Measles and Rubella Elimination
Goals, Strategies and Status

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CDC/GID/CGH
Presentation Outline

- Global Measles and Rubella Strategic Plan
- Global Situation
  - Measles
  - Rubella
- Regional elimination progress
- Strategic plan mid-term review report
Importation of genotype B3

Global transmission of measles viruses from the Philippines, 2014
GLOBAL MEASLES AND RUBELLA

STRATEGIC PLAN
2012–2020

Vision:
Achieve and maintain a world without measles, rubella and congenital rubella syndrome
Targets and Milestones

• Targets
  – By end 2015:
    • Reduce global measles mortality by at least 95% compared with 2000 estimates
    • 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

• Milestones
  – Reduce annual measles incidence to < 5 cases per million and maintain that level
  – ≥ 90% coverage with routine MCV1 nationally and ≥ 80% vaccination coverage in every district or equivalent administrative unit
  – ≥ 95% coverage with M, MR or MMR during SIAs in every district or equivalent administrative unit
  – Establish a rubella/CRS elimination goal in at least 1 more WHO Region
  – Establish a target date for the global eradication of measles
Targets and Milestones

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  – By end 2015:
    • Reduce global measles mortality by at least 95% compared with 2000 estimates
    • Achieve regional measles and rubella/CRS elimination goals
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• Milestones (by 2015)
  – Reduce annual measles incidence to < 5 cases per million and maintain that level
  – > 90% coverage with routine MCV1 nationally and > 80% vaccination coverage in every district or equivalent administrative unit
  – > 95% coverage with M, MR or MMR during SIAs in every district or equivalent administrative unit
  – Establish a rubella/CRS elimination goal in at least 1 more WHO Region
  – Establish a target date for the global eradication of measles
Strategies

1. High population immunity through vaccination with two doses of M and R containing vaccines
2. Effective surveillance, monitoring and evaluation
3. Outbreak preparedness and response & case management
4. Communication to build public confidence and demand for immunization
5. Research and development
How far have we come?

Milestones

1. **Coverage**
   - Target: >90% routine nationally
   - Target: >95% campaign

2. **Incidence**
   - Target: < 5/million

3. **Mortality**
   - Target: 95% reduction
Milestone 1- Coverage: Measles containing vaccine 1st dose (MCV1), 1980-2015

Target: > 90%

Immunization Vaccines and Biologicals, (IVB), World Health Organization.
194 WHO Member States. Date of slide: 25 July 2016.
## Estimated MCV1 coverage, by country 2015

<table>
<thead>
<tr>
<th>Coverage Level</th>
<th>Number of Countries</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50%</td>
<td>4 countries or 2%</td>
<td></td>
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<tr>
<td>50-79%</td>
<td>38 countries or 20%</td>
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<tr>
<td>80-89%</td>
<td>33 countries or 17%</td>
<td></td>
</tr>
<tr>
<td>90-94%</td>
<td>40 countries or 21%</td>
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<tr>
<td>≥ 95%</td>
<td>79 countries or 40%</td>
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</tbody>
</table>

- **119 (61%) countries have > 90% MCV1 coverage**
- **42 (22%) countries have < 80% MCV1 coverage**

39 Countries conducted 66 campaigns in 2015

180 million children reached
40/66 (61%) attained 95% coverage
18/66 (27%) with coverage survey
4 surveys document >95% coverage

Updated on 15 April 2016

- Measles (21)
- Measles and Rubella (15)
- Measles, Mumps and Rubella (3)
- No SIA in 2015
- Not Applicable

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.
Milestone 2- **Incidence**: Annual reported measles cases (with MCV coverage) 1980-2015

Measles incidence in 2015: 36 / 10^6 down by 75% since 2000
Target: < 5 / million

No. of reported cases (millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>MCV1 Coverage*</th>
<th>MCV2 Coverage*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1982</td>
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<td></td>
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<tr>
<td>1984</td>
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<td>1986</td>
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<td>1988</td>
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<td>1990</td>
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<td>1992</td>
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<td>1994</td>
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<td>1996</td>
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<td>1998</td>
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<td>2000</td>
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<td>2002</td>
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<td>2004</td>
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<tr>
<td>2006</td>
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<td>2008</td>
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<td>2010</td>
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<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Coverage as estimated by WHO and UNICEF.
** MCV2 estimates is only available from 2000 when global data collection started, however some countries have introduced the vaccine earlier.

Source: JRF
194 WHO Member States.
Updated on 18 July 2016
Milestone 3- Mortality Reduction: Decrease from 2000 Estimate

79% drop from 2000 to 2015 (Target: 95%)

20.3 million deaths averted in the past 15 years by measles vaccination

*Patel et al, Progress toward regional measles elimination - worldwide, 2000-2015. In press*
Where we are

Rubella

1. Coverage

2. Burden of Congenital Rubella Syndrome

3. Vaccine introduction
Over half the world’s children are not vaccinated against rubella (46%)

Immunization Vaccines and Biologicals, (IVB), World Health Organization.
194 WHO Member States. Date of slide: 16 July 2016.

*coverage estimates for the 1st dose of rubella containing vaccine are based on WHO and UNICEF estimates of coverage of measles containing vaccine.
Rubella vaccine 1st dose coverage by WHO region, 1980-2015

Wide regional variations in rubella coverage

Immunization Vaccines and Biologicals, (IVB), World Health Organization.
194 WHO Member States. Date of slide: 16 July 2016.

*Coverage estimates for the 1st dose of rubella containing vaccine are based on WHO and UNICEF estimates of coverage of measles containing vaccine.
Rubella Vaccination Prevents CRS: Estimates of the median incidence of CRS per 100,000 live births by country in 2010


http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0149160
Countries with rubella vaccine in the national immunization program or planned introductions in 2016

Data source: WHO/IVB Database, as of 12 April 2016

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

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 2016. All rights reserved.

- Introduced to date (148 countries or 76.3%)
- Planned introductions in 2016 (11 countries or 5.7%)
- Not Available, Not Introduced/No Plans (35 countries or 18%)
- Not applicable
Regional Progress
Measles and Rubella Elimination Goals by WHO Region, 2016

All Regions have measles elimination goals
Americas, European and Western Pacific Regions have rubella elimination goals
### Regional Verification of Measles and Rubella Elimination, 2016

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Regional Verification Commissions Established</th>
<th>Elimination Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td># of countries</td>
</tr>
<tr>
<td>African (AFR)</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>Americas (AMR)</td>
<td>Yes</td>
<td>Measles: 36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubella: 36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European (EUR)</td>
<td>Yes</td>
<td>Measles: 21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubella: 24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Mediterranean (EMR)</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>South-East Asian (SEAR)</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>Western Pacific (WPR)</td>
<td>Yes</td>
<td>Measles: 7</td>
</tr>
<tr>
<td>WHO Region</td>
<td>Elimination Target</td>
<td>MCV1 /MCV2 coverage</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>AFR</td>
<td>2020 – measles</td>
<td>74% 18%</td>
</tr>
<tr>
<td>AMR</td>
<td>2000 – measles 2010 – rubella</td>
<td>94% 53%</td>
</tr>
<tr>
<td>EUR</td>
<td>2015 – measles 2015 – rubella</td>
<td>94% 89%</td>
</tr>
<tr>
<td>EMR</td>
<td>2020 – measles</td>
<td>76% 68%</td>
</tr>
<tr>
<td>SEAR</td>
<td>2020 – measles</td>
<td>85% 71%</td>
</tr>
<tr>
<td>WPR</td>
<td>2012 – measles No date - rubella</td>
<td>96% 93%</td>
</tr>
<tr>
<td>Global</td>
<td>measles rubella</td>
<td>85% 46%</td>
</tr>
</tbody>
</table>
Challenges to Measles-Rubella Elimination

- AMR—risk of importations
- AFR—weak immunization & health systems, reliance on campaigns
- EUR—vaccine hesitancy, susceptible adults, variable surveillance quality
- EMR—security issues that limit access; persistent low coverage in some countries
- SEAR—large federalized countries (e.g. India, Indonesia) with heterogeneous coverage and need to strengthen and expand case-based surveillance
- WPR—measles resurgence in China, Philippines

All Regions
- Need for increased visibility and political commitment to regional elimination goals
- Susceptibility gaps including among older children and adolescents
- Lack of human and financial resources
- Vaccine hesitancy
MIDTERM REVIEW OF THE GLOBAL MEASLES AND RUBELLA STRATEGIC PLAN 2012 – 2020

Presented to SAGE Geneva, 19 October 2016
Major findings and conclusions (1)

- Tremendous progress made since 2001, however, neither measles nor rubella elimination on track to achieve ambitious goals
- Basic strategies articulated are sound
- Full implementation has been limited by inadequate country ownership and global political will, reflected in inadequate resources
- It is premature to set a timeframe for measles eradication at this point
  - A determination should be made, not later than 2020, whether a formal global goal for measles eradication should be set with timeframes for achievement
Major findings and conclusions (2)

• Disease incidence is the most important indicator of progress
• There is an urgent need to strengthen the collection and use of surveillance data to better guide program strategy and implementation
  • Outbreaks highlight program weaknesses
• Strengthening of immunization systems is critical to achieving regional elimination goals
  • Two doses of measles or measles-rubella vaccine delivered through ongoing services is the standard for national programs.
  • Regular preventative campaigns should be conducted if coverage is insufficient for high population immunity
Summary

- US still at high risk of importation due to ongoing global transmission
- Effective vaccination strategies exist, resulting in major achievements but targets not met
  - Midterm review: 
    “[The basic strategies are sound, however,] the main impediments to full implementation have been inadequate country ownership and global political will, reflected in inadequate resources”
- Global efforts to assist countries to introduce rubella containing vaccine are needed
- Mid-term review recommendations are being implemented to continue progress towards a world without measles, rubella and congenital rubella syndrome
Thank you from the Measles and Rubella Initiative Partners