How far are we from eliminating measles and rubella in the WHO European Region?

Mark Muscat
Vaccine-preventable Diseases and Immunization Programme
WHO Regional Office for Europe
Copenhagen, Denmark

Vaccinedag 2017, 11 September 2017
Number of measles cases and coverage with measles-containing vaccine, WHO European Region, 1980-2016

Data source: Coverage data - WHO/UNICEF JRF, Cases - CISID
European Vaccination Action Plan (EVAP): GOALS

- Sustain polio-free status
- Eliminate measles and rubella
- Control hepatitis B
- Meet regional vaccination coverage targets
- Evidence-based decisions on introduction of new vaccines
- Immunization programmes are financially sustainable
All 6 WHO Regions have measles elimination goals

**Elimination:**
The interruption of indigenous transmission in a defined geographical area for at least 12 months in the presence of a well-performing surveillance system.
Measles verification status, 2012-2016

- **2012**: 23 cases
  - Eliminated: 14 cases
  - Endemic: 12 cases
  - No Date: 4 cases

- **2013**: 19 cases
  - Eliminated: 13 cases
  - Endemic: 14 cases
  - No Date: 4 cases

- **2014**: 21 cases
  - Eliminated: 18 cases
  - Endemic: 3 cases

- **2015**: 24 cases
  - Eliminated: 14 cases
  - Endemic: 9 cases
  - Inconclusive: 5 cases

- **2016**: 32 cases
  - Eliminated: 9 cases
  - Endemic: 7 cases
  - Inconclusive: 3 cases
  - No Date: 2 cases
Rubella verification status, 2012-2016

- 2012: 25 (11 Eliminated, 13 Interrupted - 12m, 9 Interrupted - 24m, 4 Endemic, 4 Inconclusive)
- 2013: 19 (17 Eliminated, 9 Interrupted - 12m, 9 Interrupted - 24m, 4 Endemic, 4 Inconclusive)
- 2014: 20 (18 Eliminated, 9 Interrupted - 12m, 9 Interrupted - 24m, 2 Endemic, 2 Inconclusive)
- 2015: 24 (16 Eliminated, 9 Interrupted - 12m, 9 Interrupted - 24m, 2 Endemic, 2 Inconclusive)
- 2016: 32 (14 Eliminated, 3 Interrupted - 12m, 3 Interrupted - 24m, 2 Endemic, 2 Inconclusive)

Legend:
- Blue: Eliminated
- Light Blue: Interrupted - 24m
- Green: Interrupted - 12m
- Yellow: Endemic
- Gray: Inconclusive
- Black: No Date
Measles and Rubella elimination status, WHO European Region, 2016

Source: Regional Verification Committee Report 2016
Updated as of: 06 Sep 2017
Map Production: Vaccine-preventable Diseases and Immunization (VPI), Division of Health Emergencies and Communicable Diseases (DEC), World Health Organization Regional Office for Europe.

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2017. All rights reserved.
Number of measles in the WHO European Region, 2007-2017*

- **Bulgaria**: 24,410 cases
- **France**: 19,997 cases
- **Ukraine**: 14,079 cases
- **Georgia**: 11,060 cases
- **Kyrgyzstan**: 18,097 cases
- **Romania**: 4,276 cases
- **Italy**: 4,521 cases

Data source: CISID, extracted 1 August 2017

* Jan-Jun 2017

2016: 5,133 cases in 34 countries
First ½ 2017: 9,386 cases in 40 countries
Top 10 countries with measles cases, WHO European Region, January-June 2017

- **Italy**: 3660 cases
- **Romania**: 1844 cases
- **Ukraine**: 943 cases
- **Germany**: 796 cases
- **Tajikistan**: 550 cases
- **France**: 352 cases
- **Belgium**: 297 cases
- **Bulgaria**: 161 cases
- **Spain**: 141 cases
- **Czech Republic**: 131 cases

59% of cases in the Region in 2 countries (n=5504)

13 deaths: All age groups
- 6 in Romania
- 2 in Italy
- 1 each from Bulgaria, Germany, Portugal, Spain and Switzerland

Data source: CISID, extracted 1 August 2017
Highest incidence countries for measles per million inhabitants
WHO European Region, January-June 2017

<table>
<thead>
<tr>
<th>Country</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romania</td>
<td>95.2</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>63.4</td>
</tr>
<tr>
<td>Italy</td>
<td>61.2</td>
</tr>
<tr>
<td>Belgium</td>
<td>26.1</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>22.7</td>
</tr>
<tr>
<td>Ukraine</td>
<td>21.1</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>12.4</td>
</tr>
<tr>
<td>Germany</td>
<td>9.9</td>
</tr>
<tr>
<td>Armenia</td>
<td>9.1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Data source: CISID, extracted 1 August 2017
Age distribution and vaccination status of measles cases, WHO European Region, January-June 2017
Age distribution of measles cases in selected countries, WHO European Region, January-June 2017

Data source: CISID, extracted 2 August 2017
Measles outbreaks occurred in several susceptible populations

- Unvaccinated children
- Unvaccinated adolescents
- Unvaccinated adults
- Roma communities
- Religious communities
- Traveller communities
- Health workers
- Followers of anthroposophy

Inequalities in uptake and disease persist

Just as health inequalities are unfair and avoidable, so are inequalities in immunization coverage.
Main public settings for measles outbreaks

**Health-care settings**

12 countries reported nosocomial transmission in recent years

In 2014:

- **Spain** (n=120):
  - HCW: 25%
  - Other: 75%

- **Czech Republic** (n=171):
  - HCW: 40%
  - Other: 60%

13-19 times higher risk of acquiring measles in susceptible HCWs than for the general public

**Educational facilities**

- Day care centres
- Kindergartens
- Schools
- Anthroposophic Schools
- Universities

At least 8 countries have reported outbreaks in educational facilities in recent years

Rubella in the WHO European Region, 2000 & 2010-2017*

99.8% REDUCTION 2000-2016

621,039 cases in 2000

65% reported by Poland

Data source: CISID, extracted 2 August 2017

* Jan-Jun 2017
Countries with most rubella cases, WHO European Region, 2017 *

- Poland: 253 cases
- Italy: 46 cases
- Germany: 42 cases
- Georgia: 3 cases
- Portugal: 1 case
- 12 other countries: 43 cases

28 countries: 0 cases

Data source CISID, extracted 31 March 2017

* Jan-Jun 2017
Commitment

High population immunity

High-quality surveillance

Knowledge and training
Reaching and maintaining high population immunity

**Aim**
- To achieve a high vaccination coverage of at least 95% with 2 measles vaccine doses
- To close population immunity gaps

**Challenges**
- Vaccine hesitancy
- Immunization programme limitations
**Vaccine hesitancy: determinants**

- **Trust:** in safety and/or effectiveness of vaccines, in delivery system, in government.

- **Perceived risks:** Disease risk low; vaccination not deemed immediately or not at all necessary.

- **Access:** (geographical and time), affordability, appeal of services

---

**Immunization programme limitations**

- Lack of timely monitoring of coverage
- Limited ability to follow up unvaccinated individuals/groups
- Lack of communication strategies
- Health workers not properly educated on vaccines
- Inflexibility of vaccine services
- Vaccine supply issues
- Delayed outbreak response
Examples of activities and polices to reach and maintain high population immunity

- Vaccination registers with reminder systems
- Supplementary immunization activities
- Tailoring Immunization Programmes
- Opportunity vaccination
- Pre-school entry policies
- Pre-travel vaccination
- Health workers policies
Hi
gh-quality surveillance

- Inadequate reporting of suspected cases
- Sub-optimal laboratory testing rate
- Insufficient genotyping especially for rubella

- Reporting of suspected cases
- Epidemiological investigation
- Laboratory confirmation
- Genotyping and sequencing
- Establish national operating procedures for epidemiological and laboratory investigation
Widespread misinformation and myths
Lack of education and training on vaccines in medical curricula
False contraindications
Lack of information
Lack of personal knowledge and disease awareness

Web-based information on diseases and benefits of vaccines
Medical and nursing curricula
Continued medical education
Training in communication
School-based learning
Health care workers to promote vaccines
Summary

- Progress has been made toward eliminating measles and rubella
- Substantial number of countries could be declared as having eliminated measles and rubella

More action needed:
- Ownership and commitment
- Maintaining high vaccination coverage
- Closing immunity gaps
- High-quality surveillance
- Improving knowledge and training
Acknowledgements

Colleagues at Vaccine-preventable Diseases and Immunization Unit

- Robb Butler
- Myriam Ben Mamou
- Catharina De Kat-Reynen
- Dragan Jankovic
- Theodoros Kaloumenos
- Patrick O’Connor
- Siddharta Datta
- Simarjit Singh