GOAL 2: Achieve rubella and CRS elimination (Indicator G2.2)

Highlights

- The number of countries using RCV in their national programme continues to increase. As of December 2015, 149 Member States had introduced rubella vaccines into their routine immunization programme; coverage, however, varies from 12% to 94% depending on region.
- Ten member States are planning to introduce RCV in 2016.
- In April 2015, the International Expert Committee for Measles and Rubella Elimination in the Americas verified that the region had eliminated the endemic transmission of rubella and congenital rubella syndrome (CRS).
- Rubella and CRS surveillance systems are weak and cases remain underreported, particularly in Member States that have not yet introduced RCV and/or do not have rubella control or elimination goals. Hence, global rubella and CRS surveillance data do not reflect the true burden of these diseases.

DEFINITION OF INDICATOR

- Rubella and CRS elimination: The absence of endemic rubella virus transmission in a defined geographical area (e.g. region or country) for >12 months and the absence of CRS cases associated with endemic transmission in the presence of a well-performing surveillance system.

Note 1: There may be a time lag (up to 9 months) in occurrence of CRS cases after interruption of rubella virus transmission has occurred. Evidence of the absence of continuing rubella transmission from CRS cases is needed because infants with CRS can transmit the rubella virus for up to 12 months after birth.

Note 2: Verification of rubella elimination takes place after 36 months of interrupted rubella virus transmission.

TARGET

- Region of the Americas: Rubella eliminated in 2009 and the International Expert Committee for Measles and Rubella Elimination verified the Region free from rubella and CRS in April 2015.
- European Region: Rubella elimination by 2015.
- Western Pacific Region: Rubella elimination but no target date set.
- South-East Asia Region: Rubella control by 2020.
- Eastern Mediterranean Region: No target set.

DATA SOURCES

- WHO-UNICEF joint reporting forms (JRFs) for disease incidence and WHO-UNICEF Estimates of National Immunization Coverage (WUENIC) data for coverage rates are subject to the same limitations as all other data submitted via the JRFs, as described in the 2015 report of the GVAP Secretariat (2).
- There are no WHO-UNICEF estimates for rubella coverage. The first dose of measles-containing vaccine (MCV1) is used as a proxy in the Member States that have introduced rubella vaccine (as all the Member States use combined vaccines for first dose of rubella except for the Russian Federation).

COMMENTS ON DATA QUALITY

- None.
Background and progress

As of December 2015, 149 Member States (77%) had introduced RCV, a 59% (55 countries) increase from 2000 (Figure 1.11 and Figure 1.12). Average coverage globally has gradually increased from 35% in 2010 to 46% in 2015. However, it varies from 12% in the African Region to 94% in the European Region and Region of the Americas (Table 1.8). In 2015, an additional seven Member States introduced rubella vaccine in their routine programme. Introduction of rubella vaccine is ongoing in eleven Member States, and four Member States (Kenya, Mozambique, Sierra Leone, Togo) plan to introduce the vaccine in 2017.

In 2015, the global incidence of rubella was estimated to be 3.3 per million population (reported by 158 Member States; Table 1.8 and Figure 1.13). Note that the total number of Member States reporting rubella incidence to WHO has decreased dramatically in recent years, from 176 (91%) in 2012 to 158 (81%) in 2015, which in part explains the appearance that rubella incidence is decreasing (Table 1.8).

In total 120 (62%) Member States reported CRS figures for 2015 compared with 115 (59%) for 2014 (Table 10). While this is an improvement, the very low reported incidence is probably more a sign of the almost non-existent CRS surveillance systems outside the Region of the Americas and a few other Member States than a reflection of true disease burden.

Regional review

The Region of the Americas achieved rubella and CRS elimination in 2009; the last endemic rubella case was reported on 2009 in Buenos Aires, Argentina and the last endemic CRS case was reported in 2009 in Brazil. In 2015, the region was verified as having eliminated rubella and CRS.

A total of 52 Member States in the European Region use the combined measles–mumps–rubella (MMR) vaccine, and Tajikistan is using measles–rubella (MR) vaccine in a two-dose schedule. Based on JRF data, the number of rubella cases reported in the region dropped by 99% between 2013 (n=39 614) and 2015 (n=385), but the JRF data cannot be considered accurate due to underreporting. For example, most rubella cases occurred in Poland even though Poland did not reported cases on the JRF. At its October 2015 meeting, the RVC concluded that 18 countries in the region continued to have endemic transmission (with three countries not reporting). Countries that did report cases through the JRF included Kyrgyzstan (n=100), Georgia (n=100) and Germany (n=90).

The decrease in cases reported between 2014 and 2015 is primarily the result of a decrease in cases reported by Poland (which did not report cases for 2015), despite lack of a response measure to control the outbreak. The outbreak in Poland started in 2010 and was caused by aggregation of susceptible cohorts in the context of gender-specific immunization in the past, and late introduction of the two-dose MMR schedule. As indicated in its annual status update reports, Poland reported 5891 rubella cases for 2014 (it has to be noted that there is some discrepancy between annual status update and JRF data). The outbreak mostly affected adolescent/young adult men, with 37% of those affected by rubella being 15 years of age and older.

In 2014, the Regional Committee for the Western Pacific endorsed the Regional Framework for Implementation of the Global Vaccine Action Plan in the Western Pacific and its specified immunization goals, including the regional rubella elimination goal (target date to be determined). At the regional meeting of the Technical Advisory Group (TAG) in June 2015, a recommendation was made to establish 2020 as the target date for elimination of rubella in the region. The number of reported rubella cases has been declining in the Western Pacific Region since 2011 (from 76 022 in 2011 to 9398 in 2015) with the majority of cases being reported from China, Viet Nam, Japan and the Philippines. Reported CRS cases have also declined in the region (45 in 2013 and 5 in 2015) with most cases being reported from Viet Nam (n=4). CRS surveillance has not been established by some countries in the region.

The South-East Asia Region has made significant progress towards rubella and CRS control. In February 2016, eight of 11 Member States introduced RCV into their routine immunization programme. The remaining three member States (the Democratic People's Republic of Korea, India and Indonesia) have plans to introduce RCV before 2018 and preparations are ongoing. India continued to report the most confirmed cases (3252), followed by Nepal (626) and Bangladesh (189), while Indonesia did not report any data in the JRF.

Surveillance for CRS only started as a WHO-supported activity after the September 2013 Regional Committee resolution and all countries in the region have agreed
in principle to establish sentinel surveillance for CRS. Of the confirmed rubella outbreaks, 87% (91) were from India.

Although the Eastern Mediterranean Region has not yet set a rubella elimination goal, 13 (60%) countries have set a national target for rubella/CRS elimination and 11 countries are now implementing CRS surveillance. In 2015, 1885 confirmed cases of rubella were reported by the countries in the region. The majority of these (95%) were reported from four countries (Sudan, Pakistan, the United Arab Emirates and Yemen), two of which (Sudan and Pakistan) have not yet introduced RCV. So far, only one of the six Gavi-eligible countries in the region (i.e. Yemen) has benefited from Gavi Alliance support to conduct SIAs of RCV (completed in 2015).

The African Region does not have a rubella control or elimination target and, in 2015 reported 5302 cases of rubella. This is not surprising given the low uptake of RCV in the region. By the end of 2015, seven (15%) of the countries had introduced RCV and another five countries are planning to introduce RCV in 2016.

Conclusion

A new phase of accelerated rubella control and CRS prevention has begun, marked by the 2011 WHO position paper, which recommended a strategy consistent with rubella and CRS elimination (3), the inclusion of rubella elimination in five WHO regions by 2020 as a disease control target in the Global Vaccine Action Plan (2012) and Gavi Alliance support for the introduction of rubella vaccine in countries meeting the eligibility criteria. However, failure to fully integrate prevention of rubella and CRS with measles elimination activities represents a major missed opportunity for immunization and integrated disease surveillance.

The key challenges to elimination are:

a. building support for additional regions to adopt elimination goals, which includes ensuring that all Member States can achieve and maintain the minimum coverage (≥ 80%) through routine services and/or in SIAs required for introduction of RCV;

b. advocating for resources and a secure vaccine supply needed to meet the European Region’s elimination goal;

c. ensuring high routine coverage of RCV (because of the use of combined MR or MMR vaccines, the programmatic target for RCV1 and RCV2 coverage is ≥ 95%);

d. ensuring high-quality MR SIAs that reach at least 95% of targeted children, as verified through surveys; and

e. strengthening synergies between rubella and measles surveillance and expanding CRS surveillance.

Commitment at all levels of government as well as involvement of the private sector is needed to address these challenges. For Gavi-eligible countries, the challenge is in capitalizing on the available resources for RCV introduction while ensuring sufficient political and financial commitment to assure the sustainability of the programme.

Financial support from the Gavi Alliance and the Vaccine Alliance together with the leadership, coordination and technical expertise from the Measles & Rubella Initiative (M&RI), provide an opportunity for Member States and regions to accelerate progress in rubella control and CRS prevention. Rubella elimination has been achieved and verified in the Americas; the European Region is the next region closest to achieving rubella elimination. Substantially greater commitment and investment by Member States and the global immunization community will be required to reach the GVAP target of rubella elimination in five regions by 2020.

Table 1.8 and Table 1.9, as well as Figure 1.11, Figure 1.12, and Figure 1.13 provide data on cases of rubella and CRS.
### Table 1.8: Rubella cases and incidence by WHO region, 2013–2015 and baseline (2010)

<table>
<thead>
<tr>
<th>WHO region</th>
<th>National rubella coverage (%)</th>
<th>Member States reporting rubella cases (%)</th>
<th>Rubella incidence per million population</th>
</tr>
</thead>
<tbody>
<tr>
<td>African Region</td>
<td>12</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Region of the Americas</td>
<td>94</td>
<td>93</td>
<td>92</td>
</tr>
<tr>
<td>Eastern Mediterranean Region</td>
<td>45</td>
<td>42</td>
<td>38</td>
</tr>
<tr>
<td>European Region</td>
<td>94</td>
<td>94</td>
<td>95</td>
</tr>
<tr>
<td>South-East Asia Region</td>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Western Pacific Region</td>
<td>89</td>
<td>90</td>
<td>88</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
<td><strong>44</strong></td>
<td><strong>42</strong></td>
</tr>
</tbody>
</table>

Note: MCV1 was used as a proxy in the Member States that have introduced rubella vaccine.

* For the Region of the Americas, the cases and incidence columns refers to suspected/confirmed rubella cases.


### Table 1.9: CRS cases and incidence by WHO region, 2012–2015

<table>
<thead>
<tr>
<th>WHO region</th>
<th>Member States reporting CRS cases (%)</th>
<th>CRS incidence per million population</th>
</tr>
</thead>
<tbody>
<tr>
<td>African Region</td>
<td>49</td>
<td>36</td>
</tr>
<tr>
<td>Region of the Americas</td>
<td>94</td>
<td>100</td>
</tr>
<tr>
<td>Eastern Mediterranean Region</td>
<td>48</td>
<td>38</td>
</tr>
<tr>
<td>European Region</td>
<td>68</td>
<td>64</td>
</tr>
<tr>
<td>South-East Asia Region</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Western Pacific Region</td>
<td>41</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62</strong></td>
<td><strong>59</strong></td>
</tr>
</tbody>
</table>

Source: JRF (data as of 24 June 2016).
**Figure 1.11: Immunization coverage with rubella-containing vaccines* in infants, 2015**

![Map showing immunization coverage with rubella-containing vaccines](image1)

*Coverage estimates for the 1st dose of rubella-containing vaccine are based on WHO and UNICEF estimates of coverage of measles-containing vaccine.


**Figure 1.12: Rubella-containing vaccine coverage* by WHO region, 1980–2015**

![Graph showing rubella-containing vaccine coverage by WHO region](image2)

*Coverage estimates for the 1st dose of rubella-containing vaccine are based on WHO and UNICEF estimates of coverage of measles-containing vaccine.

Figure 1.13: Reported rubella incidence rate* per country for 2015

- <1 (101 countries or 52%)
- >1 to <5 (32 countries or 16%)
- >5 to <10 (13 countries or 7%)
- >10 to <50 (10 countries or 5%)
- ≥ 50 (3 countries or 2%)
- Not applicable
- Not available/No data reported to WHO Headquarters (35 countries or 18%)

* Per million population

Source: Joint Reporting Form as of 24 June 2016

References


Bibliography

- Proceedings and draft recommendations from the fifth meeting of the SAGE working group on measles and rubella, 3-4 September 2015 (http://www.who.int/immunization/sage/meetings/2015/october/1_measles_rubella_report_sage_30_sept_2015_final.pdf?ua=1, accessed 15 July 2016).