Global Rubella Update and Incorporating MR vaccine Into National Immunizations Programs

13th Annual Meeting
American Red Cross National Headquarters
September 9, 2014
Dr Gavin Grant, CDC/GID
Dr. Susan Reef, CDC/GID
GVAP Targets

By end 2015:
• Achieve regional measles and rubella/CRS elimination goals

By end 2020:
• Achieve measles and rubella elimination in at least five (of the six) WHO Regions

Measles and Rubella Elimination Goals by WHO Region, 2013

All Regions have measles elimination goals
Americas and Europe have rubella elimination goals
Estimated CRS Incidence (per 100,000 live births), 2010

American Region has eliminated Rubella and CRS

European Region has 2015 Rubella & CRS elimination goal

Rubella Containing Vaccine (RCV) Introduction

• WHO/SAGE Recommended introduction of RCV into EPI schedules (2011)
  – Introduction requires MCV coverage of \( \geq 80\% \) through Routine or SIA

• GAVI supported introduction in eligible countries
  – Introduction grant
  – Vaccine and portion of operational costs
Rubella containing vaccine coverage by WHO region, 1980-2013

Immunization Vaccines and Biologicals, (IVB), World Health Organization.
194 WHO Member States. Date of slide: 24 July 2014.
Distribution of countries using rubella vaccine in their routine immunization schedule in 2013 and countries planning introduction during 2014-2015

2014: Bangladesh, Burkina Faso, Tanzania, Viet Nam, Yemen
2015: Gambia, Myanmar, Papua New Guinea, Solomon Islands, Sudan and Zambia

Data Source: Source: WHO/Expanded Programme on Immunization, as at 1 July 2014.

194 WHO Member States

Map production: Immunization Vaccines and Biologicals, (IVB), World Health Organization

Date of slide: 04 July 2014

- Introduced prior to 2013 (137 countries or 71%)
- Introduction planned 2014-2015 (11 countries or 6%)
- Rubella vaccine not in the routine schedule or planned before 2015 or data not available (46 countries or 24%)

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 lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2014. All rights reserved.
Immunization coverage with rubella containing vaccines* in infants, 2013

*MCV1 was used as a proxy in the Member States that have introduced Rubella vaccine.

Source: WHO/IVB Database as at 28 June 2014. 194 WHO Member States.
Map production: Immunization Vaccines and Biologicals, (IVB). World Health Organization
Date of slide: 16 July 2014

- <50% (0 country or 0%)
- 50-79% (11 counties or 8%)
- 80-89% (13 countries or 9%)
- >90% (113 countries or 89%)
- Not available (3 countries)
- Not introduced (57 countries)

Of countries that have introduced
<table>
<thead>
<tr>
<th>Region (countries)</th>
<th>Introduced RCV (# countries)</th>
<th>Not introduced RCV (# countries)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-GAVI</td>
<td>GAVI</td>
</tr>
<tr>
<td>AFR (46)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AMR (35)</td>
<td>32</td>
<td>3</td>
</tr>
<tr>
<td>EMRO (21)</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>EURO (53)</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>SEAR (11)</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>WPR (27)</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total 194</strong></td>
<td><strong>125</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

*As of Sept 8, 2014
Issues with MR introduction

• Establishing surveillance
• Strengthening surveillance
• Vaccine Supply
• Cost of Vaccine
• Integration of MR into routine
Issues: Establishing Surveillance

• Lack of surveillance
  – Required to monitor targets
  – Rubella Surveillance
    • define epidemiology
    • identify trends
  – CRS Surveillance
    • describe incidence and demographics of mothers
    • demonstrates disease burden

• Surveillance is weak
  – Many countries uses measles case-based surveillance to identify rubella
  – Under-reporting of cases of rubella and CRS
  – Countries not reporting

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2012</th>
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<tr>
<td><strong>Rubella:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. countries</td>
<td>102</td>
<td>174</td>
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<tr>
<td>reporting</td>
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<tr>
<td>No. rubella</td>
<td>670,894</td>
<td>94,030</td>
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<tr>
<td>cases</td>
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<td><strong>CRS:</strong></td>
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<tr>
<td>No. countries</td>
<td>75</td>
<td>129</td>
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<tr>
<td>reporting</td>
<td></td>
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<tr>
<td>No. CRS cases</td>
<td>157</td>
<td>300</td>
</tr>
</tbody>
</table>

Source: MMWR/WER December 2013
## Issues: Reporting

*Estimated Burden of CRS Globally*† Compared to Reported Cases

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated numbers of CRS Cases**</th>
<th>Reported No. of CRS cases in 2012</th>
<th>Member states reporting CRS in 2012</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1996</td>
<td>2010</td>
<td>No.</td>
</tr>
<tr>
<td>AFR</td>
<td>31 133</td>
<td>40 680</td>
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<tr>
<td>AMR</td>
<td>9 701</td>
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<td>EMR</td>
<td>9 265</td>
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<td>EUR</td>
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<td>SEAR</td>
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<td>47 527</td>
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<tr>
<td>WPR</td>
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<td>9 127</td>
<td>134</td>
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<tr>
<td>GLOBAL</td>
<td>120 342</td>
<td>103 068</td>
<td>300</td>
</tr>
</tbody>
</table>

*unpublished, Adams E, Vynnycky E

** lower and upper limits of plausible estimates different from mean by factor of 1 - 100

†All member states
Issues: Vaccine Supply

Rubella Vaccine Introduction Forecast, 2012-2024

- Currently single manufacturer of MR vaccine
- Several manufactures coming on line
- Some populous countries introducing sooner than expected

![Graph showing vaccination data from 2012 to 2024.](image)

- Over 800 million children projected to receive MR by 2020
- Another 800 million children projected to receive MR in the following decade

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- Another 800 million children projected to receive MR in the following decade
Issues: Cost of Vaccine

• SAGE recommendation on providing MR for both doses of MCV
  – Increase in costs for the routine
• Several countries rely on donors to pay for the MCV vaccines, will they pay for MR?
• GAVI supports MR vaccine in the SIA but not the routine
New SAGE Recommendations for Rubella

- Optimizing the use of rubella containing vaccine
- Target age range for M, MR SIAs
- Vaccination of Health Workers
SAGE November 2013: Optimizing the use of rubella containing vaccines

SAGE noted:
• that among the WHO Regions, only the AMR and EUR have rubella elimination targets and urged AFR, EMR, SEAR and WPR to work towards establishing regional rubella elimination goals

Recommended that:
• countries achieving ≥80% measles coverage through routine or SIAs, or both, to take the opportunity offered by measles elimination activities to introduce RCVs
• countries introducing RCV for the first time should carry out a catch-up campaign using MR/MMR vaccine for children aged 9 months to <15 years, and use MR/MMR in routine immunization with the first dose of measles-containing vaccine
• countries which currently give the first dose of RCV with the 2nd routine dose of measles vaccine should change the schedule to give the first dose of RCV with the first dose of MCV as MR or MMR
SAGE November 2013: Target age range for M, MR SIAs

SAGE reviewed:
• several country examples with different vaccine delivery strategies to determine criteria for when countries should expand the target age range for SIAs

And concluded that:
• no single criterion can identify the ideal target age range for measles or MR SIAs

Recommended that:
• countries integrate their surveillance, demographic, survey and (if available) seroprevalence data together with vaccination coverage information, history of MCV and RCV use, and local knowledge
• vaccination coverage should be verified for all M and MR SIAs through statistically valid and generally accepted methodology
• where possible, all doses given during SIAs should be documented in the child’s vaccination record and the number of zero-dose children vaccinated recorded by age group.

→ Need to develop a practical approach for operationalizing this recommendation
SAGE November 2013: Vaccination of health care workers

SAGE reviewed:

• the known risk of spreading disease from health workers to patients or from patients to health workers

Recommended that:

• all health workers should be immune to measles and rubella
• verification of vaccination and/or immunity should be integrated into standard infection control guidelines or other health-worker standards of care
• Regions and countries should develop plans to operationalize these recommendations
Summary

• Rubella and CRS are significant public health issues that needs to be tackled
  – However, there is significant underreporting of both diseases

• Introduction of RCV should accelerate to reach goals
  – Two regions have elimination goals
  – Two regions have rubella/CRS control goals

• Monitoring of those goals requires surveillance strengthening

• Introduction of RCV should be integrated with MCV
  – SIA planning requires review the epidemiology for both diseases to maximize the benefit of the SIA
  – Logistics for MR vaccine
  – Ensure that HWs are immune to BOTH measles and rubella
Partners supporting measles and rubella: