



## Introduction

The following surveillance report covers the year 2002 and aims to describe basic epidemiological features of measles in EUVAC.NET participating countries. All incidence rates are based on reported measles cases and are per 10<sup>5</sup> inhabitants per year. With a few exceptions, total numbers reported are likely to be incomplete. Hence, incidence data in this report has to be interpreted cautiously because of under-reporting.

## Methods

For 2002, 17 (89%) out of the 19 EUVAC.NET participating countries provided data, 16 of which contributed case-based data. Collaborators sent case-based data electronically to EUVAC.NET as an Excel file. Analysis of data was carried out using Microsoft Excel 2000. In this report, evaluation is based on cases with date of disease onset in 2002. Where this was not available, cases with the date of notification reported in 2002 was used to include the cases. Minor discrepancies with national data may arise in some countries if these include cases notified in 2002 but with disease onset in 2001. Incidence rates were based on population statistics for 2002 obtained from the Population Information page on the WHO website for the Computerized Information System for Infectious Diseases (CISID), <http://cisid.who.dk>.

Switzerland also provided data based on a sentinel surveillance system that involved the participation of 3-4% of all primary care physicians. In France, however, a sentinel surveillance system involving 472 general practitioners is the only system in place for reporting clinical measles cases. Epidemiological evaluation of data from sentinel surveillance systems is included separately in this report.

## Incidence – notifications and laboratory data

EUVAC.NET gatekeepers reported a total of 23,765 measles cases (table 1) giving a crude incidence of 7.62 per 100,000 population. Confirmed cases, either by laboratory methods or those epidemiologically confirmed constituted 12% of the total cases. Of these, 44% were laboratory-confirmed. The distribution of notified measles cases varied considerably among the participating countries. In table 2, countries have been grouped into low, moderate and high incidences for notified cases. No cases were reported from Finland, Iceland and Luxembourg. The highest incidence of measles notifications was reported from Italy.

## Outbreaks and imported cases

There were 2081 (9%) outbreak related cases reported in 2002 (table 5). Most (83%) were reported from Germany. More details of measles outbreaks in Germany may be found on *Eurosurveillance Weekly 2002, Volume 6 / Issue 12*. The status relating to outbreaks remained unknown in 79% of all cases. No data from Italy was available on outbreak related cases through the mandatory notification system. However, a paediatric sentinel surveillance system has monitored a large outbreak situation taking place mostly during the first half of 2002. A more detailed report is found on the *Eurosurveillance Weekly 2002, Volume 6 / Issue 27*.

A known importation status was reported in 86% of cases in 2002 (table 5). Of these, there were 86 imported cases amounting to 0.95% of all cases with known importation status. Fifty-three cases (62%) were imported from another European country. There were 32 imported cases (38%) from other continents including 20 from Asia (eight from the Middle East), eight from Africa, four from North America and one from Australia.

**Table 1.** Reported measles cases and laboratory confirmed cases by country, 2002 (n=23,765)

	<i>Total no. of reported cases</i>	<i>Crude incidence</i>	<i>Confirmed cases as a % of total no. reported</i>	<i>Laboratory confirmed as a % of total confirmed cases</i>
<b>Austria</b> <sup>1</sup>				
<b>Belgium</b> <sup>1</sup>				
<b>Denmark</b>	32	0.60	100	100
<b>Finland</b>	0	0	-	-
<b>France</b> <sup>2</sup>				
<b>Germany</b>	4,665	5.69	50	34
<b>Greece</b>	5	0.05	0	0
<b>Iceland</b>	0	0	-	-
<b>Ireland</b>	268	6.91	3	100
<b>Italy</b>	18,312	31.87	0	0
<b>Luxembourg</b>	0	0	-	-
<b>Malta</b>	7	1.78	0	0
<b>The Netherlands</b>	3	0.02	33	100
<b>Norway</b>	5	0.11	100	100
<b>Portugal</b>	7	0.07	14	100
<b>Spain</b>	79	0.20	80	75
<b>Sweden</b>	8	0.09	75	100
<b>Switzerland</b>	47	0.66	89	86
<b>United Kingdom</b>	327	0.55	100	97
<b>Total</b>	<b>23,765</b>	<b>7.62</b>	<b>27</b>	<b>44</b>

<sup>1</sup> No data received till date of update of this report. <sup>2</sup> Only sentinel surveillance systems operating.

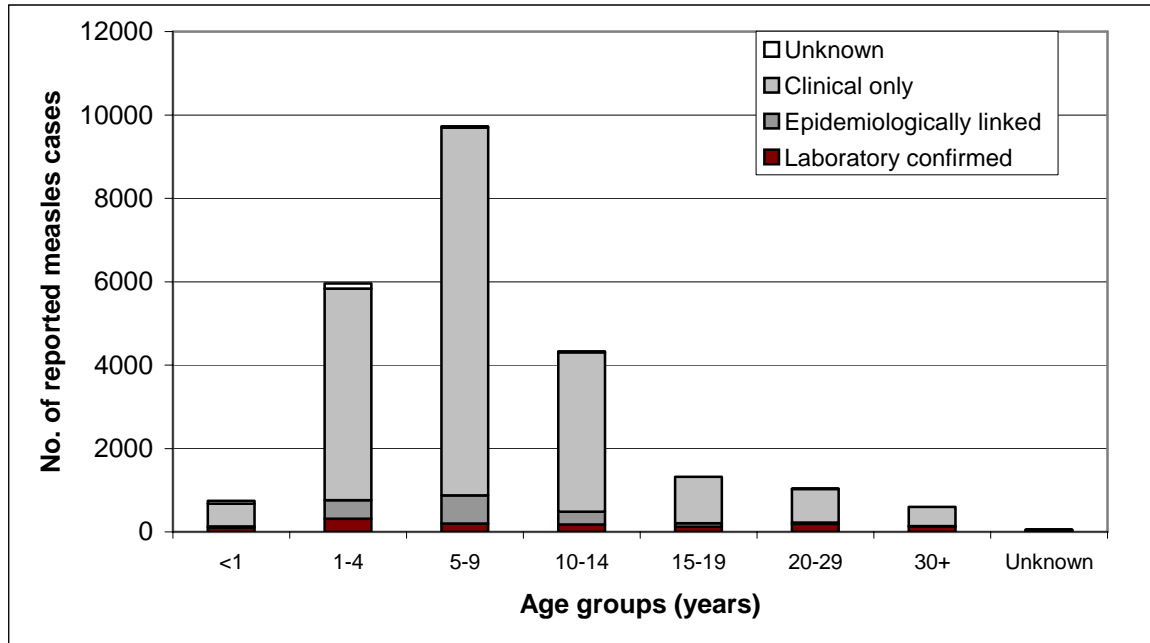
**Table 2.** Notified measles cases by country and incidence, 2002

<b>Low incidence (&lt; 0.1)</b>	<b>Moderate incidence (0.1-1.0)</b>	<b>High incidence (&gt;1.0)</b>
Finland (0)	Denmark (0.60)	Germany (5.69)
Greece (0.05)	Norway (0.11)	Ireland (6.91)
Iceland (0)	Spain (0.20)	Italy (31.87)
Luxembourg (0)	Switzerland (0.66)	Malta (1.78)
The Netherlands (0.02)	UK (0.55)	
Portugal (0.07)		
Sweden (0.09)		

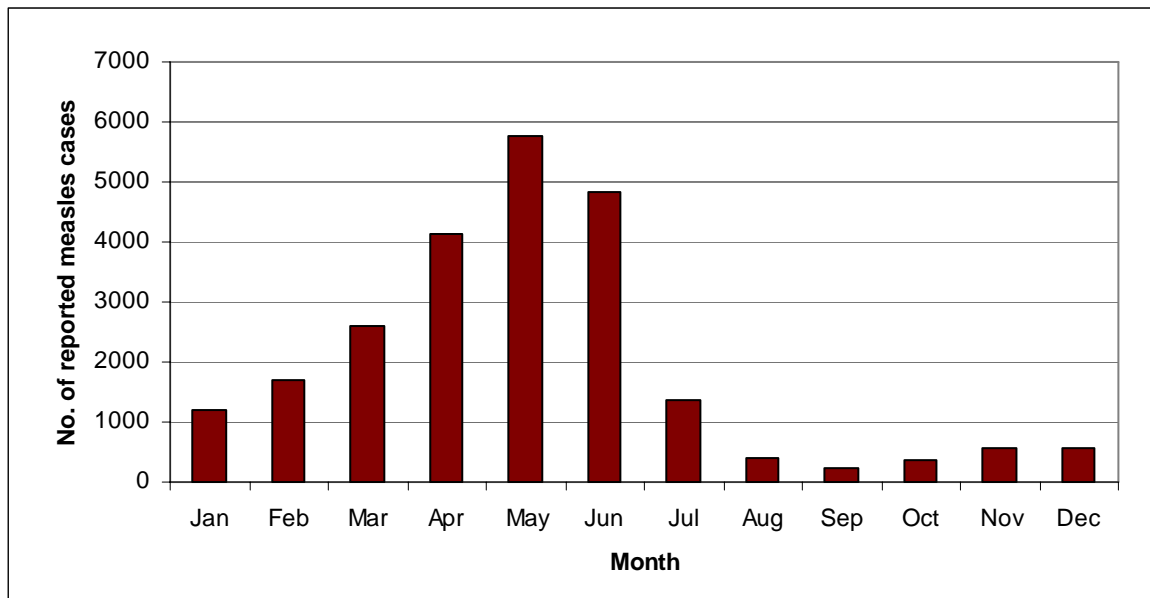
### Age distribution and seasonality

Measles was reported in both children and adults with most cases however, in the 1-9 year age group (Figure 1). These accounted for 66% of the total cases, followed by the 10-14 year age group (18%). The proportion of laboratory confirmed cases generally increased with increasing age group (Figure 1). Overall, most cases (85%) were reported to occur in the first half of the year particularly during late winter and early spring (Figure 2 and Table 3).

**Figure 1.** Notified measles cases by age group and confirmation status in 16 reporting countries, 2002 (n=23,765)



**Figure 2.** Total number of reported measles cases by month in 16 reporting countries, 2002 (n=23,765)



### Vaccination status

Information on vaccination status was provided in 72% of the total measles cases in 2002. Sixty-seven percent of the reported measles cases occurred in unvaccinated children (Table 4).

**Table 3.** Number of reported measles cases by country and month, 2002 (n=23,765)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
<b>Austria</b> <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Belgium</b> <sup>1</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Denmark</b>	22	1	0	0	3	2	3	1	0	0	0	0	<b>32</b>
<b>Finland</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>France</b> <sup>2</sup>													
<b>Germany</b>	815	994	916	585	520	313	218	100	49	32	70	53	<b>4665</b>
<b>Greece</b>	0	1	1	1	1	1	0	0	0	0	0	0	<b>5</b>
<b>Iceland</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>Ireland</b>	11	22	12	54	39	18	8	5	12	5	24	58	<b>268</b>
<b>Italy</b>	247	626	1649	3467	5170	4477	1110	278	163	272	427	426	<b>18312</b>
<b>Luxembourg</b>	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>Malta</b>	0	0	1	3	2	0	1	0	0	0	0	0	<b>7</b>
<b>The Netherlands</b>	0	2	0	0	0	1	0	0	0	0	0	0	<b>3</b>
<b>Norway</b>	0	1	0	1	0	0	0	3	0	0	0	0	<b>5</b>
<b>Portugal</b>	1	2	0	1	0	0	1	0	0	0	1	1	<b>7</b>
<b>Spain</b>	12	18	3	1	2	7	11	17	1	3	2	2	<b>79</b>
<b>Sweden</b>	4	2	0	2	0	0	0	0	0	0	0	0	<b>8</b>
<b>Switzerland</b>	7	0	5	5	7	6	9	1	1	2	4	0	<b>47</b>
<b>United Kingdom</b>	66	46	26	16	39	7	12	5	21	40	25	24	<b>327</b>

<sup>1</sup> No data received till date of issue of this report. <sup>2</sup> Only sentinel surveillance systems operating.

**Table 4.** Vaccination status of reported measles cases by country, 2002 (n=23,765)

	No. unvaccinated	Percentage unvaccinated	No. vaccinated	Percentage vaccinated	No. unknown vaccination	Percentage unknown vaccination
<b>Austria</b> <sup>1</sup>						
<b>Belgium</b> <sup>1</sup>						
<b>Denmark</b>	27	84	3	9	2	6
<b>Finland</b>	0		0		0	
<b>France</b> <sup>2</sup>						
<b>Germany</b>	3424	73	414	9	827	18
<b>Greece</b>	n.r.		n.r.		5	100
<b>Iceland</b>	0		0		0	0
<b>Ireland</b>	n.r.	4	11	4	247	92
<b>Italy</b>	12087	66	658	4	5567	30
<b>Luxembourg</b>	0		0		0	
<b>Malta</b>	1	14	6	86	0	0
<b>The Netherlands</b>	2	67	1	33	0	0
<b>Norway</b>	4	80	1	20	0	0
<b>Portugal</b>	3	43	4	57	0	0
<b>Spain</b>	45	57	24	30	10	13
<b>Sweden</b>	5	63	0	0	3	38
<b>Switzerland</b>	23	49	8	17	16	34
<b>United Kingdom</b>	313	96	11	3	3	1
<b>Total</b>	<b>15944</b>	<b>67</b>	<b>1141</b>	<b>5</b>	<b>6680</b>	<b>28</b>

<sup>1</sup> No data received till date of issue of this report. <sup>2</sup> Only sentinel surveillance systems operating.

**Table 5. Reported measles cases: hospitalised, outbreak related and imported, by country, 2002 (n=23,765)**

	Hospitalised cases		Outbreak related cases		Imported cases	
	Total no.	Unknown / no data	Total no.	Unknown / no data	Total no.	Unknown / no data
<b>Austria</b> <sup>1</sup>						
<b>Belgium</b> <sup>1</sup>						
<b>Denmark</b>	25 (78)	0	25 (78)	0	4 (13)	0
<b>Finland</b>	0	0	0	0	0	0
<b>France</b> <sup>2</sup>						
<b>Germany</b>	44 (1)	486	1723 (37)	0	36 (1)	824
<b>Greece</b>	3 (60)	2	0	0	0	5
<b>Iceland</b>	0	0	0	0	0	0
<b>Ireland</b>	1 (0)	257	4 (1)	264	0	262
<b>Italy</b>	2202(12)	1778	0	18312	0	0
<b>Luxembourg</b>	0	0	0	0	0	0
<b>Malta</b>	0	0	4 (57)	0	0	0
<b>The Netherlands</b>	0	0	0	0	2 (67)	0
<b>Norway</b>	3 (60)	1	0	0	4 (80)	0
<b>Portugal</b>	1 (17)	0	0	0	1(14)	2
<b>Spain</b>	6 (8)	12	43 (54)	0	13 (17)	6
<b>Sweden</b>	0	8	0	0	5 (63)	2
<b>Switzerland</b>	9 (19)	38	0	47	3 (6)	33
<b>United Kingdom</b>	49 (15)	202	282 (86)	41	18 (6)	309
<b>Total</b>	<b>2343 (10)</b>	<b>2784</b>	<b>2081 (9)</b>	<b>18664</b>	<b>86 (0.4)</b>	<b>1443</b>

Percentage in brackets (/).<sup>1</sup> No data received till date of issue of this report. <sup>2</sup> Only sentinel surveillance systems operating.

### Morbidity and mortality

Data on known hospitalisation status was available in 88% of cases. There were 2343 reported hospitalised cases in connection with measles (table 5) amounting to 10% of all cases with known hospitalisation status. Of these, 94% were reported from Italy. Encephalitis was reported in six cases in 2002 giving an incidence of 25 per 100,000 measles cases. Five cases were reported from Germany and one from Switzerland. They were aged 8, 12, 16, 19, 24 and 39 years. Three cases were unvaccinated and in the other three the vaccination status was unknown. A case of subacute sclerosing panencephalitis in a six-year-old male was identified in Norway in 2002. The child is believed to have suffered from measles in his country of origin before being adopted in Norway. This case is not included as a measles case in the EUVAC.NET database. No deaths attributed to measles were reported in 2002.

### Data from Sentinel Surveillance Systems

For 2002, the Swiss sentinel system reported an extrapolated 500 cases and a crude incidence rate of 7 per 100,000 population. The French sentinel system reported 12 cases giving an extrapolated 5190 cases and an incidence of 8 per 100,000 population.

### Comments

Although there has been one country less providing data, in general, the quality of data collected improved with more data on variables reported compared to 2001. Over the previous year, there has been a 220% increase in reported measles cases through national universal notification systems in EUVAC.NET participating countries. While reports of measles cases from Germany dropped by 23%, cases reported from Italy increased twentytwo fold, greatly contributing to the increase in the total number of cases. Some

countries have reported incidence rates of less than 0.1 per 10<sup>5</sup> population per year possibly indicating a near-elimination situation.

The distribution of reported measles cases by age has altered slightly, with more cases in the 5-9 age group, both in absolute figures and relative to other age groups. The seasonal distribution was similar to that reported in the 2001 report with most cases occurring in winter and spring.

The percentage of cases with known vaccination status increased from 56% in 2001 to 72% indicating improved quality of collected data. Overall, 67% of those reported with measles were unvaccinated compared with 50% in the previous year. Paradoxically, a high proportion of measles occurring in unvaccinated children were reported from countries known to have moderate-to-high vaccination coverage such as Denmark, Norway and The Netherlands. This is due to an accumulated cohort of susceptible individuals to the disease (i.e. no history of measles or vaccination) over time following the introduction of MMR vaccination in the national vaccination programme. This is known to occur during the so called 'honeymoon period'; the name given when the very low incidence currently suggests that a disease is disappearing, yet without any sign, groups of unprotected individuals are forming the source of possible future outbreaks. This becomes particularly relevant when pockets of unvaccinated individuals accumulate.

While many participating countries are regularly reporting data to EUVAC.NET, others still need to have such reporting in place. The importance of enhanced surveillance including monthly data collection and reporting as part of the measles elimination plan by 2010 cannot be overemphasised.

## Reporters

Mark Muscat and Henrik Bang

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