

## Introduction

The following preliminary rubella surveillance report aims to provide an overview of surveillance systems and selected epidemiological characteristics of rubella at European level for 2010.

## Methods

Data were obtained from 28 countries through national mandatory notification systems for rubella covering total population for 2010. Of these, 25 submitted case-based data, two countries, namely Bulgaria and Turkey submitted aggregated data, and Poland submitted the number of reported cases by month. For the purpose of this report, clinical, laboratory-confirmed or epidemiologically linked cases meeting the reporting requirements for national rubella surveillance were included in the analysis.

Incidence was calculated with the number of reported rubella cases as the numerator and the country population obtained from Eurostat<sup>1</sup> as the denominator. We expressed incidence of disease as rubella cases per million inhabitants per year.

In this report, evaluation is based on cases with disease onset dates in 2010. Where this was not available, cases with the date of notification reported during 2010 were included. Minor discrepancies with nationally reported data may arise if these included cases notified in 2010 rather than those with disease onset during this period.

## Rubella incidence

A total of 4,693 rubella cases was reported from 28 countries that provided epidemiological data based on mandatory notification systems covering total country population for 2010 (table 1). Of these, 496 were reported from 27 countries using case-based or aggregated data format. The remaining 4,197 were reported from Poland in the form of numbers of cases by month. The incidence category of reported rubella per million inhabitants is shown in figure 1. The majority of cases (95%) were reported from two countries: Poland (89%) and Romania (6%)

Of the total, 104 (2.2%) were reported as laboratory-confirmed and 58 (1.2%) were epidemiologically-linked. The remaining cases were reported as clinical cases only.

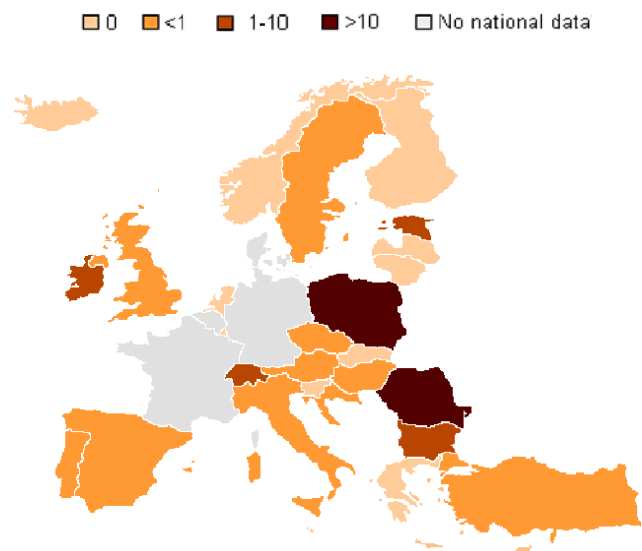
## Age distribution and sex

Data on the specified age-groups and sex was available on 496 cases (11%) that were reported

from countries using case-based or aggregated data format. The cases were distributed between age-groups with 193 (39%) aged <1 year, 146 (30%) aged 1-4 years, 53 (11%) aged 5-9 years, 34 (7%) aged 10-14 years, 16 (3%) aged 15-19 years and 54 (11%) ≥20 years. Of the 496 cases, 199 (40%) were in males, 192 (39%) were in females and in 105 (21%) cases the sex was unknown.

Rubella in pregnancy was reported in two cases: one from Romania and one from Switzerland. Both cases were laboratory-confirmed. Table 2 shows the cases of rubella by sex and pregnancy status by country.

Figure 1. Incidence category of reported rubella per million inhabitants, 2010



## Vaccination status

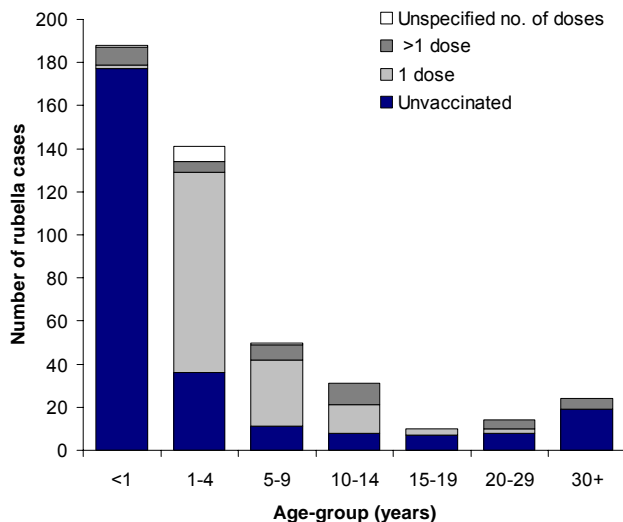
Of the 496 cases, the vaccination status was known in 460 (93%). Of these, 268 (58%) were unvaccinated, 144 (31%) were vaccinated with one dose, 39 (8%) were vaccinated with at least two doses, and nine (2%) were vaccinated with an unspecified number of doses. Table 2 shows the number and percentage of rubella cases by vaccination status for each country. Figure 2 shows the reported cases of rubella with a known vaccination status by age-group.

## Imported cases

The importation status was known in 391 (60%) of cases that were reported from 25 countries using case-based format (table 2). Of these, eight were reported as imported cases amounting to 3% of all cases with a known importation status. The

cases were reported to have acquired the infection from the following countries: Algeria (1), the Philippines (1), Thailand (1), South Africa (2), Spain (1), Switzerland (1) and Vietnam (1). The remaining cases were believed to have been infected within their own country of residence.

Figure 2. Rubella cases with a known vaccination status by age-group, 2010 (n=494)



### Comments

In 2010, EUVAC.NET hub requested case-based surveillance data on rubella from countries that could provide such data. Until 2009, rubella data was requested in aggregated format. Out of the 32 EUVAC.NET-participating countries, 25 submitted case-based data. This can be considered as a step forward in reporting rubella data at European level.

Comparisons of numbers of rubella cases between countries should be made with caution because of dissimilar surveillance sensitivities, completeness of reporting and different reporting procedures - some countries reported only laboratory-confirmed cases whereas others reported mainly clinical cases without laboratory confirmation. However, despite these limitations and taking into account that there were no major changes in the reporting procedures in each country, the overall incidence of rubella at European level continued to decline in 2010 since 2000. Most countries have reported a decrease in the number of cases particularly Poland and Romania. However, the epidemiological assessment of rubella in 2010 is limited by the lack of further data from Poland which reported most cases.

The percentage of laboratory-confirmed cases in 2010 was only 1.7% of the total reported cases. Only a tiny fraction (0.1%) of the cases in Poland was laboratory-confirmed. Strengthening surveillance systems for rubella by rigorous case investigation and laboratory confirmation of

suspected cases is a key strategy to eliminate rubella in Europe.<sup>2</sup>

The elimination rubella and prevention congenital rubella infection ultimately depends on achieving and maintaining high rubella vaccine coverage in all European countries.

### References

- 1 Eurostat. Statistical Office of the European Communities. <http://app.eurostat.ec.europa.eu> (accessed Dec 1, 2010).
- 2 WHO. Eliminating measles and rubella and prevention congenital rubella infection. WHO European region strategic plan 2005–2010. World Health Organization 2005. [http://www.euro.who.int/\\_data/assets/pdf\\_file/0008/79028/E87772.pdf](http://www.euro.who.int/_data/assets/pdf_file/0008/79028/E87772.pdf) (accessed Mar 25, 2011).

### Reporter

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### Contributors

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Table 1. Number of reported rubella in 2009 and 2010, and percentage of laboratory-confirmed and epidemiologically linked cases by country, 2010

| Country        | Number of cases<br>(Crude incidence per million inhabitants) |                          | Laboratory-confirmed | Epidemiologically linked |
|----------------|--|--------------------------|----------------------|--------------------------|
|                |  |                          | cases                | cases                    |
|                | 2009   | 2010                     | 2010                 | 2010                     |
| Austria        | 308 (36.9)   | 3 (0.4)                  | 1 33%                | 0 0%                     |
| Bulgaria       | 44 (5.8)   | 39 (5.2)                 | 1 3%                 | 0 0%                     |
| Croatia        | 0 (0)  | 1 (0.2)                  | 1 100%               | 0 0%                     |
| Cyprus         | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Czech Republic | 6 (0.6)  | 4 (0.4)                  | 2 50%                | 0 0%                     |
| Estonia        | 1 (0.7)  | 2 (1.5)                  | 0 0%                 | 0 0%                     |
| Finland        | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Greece         | 4 (0.4)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Hungary        | 0 (0)  | 1 (0.1)                  | 1 100%               | 0 0%                     |
| Iceland        | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Ireland        | 19 (4.3)   | 28 (6.3)                 | 1 4%                 | 0 0%                     |
| Italy          | 205 (3.4)  | 44 (0.7)                 | 0 0%                 | 0 0%                     |
| Latvia         | 7 (3.1)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Lithuania      | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Luxembourg     | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Malta          | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Netherlands    | 7 (0.4)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Norway         | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Poland         | 7586 (198.9)   | 4197 (110.0)             | 0 0%                 | 0 0%                     |
| Portugal       | 3 (0.3)  | 1 (0.1)                  | 0 0%                 | 0 0%                     |
| Romania        | 603 (28.0)   | 274 (12.8)               | 5 2%                 | 58 21%                   |
| Slovakia       | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Slovenia       | 0 (0)  | 0 (0)                    | 0 ..                 | 0 ..                     |
| Spain          | 20 (0.4)   | 9 (0.2)                  | 4 44%                | 0 0%                     |
| Sweden         | 1 (0.1)  | 3 (0.3)                  | 1 33%                | 0 0%                     |
| Switzerland    | 32 (4.2)   | 11 (1.4)                 | 11 100%              | 0 0%                     |
| Turkey         | 97 (1.4)   | 64 (0.9)                 | 64 100%              | 0 0%                     |
| UK             | 8 (0.1)  | 12 (0.2)                 | 12 100%              | 0 0%                     |
| Total          | 8951 (21.0) <sup>†</sup>                                     | 4693 (11.0) <sup>†</sup> | 104 2.2%             | 58 1.2%                  |

<sup>†</sup> Denominator is based on the total population for 28 countries reporting for 2009 (n=425,842,094) and 2010 (n= 428,161,145)

Table 2. Gender and pregnancy and importation status of reported rubella cases, by country, 2010

| Country               | Gender |        | Pregnancy status |     |         | Importation status                              |                        |
|-----------------------|--------|--------|------------------|-----|---------|---|------------------------|
|                       | Male   | Female | Yes              | No  | Unknown | No. of cases<br>(% of known importation status) | % unknown /<br>no data |
| Austria               | 3      | 0      | ..               | ..  | ..      | 0 (0%)  | (0%)                   |
| Belgium*              | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Bulgaria              | n.d.   | n.d.   | ..               | ..  | ..      | n.d. ..   | ..                     |
| Croatia               | 1      | 0      | ..               | ..  | ..      | 0 ..  | (100%)                 |
| Cyprus                | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Czech Republic        | 4      | 0      | ..               | ..  | ..      | 0 (0%)  | (0%)                   |
| Denmark* <sup>1</sup> | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Estonia               | 1      | 1      | 0                | 1   | 0       | 0 ..  | ..                     |
| Finland               | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| France*               | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Germany*              | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Greece                | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Hungary               | 1      | 0      | ..               | ..  | ..      | 1 (100%   | (0%)                   |
| Iceland               | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Ireland               | 14     | 14     | 0                | 13  | 1       | 0 (0%)  | (54%)                  |
| Italy                 | 21     | 23     | 0                | 0   | 23      | 0 ..  | (100%)                 |
| Latvia                | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Lithuania             | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Luxembourg            | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Malta                 | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Netherlands           | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Norway                | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Poland                | n.r.   | n.r.   | ..               | ..  | ..      | n.r. ..   | ..                     |
| Portugal              | 0      | 1      | 0                | 1   | 0       | 0 (0%)  | (0%)                   |
| Romania               | 142    | 132    | 1                | 89  | 42      | 0 (0%)  | (29%)                  |
| Slovakia              | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Slovenia              | 0      | 0      | ..               | ..  | ..      | 0 ..  | ..                     |
| Spain                 | 5      | 4      | 0                | 3   | 1       | 0 (0%)  | (0%)                   |
| Sweden                | 1      | 2      | 0                | 0   | 2       | 2 (67%)   | (0%)                   |
| Switzerland           | 1      | 10     | 1                | 5   | 4       | 2 (67%)   | (73%)                  |
| Turkey                | n.d.   | n.d.   | ..               | ..  | ..      | n.d. ..   | ..                     |
| United Kingdom        | 5      | 5      | 0                | 1   | 4       | 3 (100%)  | (75%)                  |
| Total                 | 199    | 192    | 2                | 113 | 77      | 8 (3%)  | (40%)                  |

n.r. = no reports

n.d = no data on this variable due to aggregated data format

\* Non-mandatory reporting of rubella cases from total population / no reporting of rubella cases at national level

<sup>1</sup> Denmark reported zero cases of rubella in pregnancy and congenital rubella infections through a mandatory surveillance system specific for such cases

Table 3. Rubella cases by vaccination status by country, 2010 (n=496)

| Country        | No. of unvaccinated cases<br>(% of unvaccinated of<br>known vaccination status) | No. of vaccinated cases<br>(% vaccinated of known<br>vaccination status) | No. with unknown<br>vaccination status/no data<br>(% unknown status<br>/no data of total) |
|----------------|---|--|---|
| Austria        | 0 ..  | 0 ..   | 3 100%  |
| Bulgaria       | 20 57%  | 15 43%   | 4 10%   |
| Croatia        | 1 100%  | 0 0%   | 0 0%  |
| Cyprus         | 0 ..  | 0 ..   | 0 ..  |
| Czech Republic | 2 50%   | 2 50%  | 0 0%  |
| Estonia        | 2 100%  | 0 0%   | 0 0%  |
| Finland        | 0 ..  | 0 ..   | 0 ..  |
| Greece         | 0 ..  | 0 ..   | 0 ..  |
| Hungary        | 0 ..  | 0 ..   | 1 100%  |
| Iceland        | 0 ..  | 0 ..   | 0 ..  |
| Ireland        | 11 50%  | 11 50%   | 6 21%   |
| Italy          | 0 0%  | 41 100%  | 3 7%  |
| Latvia         | 0 ..  | 0 ..   | 0 ..  |
| Lithuania      | 0 ..  | 0 ..   | 0 ..  |
| Luxembourg     | 0 ..  | 0 ..   | 0 ..  |
| Malta          | 0 ..  | 0 ..   | 0 ..  |
| Netherlands    | 0 ..  | 0 ..   | 0 ..  |
| Norway         | 0 ..  | 0 ..   | 0 ..  |
| Poland         | 0 ..  | 0 ..   | 0 ..  |
| Portugal       | 1 100%  | 0 0%   | 0 0%  |
| Romania        | 198 73%   | 72 27%   | 4 1%  |
| Slovakia       | 0 ..  | 0 ..   | 0 ..  |
| Slovenia       | 0 ..  | 0 ..   | 0 ..  |
| Spain          | 3 38%   | 5 63%  | 1 11%   |
| Sweden         | 3 100%  | 0 0%   | 0 0%  |
| Switzerland    | 3 75%   | 1 25%  | 7 64%   |
| Turkey         | 12 21%  | 45 79%   | 7 11%   |
| UK             | 12 100%   | 0 0%   | 0 0%  |
| Total          | 268 58%   | 192 42%  | 36 7%   |