30 June 2012 and 10 427 cases during the last 12-month period from July 2011 to June 2012.
- Reporting was complete for the 12-month period, with the exception of June 2012 data missing for Austria.
- France, Italy, Romania, Spain and the United Kingdom accounted for 90% of the reported cases.
- The majority (83%) of cases were unvaccinated, a group which includes those who should have been immunised according to recommendations and children too young to have received the first dose of MMR vaccine.
- Romania's notification rate over the last 12 months has been the highest in the EU and the increase in the number of measles cases reported in June compared to May indicates that the current outbreak is likely to continue through the low-transmission season.
- Although ten cases were complicated by acute measles encephalitis, over the last 12 months there have been no measles-related deaths.
- During the last 12 months, six countries have reported more than one case of measles per 100 000 population and the aggregated European incidence was 2.05 cases per 100 000 population.
- Measles transmission continued to be slow at European level and no new large outbreaks have been reported since the last monitoring report.

Rubella

- 17 821 cases of rubella were reported from 1 January to 30 June 2012 by the 26 EU and EEA countries contributing to the enhanced surveillance for rubella.
- 22 835 cases were reported in the last 12 months period from July 2011 to June 2012.
- Poland and Romania accounted for 99% of all reported rubella cases.
- Reporting has been complete, with the exception of data missing for Austria and Greece in relation to June 2012 and Italy for the first six months of 2012.
- Sweden has reported its largest outbreak of rubella since 1996, associated with low MMR uptake in an anthroposophical community south of Stockholm.

Measles

Surveillance data

The enhanced measles surveillance data were retrieved from TESSy on 26 July 2012 and the analysis covers the 12-month period from 1 July 2011 to 30 June 2012. Twenty-nine countries reported case-based data for the entire period, with the exception of Austria which did not report for June 2012.

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 European level during the peak transmission season from February to June (Figure 1). The highest notification rate was among infants under one year (26.35 cases per 100 000 population), followed by children aged between one and four years (12.01 cases per 100 000 population) (Figure 2).

Vaccination status was known for 88% (9 130) of the 10 427 reported cases. Of the cases with known vaccination status, 83% (7 583 cases) were unvaccinated, 12% (1 141) had received one dose of measles vaccine, 4% (354) had received two or more doses, and 0.6% (52) had received an unknown number of doses. The proportion of unvaccinated cases was high across all age groups, including those targeted by vaccination programmes (Figure 3).

Although ten cases were complicated by acute measles encephalitis, over the last 12 months there have been no measles-related deaths.

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

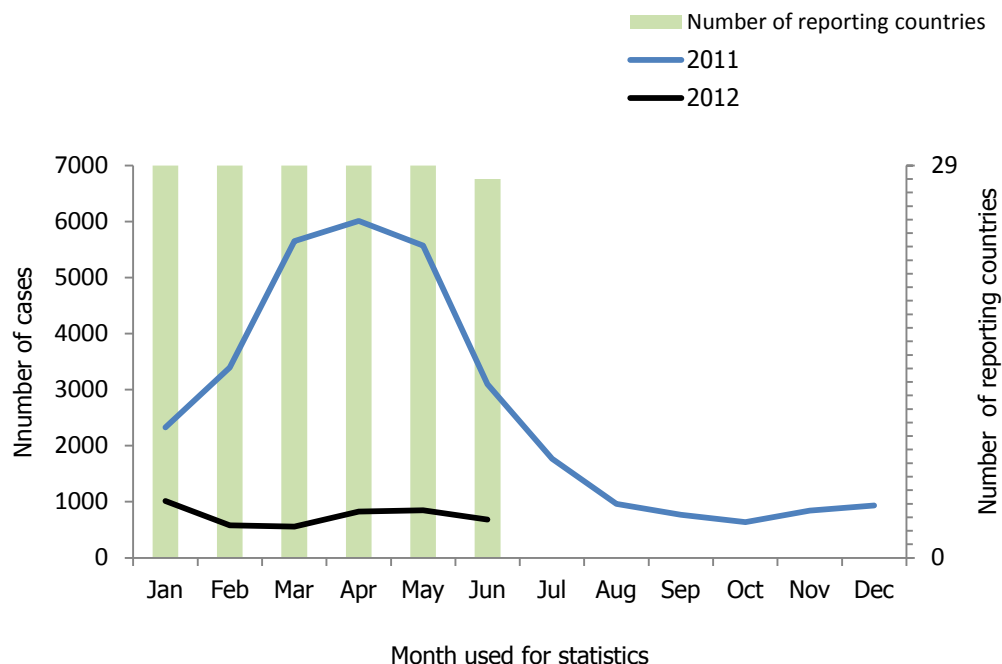


Table 1. Number of measles cases by month, and notification rates (cases per 100 000) for the last 12 months (July 2011–June 2012), EU/EEA countries.

Country	2011						2012						Total cases	Cases per 100 000
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
Austria	11	1	1	1	11	5	0	0	0	0	0	nr	30	0.36
Belgium	43	9	10	3	12	2	7	6	2	8	3	1	106	0.98
Bulgaria	0	0	1	0	1	0	0	0	0	0	0	0	2	0.03
Cyprus	0	0	0	0	0	0	0	1	0	0	0	0	1	0.12
Czech Republic	1	3	0	0	0	1	3	2	0	2	7	2	21	0.20
Denmark	2	0	0	0	0	0	1	0	0	0	0	0	3	0.05
Estonia	0	0	0	0	0	0	0	0	0	2	1	0	3	0.22
Finland	0	5	2	0	0	0	1	0	0	3	0	0	11	0.20
France	395	141	80	71	100	126	106	123	140	110	103	73	1568	2.41
Germany	119	57	22	16	21	7	4	18	7	20	59	18	368	0.45
Greece	0	3	0	0	0	0	0	0	0	0	1	1	5	0.04
Hungary	0	0	0	0	0	5	0	1	0	1	0	0	7	0.07
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Ireland	34	60	61	27	15	3	4	7	6	6	59	21	303	6.76
Italy	416	176	99	61	56	54	58	120	88	97	99	43	1367	2.25
Latvia	0	1	0	0	0	0	0	2	1	0	0	0	4	0.18
Lithuania	0	0	0	0	0	0	0	0	0	2	0	0	2	0.06
Luxembourg	0	1	1	0	0	0	0	0	1	0	0	1	4	0.78
Malta	0	1	1	0	0	0	0	0	0	0	0	0	2	0.48
Netherlands	0	1	0	0	0	0	0	0	1	4	1	1	8	0.05
Norway	1	1	2	1	0	0	0	0	0	1	0	0	6	0.12
Poland	1	10	5	1	0	0	1	1	1	13	11	9	53	0.14
Portugal	0	0	0	0	0	1	1	0	0	1	4	0	7	0.07
Romania	378	286	247	214	357	592	729	110	85	317	186	338	3839	17.89
Slovakia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Slovenia	12	0	0	0	0	0	1	0	1	0	0	0	14	0.68
Spain	248	146	185	168	203	108	59	66	72	48	49	39	1391	3.01
Sweden	2	1	0	0	4	0	2	14	4	4	1	0	32	0.34
United Kingdom	105	60	54	73	63	29	39	110	148	188	263	138	1270	2.03
Total	1768	963	771	636	843	933	1016	581	557	827	847	685	10427	2.05

nr: data not reported.

Notification rates were calculated using the most recent population estimates available from Eurostat (2011).

Countries with a notification rate ≥ 1.0 per 100 000 population are highlighted in green.

Notification rates may be underestimated for countries that did not report data for all 12 months of the period.

All confirmed, probable, possible or unknown cases, as defined by the EU 2008 case definition, are included.

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

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

Figure 2. Measles notification rates (cases per 100 000) by age group for the last 12 months (July 2011–June 2012), EU/EEA countries (n=10 314 cases with known age).

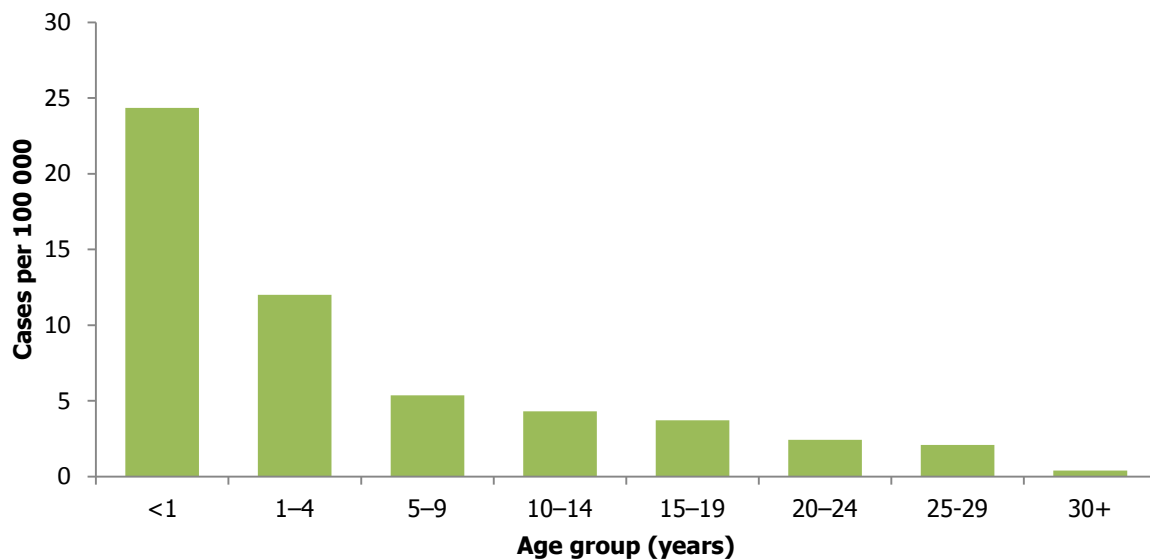


Figure 3. Proportion of vaccination status among measles cases by age group for the last 12 months (July 2011–June 2012), EU/EEA countries (n=10 314 cases with known age).

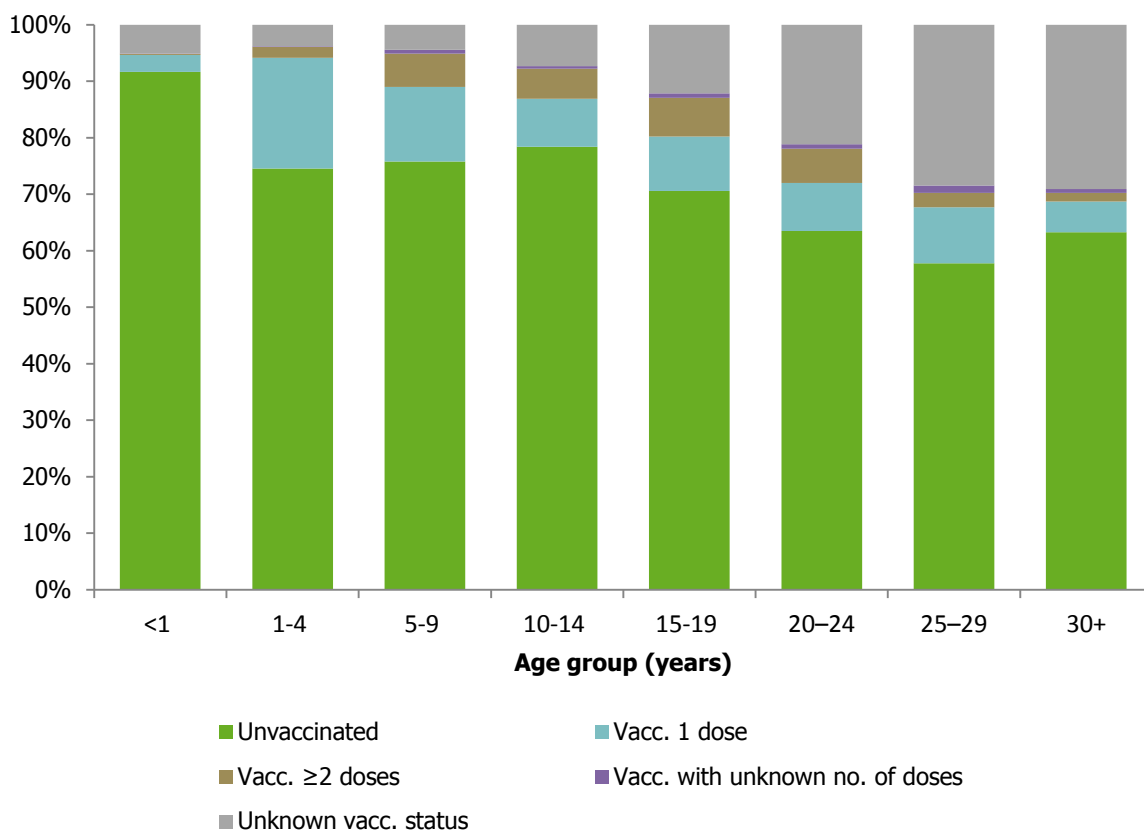
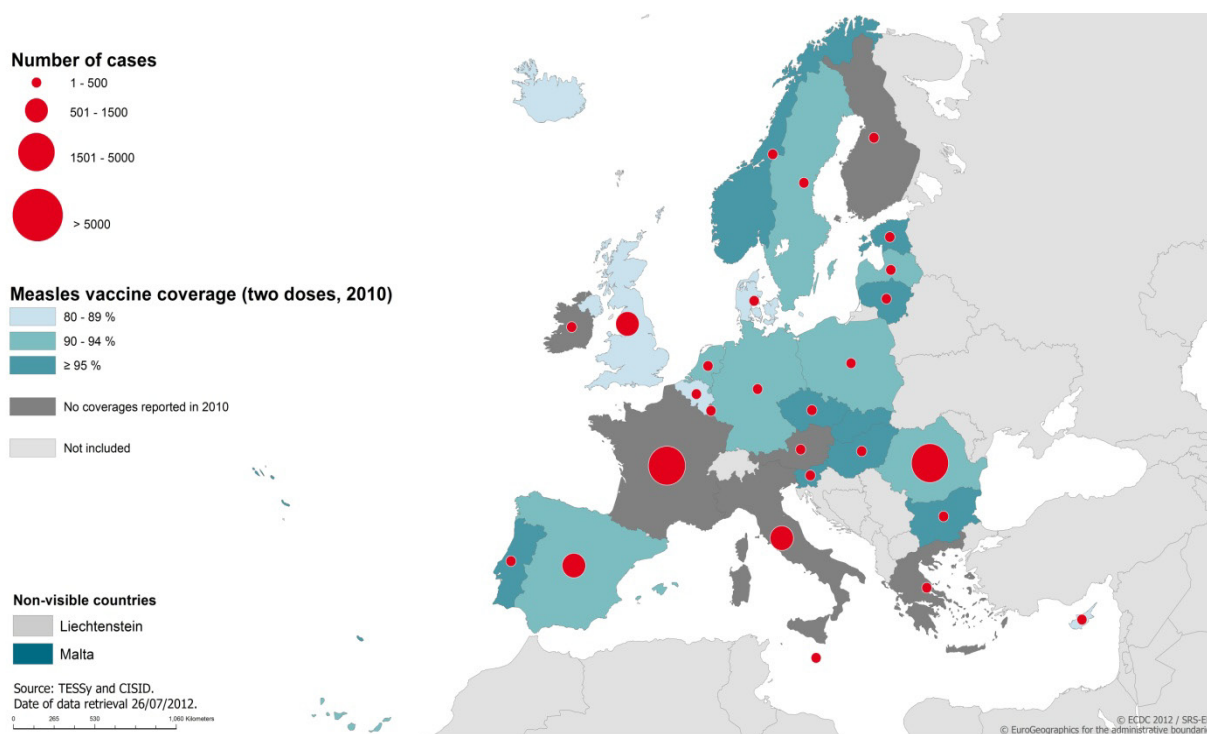
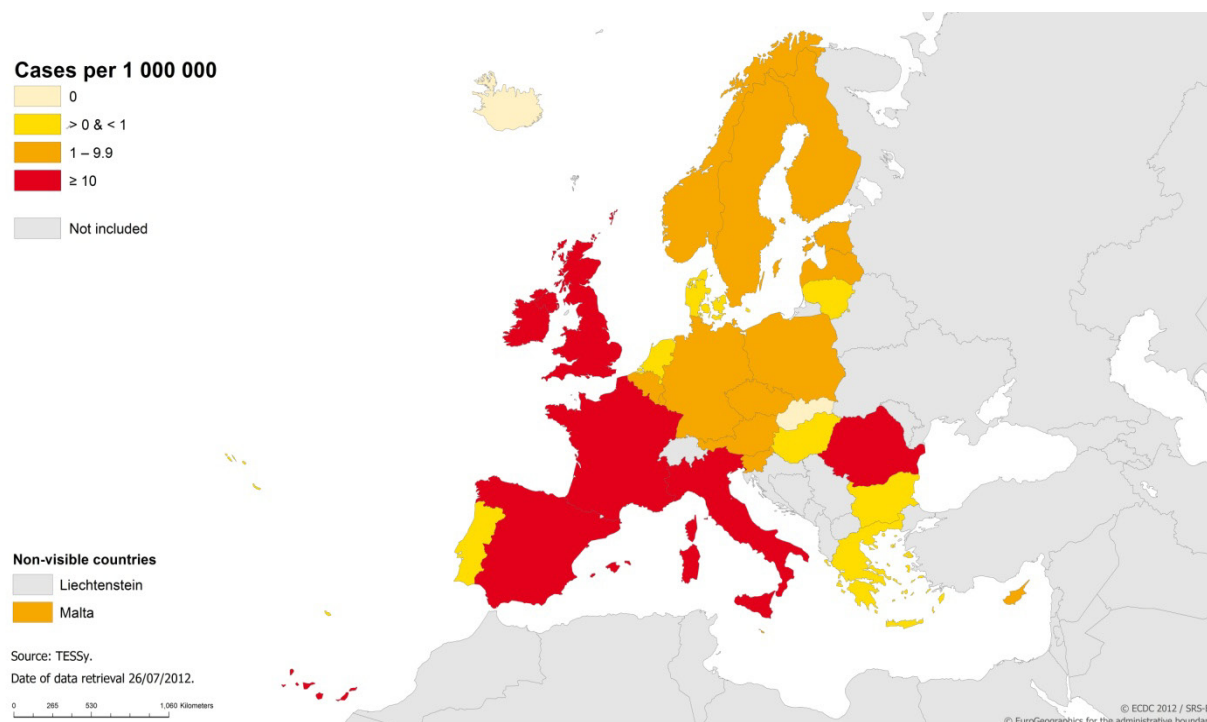


Figure 4. Number of measles cases by country in the last 12 months (July 2011–June 2012, n=10 427) and two-dose measles vaccine coverage* (2010 CISID), EU/EEA countries.



* 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 1 000 000) by country in the last 12 months (July 2011–June 2012), EU/EEA countries (n=10 427)



For maps relating to measles cases and notification rates in 2011:

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

Epidemic intelligence

European Union Member States

UK

Source: [media](#)

During 2012, the UK has had outbreaks of measles in several regions, including Sussex. Media reports indicate an increasing number of infections from Sussex where the number of confirmed cases in 2012 so far has reached 304, compared to 173 for all of 2011.

EU neighbouring countries

Ukraine

Source: [Ministry of Health](#)

As of 31 July 2012, the Ministry of Health in Ukraine had been notified of 11 734 cases of measles in 2012. Fifteen cases had been reported in the last 24 hours, indicating that transmission has slowed down.

Country report — Germany

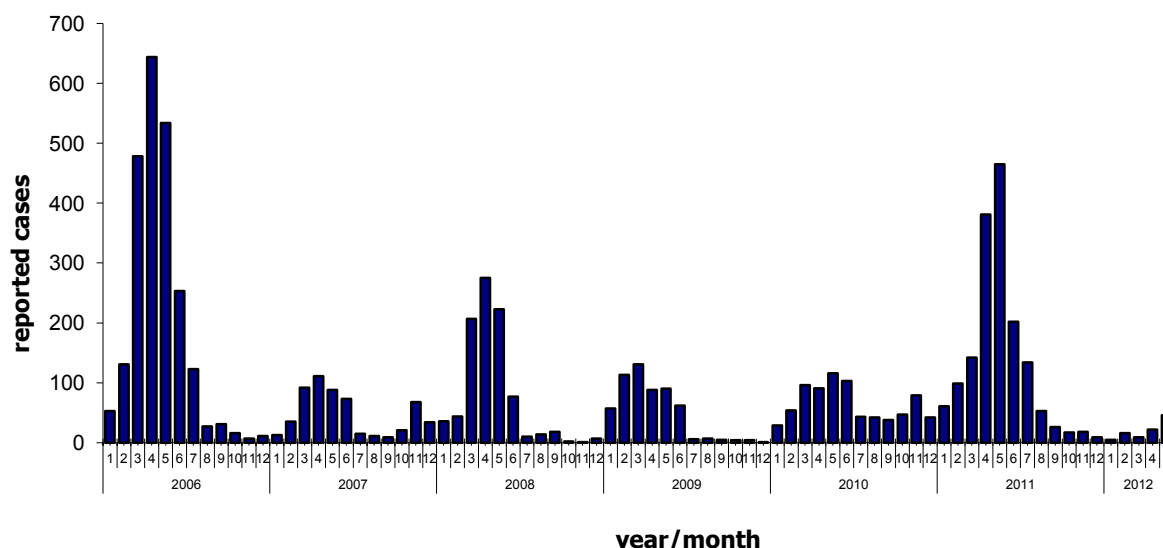
Epidemiology of measles in Germany, 2011 and 2012 (as of 31 May 2012)

Reported by: Robert Koch Institute (RKI), Germany.

Background

Mandatory reporting of measles cases was introduced in Germany in 2001 and both laboratory-confirmed and clinical cases have to be notified¹. Since the introduction, notifications have declined from 6 139 cases in 2001 to 780 cases in 2010. Like many other European countries, Germany saw a considerable increase in measles cases in 2011 (Figure 6).

Figure 6. Reported measles cases by month, Germany, 1 January 2006—31 May 2012; (n=6 845).



¹ Siedler A, Mankertz A, Feil F, Ahlemeyer G, Hornig A, Kirchner M, et al: Closer to the goal: efforts in measles elimination in Germany 2010. J Infect Dis 2011 Jul; 204 (Suppl 1): S373-S380.

Childhood measles vaccination with one dose has been recommended in the western federal states (former Federal Republic of Germany) since 1973 and in the eastern states (former German Democratic Republic) since 1970. Following German reunification in 1991, a two-dose MMR schedule was introduced, with the first dose administered to children at one year of age and the second to 4–6-year-olds. In 2001, to provide the chance to gain immunity earlier, the recommended ages for the first and second doses were changed to 11–14 months and 15–23 months respectively. Vaccination is voluntary in Germany and free of charge, if recommended by the German Standing Committee on Vaccination Recommendations (STIKO). Faced with the target of eliminating measles transmission by 2015, STIKO updated the general vaccination recommendations for measles in 2010. In addition to routine childhood vaccination, STIKO recommends one dose of MMR vaccine for adults born after 1970 who have not been vaccinated, only received one vaccination during childhood, or have unknown vaccination status. As a result of the updated recommendation, catch-up vaccination of young adults became free of charge (before 2010 this was only possible for children up to 18 years of age). Routine childhood vaccination against rubella with one dose was introduced in the western federal states in 1980, while in the eastern states vaccination was made available from 1986 onwards but only to risk groups. Childhood rubella vaccination became available to all children with the introduction of the two-dose MMR scheme in 1991.

Vaccination uptake in Germany is routinely assessed at school entry in all states and has continued to increase in recent years. In 2010, coverage with one dose of MMR vaccine was 96%, and two-dose coverage was 92%, which is still below the critical 95% coverage recommended for elimination. There are still differences between the former East German and western federal states. According to Siedler et al, these are most likely due to historical differences in attitude toward vaccinations, and possibly differences in the level of engagement of local public health services with regard to supplementary immunisation activities (SIAs). Federal states are strengthening their efforts to improve vaccination coverage, especially in children and adolescents. In several states local public health authorities have implemented regular supplementary immunisation activities in schools. Other activities aim to inform the public about possible serious outcomes of measles and to raise family doctors' awareness concerning measles. The first German National Immunisation Plan was published recently².

Recent developments

Between 1 January and 31 December 2011, 1 607 measles cases were reported in Germany of which 918 (57.1%) were laboratory-confirmed and 571 (35.5%) epidemiologically linked to laboratory-confirmed cases. The majority of notified cases occurred in the federal states of Baden-Württemberg (n=524), Bavaria (n=436), Berlin (n=160) and Hessen (n=122). Measles cases and incidence rates per 100 000 inhabitants by federal state in 2011 are shown in Table 2. There was considerable difference in incidence between eastern and western federal states (Figure 7). Incidence was highest in infants (11.4 per 100 000) and one-year-old children (14.3 per 100 000), and ranged between 6.1 and 8.7 per 100 000 in the other childhood age-groups (<14 years) (Figure 8). Outbreaks occurred in schools, within families, in Roma communities and in health care facilities. Of the 1 607 cases, 1 092 (68%) were related to an outbreak (two or more linked cases). Vaccination status was reported for 1 540 of the cases (95.8%) and of these, 1,377 (89.4%) were unvaccinated and 163 (10.6%) had received one or more doses of measles vaccine. Measles infection was laboratory-confirmed in 96 of the 163 vaccinated cases (58.9%), and 41 (25.2%) cases were epidemiologically linked.

² National Immunisation Plan of Germany 2012 (in German): www.msagd.rlp.de/aktuelles

Table 2. Measles cases in 2011 and incidence rates 2010 and 2011, by federal state.

Federal state	Cases		Incidence per million inhabitants	
	2011	2011	2011	2010
Germany	1 607	19.6	19.6	9.5
Baden-Württemberg	524	49	49	14
Berlin	160	47	47	27
Bayern	436	35	35	18
Saarland	35	34	34	1
Hamburg	48	27	27	9
Hessen	122	20	20	5
Brandenburg	27	11	11	6
Schleswig-Holstein	28	10	10	7
Rheinland-Pfalz	29	7	7	7
Niedersachsen	55	7	7	2
Thüringen	13	6	6	0
Nordrhein-Westfalen	102	6	6	10
Sachsen	23	6	6	1
Bremen	2	3	3	2
Mecklenburg-Vorpommern	3	2	2	1
Sachsen-Anhalt	0	0	0	2

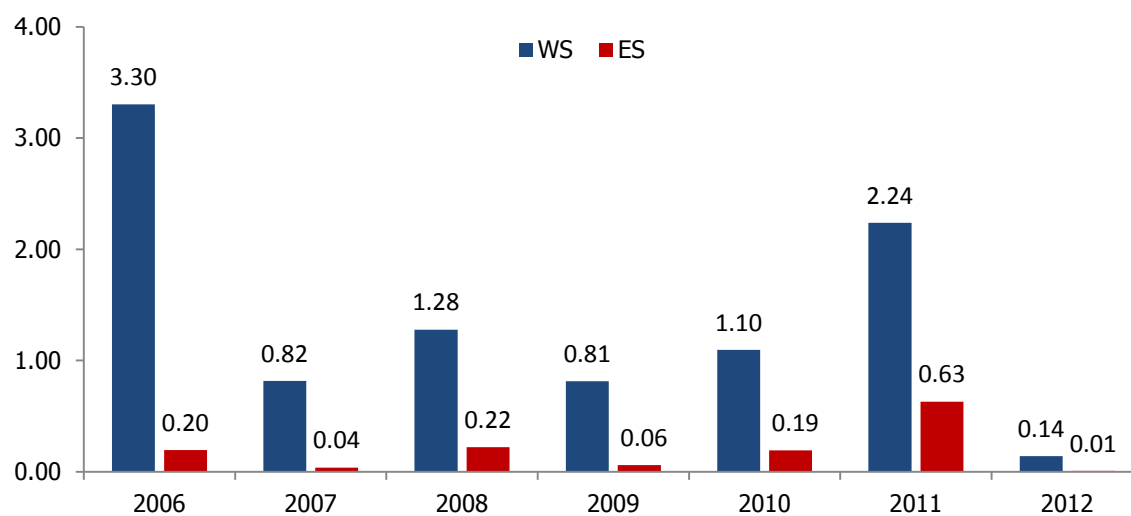
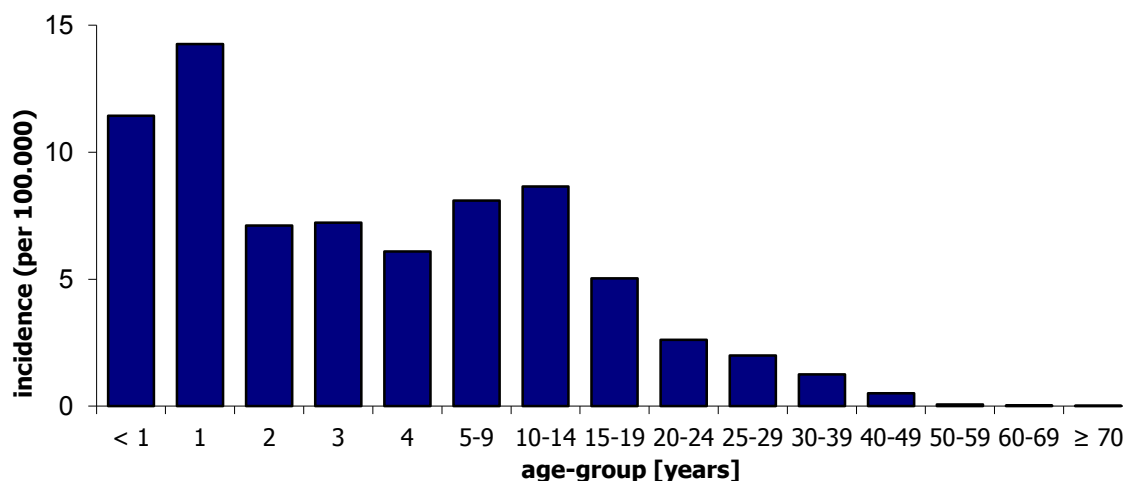
Figure 7. Measles incidence rates per 100 000 inhabitants by German western federal (WS, n=11) and eastern federal states (ES, n=5); 2006 – 31 May 2012 (n=6 845).

Figure 8. Measles incidence rates per 100 000 by age group, Germany, 2011 (n= 1 607).

From 1 January to 31 May 2012, 98 measles cases were notified to the Robert Koch Institute (Figure 10). Two cases of acute encephalitis were notified in 2012. During April and May 2012 several outbreaks occurred in Bavaria, which are briefly described below.

- Outbreak in Oberallgäu, Bavaria (close to the border with Switzerland), calendar weeks 16–21

Seven cases aged between eight and 33 years were reported. All cases were laboratory-confirmed. The index case is unknown. Onset of symptoms of the first two cases was 13–14 April 2012. One case participated in an international yoga course with participants from Switzerland and Liechtenstein during the infectious period. The participants were informed by the German public health authorities about possible exposure.

- Outbreak in Landshut, Bavaria, calendar weeks 16–22

Twelve cases aged between six and 15 years were identified in an outbreak at a Montessori school in the district of Landshut up to 31 May 2012. The index case was a 15 year-old boy who travelled to London during the incubation period. Measles was laboratory-confirmed in six cases. All cases were unvaccinated and one 14-year old boy required hospitalisation. The following control measures were undertaken: immunisation cards of all attending students of the school were checked, recommendations for vaccination at general practitioners were given when applicable, and unprotected persons were excluded from school.

In addition to the 12 linked cases, the RKI was informed about a 32 year-old unvaccinated man who developed measles rash on 19 May 2012. He is a resident of Landshut but no epidemiological link with the school outbreak could be established. The infection was serologically confirmed. The man works with passenger security control at the Franz Josef Strauss international airport in Munich, and he was on duty at different checkpoints in all terminals at the time he developed the rash and in the preceding days. Due to the fact that his job involved innumerable brief contacts with travellers over several days it was impossible to identify individual passengers with whom he had close contact and contact tracing was therefore not conducted. However, RKI informed international public health authorities via EWRS and IHR about the possible exposure to measles at Munich airport.

The public health authorities, together with the Bavarian Ministry of Health, distributed information leaflets on measles among airport staff and 165 people with close professional contact to the case were identified. Of these, 56 had a history of measles infection, 62 had been vaccinated at least once, 13 were unvaccinated and 34 had an unknown vaccination status. Unvaccinated persons considered to have been at high risk of infection (e.g. due to prolonged contact with the index case or presence of possible prodromal symptoms) were suspended until vaccinated or until serological evidence of immunity could be demonstrated. The unvaccinated, those with unknown vaccination status and those who had received only one dose during childhood were advised to get vaccinated. Blood samples were collected and immunisations were administered at the airport over a 10-day period from the date of symptom onset of the case. The occupational health department plans to check the immunisation status of all the approximately 1 200 employees at the airport. There have been no reports of infections linked to the case at the airport.

- Outbreak in Erlangen/Nurnberg, Bavaria, calendar week 18–19

The outbreak originated at an international company whose employees frequently travel to Ukraine and China. The index case developed symptoms between 30 April and 3 May 2012. Nine staff members aged 25 to 36 years developed measles (six laboratory-confirmed) and one case was hospitalised. Five of those infected had received at least one dose of measles vaccine during childhood. The company immediately informed staff at all its branches worldwide about the measles outbreak at their headquarters and recommended them to check their vaccination status and to arrange for immunisation if applicable.

Figure 9. Reported number of measles cases by age group, Germany, 2011 (n=1 607).

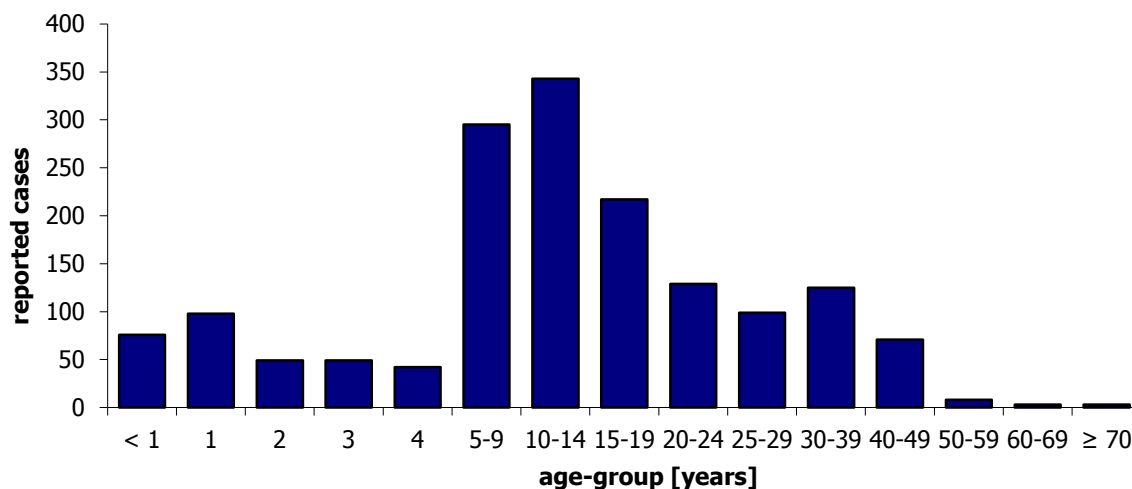
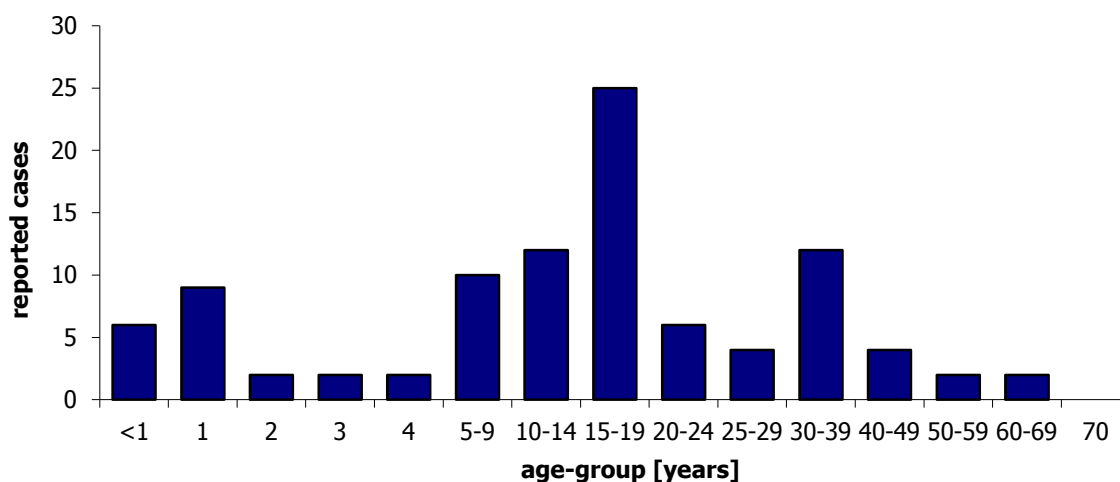


Figure 10. Reported number of measles cases by age group, Germany, 1 January–31 May 2012 (n=98).



ECDC comment

This report from the RKI in Germany highlights the practical aspects of measles outbreak control. Maintaining measles elimination in a defined geographical area depends on high vaccination uptake in the population (herd immunity) and early recognition and response to outbreaks resulting from importation of measles virus. When measles incidence reduces over time as a result of increasing vaccination uptake, rapid and effective response to outbreaks becomes increasingly important for achieving and maintaining elimination status. Early detection and action requires a high degree of awareness concerning measles among health care workers. If infective patients are not separated from other patients in clinics and emergency waiting rooms, measles can easily transmit to infants who are too young to be vaccinated and to other unvaccinated people.

ECDC is grateful for the report by RKI and encourages other countries to submit updates on measles and rubella epidemiology, reports on recent outbreaks and control measures, and descriptions of initiatives aimed at increasing MMR vaccination uptake.

Rubella

Surveillance data

The enhanced rubella surveillance data were retrieved from TESSy on 26 July 2012 and the analysis covers the 12-month period from 1 July 2011 to 30 June 2012. Twenty-six countries reported case-based data for the entire period, Austria and Greece did not report in June, and Italy has not reported on rubella during the past six months.

An overview of the number of cases and notification rates in the past 12 months is shown in Table 3. Poland and Romania accounted for 99% of the reported cases.

Table 3. Number of rubella cases by month and notification rates (cases per 100 000) in the last 12 months (July 2011–June 2012), EU/EEA countries.

Country	2011						2012						Total cases	Cases per 100 000
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
Austria	0	0	0	0	1	0	0	0	0	0	0	nr	1	0.01
Belgium	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-
Bulgaria	3	0	2	0	1	1	1	2	4	1	2	2	19	0.25
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Czech Republic	2	0	0	0	2	0	2	0	2	1	1	0	10	0.09
Denmark	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Estonia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Finland	0	0	0	1	0	0	0	0	0	0	0	0	1	0.02
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	nr	0	0.00
Hungary	0	0	0	0	1	0	0	1	1	4	0	0	7	0.07
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Ireland	0	0	0	0	0	0	0	0	3	0	6	2	11	0.25
Italy	4	4	3	1	4	0	nr	nr	nr	nr	nr	nr	16	0.03
Latvia	0	0	0	1	0	0	0	0	0	0	3	2	6	0.27
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Luxembourg	0	0	0	0	0	0	0	0	1	0	0	0	1	0.20
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Netherlands	0	0	0	0	0	0	0	0	0	1	0	0	1	0.01
Norway	0	0	0	0	0	0	0	1	0	0	0	0	1	0.02
Poland	264	153	161	160	205	186	174	279	695	1071	1027	731	5106	13.37
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Romania	13	9	45	276	1595	1905	850	4054	5698	1874	899	299	17517	81.62
Slovakia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Slovenia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Spain	1	0	1	1	0	2	4	12	15	12	6	2	56	0.12
Sweden	0	0	0	2	1	0	0	0	0	1	2	15	21	0.22
United Kingdom	1	2	0	0	0	0	3	19	17	9	8	2	61	0.10
Total	288	168	212	442	1810	2094	1034	4368	6436	2974	1954	1055	22835	4.50

nr: data not reported.

Notification rates were calculated using the most recent population estimates available from Eurostat (2011).

Countries with a notification rate ≥ 1.0 per 100 000 population are highlighted in green.

For countries that reported 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.

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

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

Epidemic intelligence

European Union Member States

Sweden

Sources: [SMI](#) and [media](#)

The Swedish Institute for Communicable Disease Control (SMI) has reported an outbreak of to date 48 cases of rubella, concentrated in the small town of Järna south of Stockholm. It is the highest number of reported rubella cases in Sweden since 1996. Järna is the centre of the anthroposophical movement in Sweden, many of whose groups argues against childhood vaccination. According to the county medical officer there is a possibility of a large number of unreported cases because it is a mild disease and parents want their unvaccinated children to become infected. Pregnant women living in the Järna area who are not sure about their immunity against rubella and have reason to suspect that they have been exposed to the virus have been encouraged to contact local clinics.

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

- 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.
- 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. For this issue, measles and rubella data were retrieved on 26 July 2012. Later retrievals of data may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively.
- Surveillance data are no longer presented for the current calendar year but for the past 12 months, unless stated otherwise. Differences between current and previously published EMMO data should therefore be interpreted with caution.