Measles and Rubella Status Report: 
Progress, Challenges and Lessons 

Meeting of the WHO Strategic Advisory Group of Experts 

7 November 2012
Outline

• Global and Regional Goals
• Global Measles Progress
• Global Rubella Progress
• Regional perspectives
• Conclusions
Measles and Rubella Targets

WHA 2015 global targets:
- Measles mortality reduction of 95% vs. 2000
- Measles reported incidence <5 cases per million
- Measles vaccination coverage
  - national level 90%
  - every district 80%

Regional Measles Elimination goals:
- 2000 AMRO
- 2012 WPRO
- 2015 EURO, EMRO
- 2020 AFRO No SEARO elimination goal

Rubella Elimination goals:
- 2010 – AMRO, 2015 – EURO

GVAP goal:
- 2020 Measles and rubella elimination in 5 WHO regions
How far have we gone?
Measles global annual reported cases and MCV1 coverage*, 1980-2011

* MCV1 coverage: coverage with first dose of measles-containing vaccine as estimated by WHO and UNICEF
74% reduction in measles deaths, 2000 - 2010

Measles contributes 20% to the overall reduction in <5 child mortality (MDG 4).

Projected current trend

Trend to reach 2015 goal

Reduction in Estimated Measles Deaths by WHO Region 2000 to 2010

Measles containing vaccine 1st dose coverage by WHO region, 2000-2011

Source: WHO/UNICEF coverage estimates
2011 revision. July 2012
193 WHO Member States. Date of slide: 3 September 2012
Proportion of Countries Reaching 90% MCV1 Coverage, by WHO Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Goal</th>
<th>Current Trend</th>
<th>Trend to Reach Goal</th>
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</thead>
<tbody>
<tr>
<td>AFR</td>
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<td>AMR</td>
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<td>EMR</td>
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<td>EUR</td>
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<td>WPR</td>
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<tr>
<td>Global</td>
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</table>

Percentage of Countries

Graph showing trends and projections for different regions.
Proportion of Countries with ≥80% MCV1 coverage in all districts, by WHO Region

% countries with all districts ≥80%

Trend to reach goal

Projected current trend

AFR
AMR
EMR
EUR
SEAR
WPR
GLOBAL
Goal

World Health Organization
Expansion of measles second dose

- 2nd dose now used in all countries
- 141 countries have introduced MCV2 in routine by 2011
- SIAs reached 146 million in 28 countries in 2011, 17 (61%) reaching >95% coverage

Countries Giving 2 Doses of Measles Vaccine in their Routine National Immunization System, 2011

Source: WHO/IVB database, 194 WHO Member States. Data as of July 2012
Date of slide: 20 July 2012
64% reduction in global measles incidence per million population, 2000-2011

[Graph showing the decrease in measles incidence per million population from 2000 to 2015, with a projected trend to reach the 2015 goal.]
Reported measles incidence (cases/million pop) and countries with large outbreaks, Jan to Dec 2011

Data sources: monthly surveillance DEF file and country reports received at WHO IVB
Data in HQ as of 30 May 2012
* Data for Somalia and DRC from aggregate case reports, not monthly DEF file
Distribution of measles genotypes, 2011
(data as of 06/02/2012)
Rubella
Countries giving children rubella vaccine in their national immunization program

1996
83 countries
13% of birth cohort

2011
130 countries
41% of birth cohort

194 WHO Member States. Date of slide: 31 October 2012.

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.
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Proportion of countries offering rubella vaccine in routine by WHO region, 2000-2011

* Apparent decrease in 2011 because South Sudan joined EMRO but does not offer rubella vaccine in routine
Rubella cases reported to WHO 2000-2011

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Member states reporting in 2011</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>40 / 46</td>
<td>87%</td>
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<tr>
<td>AMR</td>
<td>35 / 35</td>
<td>100%</td>
</tr>
<tr>
<td>EMR</td>
<td>17 / 22</td>
<td>77%</td>
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<td>EUR</td>
<td>47 / 53</td>
<td>89%</td>
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<tr>
<td>SEAR</td>
<td>10 / 11</td>
<td>91%</td>
</tr>
<tr>
<td>WPR</td>
<td>24 / 27</td>
<td>89%</td>
</tr>
<tr>
<td>Global</td>
<td>173 / 194</td>
<td>89%</td>
</tr>
</tbody>
</table>

Data received at WHO as of 14/07/2012
Estimates of the 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</th>
<th>Member states reporting CRS in 2011</th>
</tr>
</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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<td>3</td>
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<td>EMR</td>
<td>9 265</td>
<td>5 720</td>
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<td>EUR</td>
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<tr>
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<td>120 342</td>
<td>103 068</td>
<td>214</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
Regional Progress
Measles vaccination coverage among children <1 year of age* and reported measles and rubella cases, PAHO, 1980-2012

*MR in children aged 1 year as countries introduced measles-rubella containing vaccines

Source: Country reports to FCH-IM/PAHO.
Heterogeneity in immunization coverage in South America and Ecuador 2011

Administrative coverage 2011:
- MMR1 = 94%
- MMR2 = 92%

Coverage range:
- <80%
- 80-94%
- ≥95%

Reported measles cases and 1\textsuperscript{st} and 2\textsuperscript{nd} dose coverage, WPRO 1980-2011

* WHO UNICEF estimates
** Official country estimates
Measles cases by month of onset, WPRO, 2008 – July 2012

86% reduction from 2008 to 2011
69% reduction from Jan 2011 to June 2012

National SIAs conducted

Source: National measles and rubella monthly reports

World Health Organization
Measles outbreaks in 4 provinces China Jan-Aug 2012

广东 Guangdong

Large proportion of measles cases belonged to vaccination targeted group (1–14), adults were also involved.

北京 Beijing

Major cases occurred sporadically

上海 Shanghai

Large proportion of measles cases was adults

新疆 Xinjiang

Major cases occurred around 1 year old, which is the routine vaccination targeted group
Measles and rubella cases and vaccine coverage, EURO, 1980 - 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Measles</th>
<th>Rubella</th>
<th>MCV1*</th>
<th>RCV1</th>
<th>MCV2**</th>
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<tbody>
<tr>
<td>1981</td>
<td>400</td>
<td>150</td>
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<td>200</td>
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<td>2011</td>
<td>1900</td>
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* WHO UNICEF estimates
** Official country estimates

Year MR SIA done in selected countries

World Health Organization
Confirmed measles cases, EURO
January 2004 – July 2012
Decreased demand for measles immunization

Vaccine safety scares: MMR boycott leads to increased measles incidence in the UK

Philosophical and cultural beliefs

Frontline healthcare workers doubting need for vaccination

Anti-vaccine movements with diverse reasons for opposing vaccination

Adverse events following vaccination distorted and sensationalized for political gain
64% of case reports in 2010 = from Malawi
69% of case reports in 2011 = from DR Congo
Measles cases and Routine MCV1 coverage, Zambia, 1999 - 2011

Measles reported/confirmed cases
- 1999: 21,791
d- 2000: 33,628
d- 2001: 23,627
d- 2002: 15,037
d- 2003: 16,793
- 2004: 187
- 2005: 187
- 2006: 197
- 2007: 117
- 2008: 26
- 2009: 17,163
- 2010: 20,429
- 2011: 33,190

Measles Immunisation Coverage
- 1999: 28
- 2000: 49
- 2001: 37 districts
- 2002: 15 measles campaign in all the 72 districts
- 2003: 37 districts
- 2004: 72 districts
- 2005: 72 districts
- 2006: 72 districts
- 2007: 72 districts
- 2008: 72 districts
- 2009: 72 districts
- 2010: 72 districts
- 2011: 72 districts
Measles cases by age Zambia, 2010-2011

No. of cases

N = 24 710

- 0-8 months
- 9-11 months
- 1-4 years
- 5-9 years
- 10-14 years
- 15-19 years
- 20-24 years
- >25 years

Confirmed Measles Cases

N = 24 710
Reported measles cases and 1st and 2nd dose coverage, EMRO 1980-2011

* WHO UNICEF estimates
** Official country estimates
Incidence of confirmed measles per million population, EMRO, 2011

* Somalia reported incidence of 2052 cases per million population

Inadequate surveillance
Measles cases, 1st & 2nd dose coverage, SIAs, Afghanistan, 1980-2011

- Reported Measles Cases (000s)
- MCV1*
- MCV2**

* WHO UNICEF estimates
** Official country estimates
Age-distribution of measles cases, Afghanistan, 2008-2011

![Age-distribution of measles cases infographic](image-url)
Reported measles cases and 1st dose coverage, SEARO 1980-2011

* WHO UNICEF estimates
India: measles 2\textsuperscript{nd} dose introduction and impact of SIAs on outbreaks

14 states with MCV1 <80%: through SIAs; 17 states with MCV1 ≥80%: through routine

No. and size of measles outbreaks has decreased after SIAs in districts in phases 1 & 2

Source: Based on target population available with Government of India
Data as on 13/08/2012
Key Challenges by WHO Region

- Americas – risk of importations
- Africa – weak immunization & health systems
- E. Med – security limiting access
- Europe – vaccine hesitancy
- SE Asia – large federalized countries (e.g. India)
- W. Pacific – spread in adults (e.g. China)

All regions

- Achieving and sustaining MCV2 coverage >95%
- Susceptibility gaps in the population including older age groups
- Lack of human and financial resources
Summary – Measles

• Measles vaccination has
  Considerably reduced measles cases globally and
  Decreased measles deaths 74% in the past decade
• Measles coverage increased since 2000 but has stagnated
  since 2010 and fewer countries meet coverage targets
• All countries now give 2 doses of MCV
  54 countries rely only on SIAs
• Measles incidence has decreased since 2000 but
  plateaued since 2008
• There have been major outbreaks of measles in 15 countries
• Many children >5 yr of age, adolescents and adults are
  getting measles in several of these outbreaks indicating
  significant immunity gaps in these populations
Conclusions – Measles

Based on current trends:
• Measles 2015 coverage targets will not be met
• AMRO has eliminated measles
• WPRO is likely to eliminate measles soon
• Other regions will not reach their elimination goals on schedule without serious measures to accelerate their immunization programs
• SEARO is still to set an elimination goal
• All countries that have eliminated measles remain susceptible to measles cases and outbreaks if vaccination coverage (with 2 doses of MCV) is not maintained >95%
Summary – Rubella

• Many countries under report rubella and do not report CRS cases.
• CRS modeling studies predict far greater numbers of CRS cases than those reported, mostly in Africa and South / SE Asia
• Since 2000 more countries are using RCV and most attain high coverage
• Only 2 regions have rubella elimination goals, AMR – 2010 and EUR – 2015
• Using a measles and rubella containing vaccine makes good sense
• Major scale-up needed to reach 2020 goal
Thank you.