Prasen Adya

Measles, Rubella &
Measles, Mumps, Rubella
Measles, Mumps, Rubella

- Vaccine Preventable Diseases.
- MCV part of EPI since 1974. *
- Prior to 1974, 90% individuals were infected with Measles before the age of 10 years! *
- 2011: Recommendation by WHO to include Rubella.
- 2013: GAVI announced its support for large scale catch up campaigns with MR vaccine.

Almost 20 mio people are affected by Measles every year.

2015: 134200 reported cases of Measles deaths: 315 children killed by Measles complications every day!

100-1000 cases of Mumps per 100000 population.*

> 100000 children are born every year with CRS.*

It costs <$2 to vaccinate a child against Measles & Rubella

Measles

- Highly contagious viral illness.
- First described in the 7th century.
- Near universal infection of childhood in pre-vaccination era.
- Frequent and often fatal in developing areas.

One child sick from Measles = Monthly Ethiopian family income
Adults at Risk of Measles

- Mass migration.
- College students.
- International travellers.
- Health-care personnel.

Causative factor for Measles Transmission in today’s era!
## Recent Measles Outbreaks

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>Increased no. of reported Measles cases.</td>
</tr>
<tr>
<td></td>
<td>33 % : African Region (AFR).</td>
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<tr>
<td></td>
<td>18 % : Eastern Mediterranean Region (EMR).</td>
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<tr>
<td></td>
<td>83 % : European Region (EUR) *</td>
</tr>
<tr>
<td>Mid 2016</td>
<td>Japan, USA, Australia</td>
</tr>
<tr>
<td>June / July 2016</td>
<td>Malaysia / Yemen</td>
</tr>
<tr>
<td>End 2016</td>
<td>Romania</td>
</tr>
<tr>
<td>January 2017</td>
<td>S. Africa</td>
</tr>
<tr>
<td>February 2017</td>
<td>Conakry, Guinea</td>
</tr>
</tbody>
</table>

Also reported: Vietnam, The Philippines, China.

# Recent Mumps Outbreaks

<table>
<thead>
<tr>
<th>Region</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>2014</td>
</tr>
<tr>
<td>USA</td>
<td>2016-17</td>
</tr>
<tr>
<td>Moldova</td>
<td>2008</td>
</tr>
<tr>
<td>Iraq</td>
<td>2015-16</td>
</tr>
<tr>
<td>Palestine</td>
<td>2014-15</td>
</tr>
<tr>
<td>Belgium</td>
<td>2012</td>
</tr>
<tr>
<td>Australia</td>
<td>2015</td>
</tr>
</tbody>
</table>
There is need for **Immunisation** in the **Developing Countries**, as well as for the **Developed Countries**
Measles & Rubella Initiative

- By the American Red Cross, United Nations Foundation, U.S. Center for Disease Control and Prevention, UNICEF and World Health Organization.
- Measles & Rubella Initiative first aimed to make a difference in Africa.
- Since then the American Red Cross and its Measles & Rubella Initiative partners have helped to vaccinate more than one billion children in more than 80 developing countries, making significant gains in the global effort to stop the disease.

Gavi’s support for Rubella is a Game Changer in the control of a disease that causes serious, life-long disabilities in infants.
WHO SAGE Recommendations

- Countries to use a Rubella containing combination vaccine such as MR or MMR, as a First dose MCV.
- Countries that introduce MR or MMR combination vaccines in routine immunisation should carry out one-time catch-up campaigns to reach all children between 9 to 15 years of age.
- Countries should switch to the same combination vaccines (MR or MMR) for both routine doses.

THE SUCCESS STORY
Rubella Elimination in the America’s

- PAHO developed a strategy to introduce MR vaccine into routine immunisation programs of all countries for children aged 12 mos & reaching > 95% coverage.
- 1998 to 2005: Vaccination campaigns were carried out in Chile, Brazil, Costa Rica, Honduras, Ecuador & El Salvador.
- Another 18 countries were added in subsequent years.
Rubella Eliminated in the America’s

- The campaigns had a huge impact on Measles as well as preventing the re-establishment of endemic Measles virus transmission in the region.
- Consistent supply was ensured by a DCVMN member.
- PAHO extended a special award to Serum Institute of India.

America’s Rubella Free!
America’s Rubella Free

- Vaccination effort led to eradication of Rubella in the Americas, 10 months before target.
- The Rubella & CRS initiative will have saved an estimated US$3 billion by preventing >112,500 CRS cases in Latin America and the Caribbean.
- The MR initiative launched a new Global Measles & Rubella Strategic Plan in 2012 – Reduction of global Measles deaths by at least 95%.
Measles Elimination in the America’s

- Large outbreaks reported between 2011 & 2015: Brazil, Ecuador.
- Efforts started in 1994. Campaign lasted 22 years.
- IEC reviewed evidence on Measles elimination presented by all countries of the region between 2015 & August 2016.
- 27 September 2016: IEC announced that Measles had been eliminated from Americas.  
  Ref.: www.eurosurveillance.org, P1, 29 Sept 2016

America’s Measles & Rubella Free
Measles Elimination in S. Korea

- **1983** : Measles, Mumps and Rubella (MMR) vaccine : added to national immunization program.
- **2000–01** : Measles epidemic : 55000 reported cases.
- **2001** : 5-year National Measles Elimination Plan.
- **2006** : Interruption of indigenous measles transmission achieved : S. Korea, first country in the World Health Organization’s (WHO) WPR : declare measles eliminated.

Ref. : MMWR Vol. 56, No 13, April 6, 2007 PP 304
Other Campaigns

- 2003 : Iranian campaign : World’s largest vaccination operation. Measles and Rubella (MR) vaccine was administered to more than 33 million people aged between 5 and 25 years, in less than one month : Decline in measles incidence due to the vaccination. Ref.
  
  \[\text{Bahman Pourabbas et al Efficacy of measles and rubella vaccination one year after the nationwide campaign in Shiraz, Iran; International Journal of Infectious Diseases (2008) 12, 43—46.}\]

- In Albania, the incidence of Measles and Rubella infections significantly dropped after the mass immunization campaigns of MR vaccine.

MR vaccine was used extensively in mass immunization campaigns in various countries in Latin America, Southern Europe, Central Asia, East Asia and Western Asia
THE REALITY
S. E. Asia Scenario*

- Measles remains a significant cause of morbidity and mortality.
- **2012 : 122000** global measles deaths : **43 %** in the SE Asian region.

*Strategic plan for Measles elimination and Rubella and CRS control in the SEA region 2014-2020*
S. E. Asia Scenario

Used different strategies:
1. Routine childhood immunisation : 1 or 2 doses;
2. Selective vaccination among young adolescent & susceptible adult females;
3. Incorporating RCV’s into Measles SIA’s;
4. Different combinations of the abovementioned strategies.

Campaigns conducted /planned : Thailand, Philippines, Indonesia, India.
Measles & Rubella Elimination

- Progressing slower than expected.
- Since 2010 global Measles incidence has decreased by 21% from 50 cases per mio to 39.3 cases in 2015.
- Measles outbreak have occurred in numerous countries
  - sub-optimal immunisation coverage.
  - increased susceptibility in older age groups.

45 Member States have not yet introduced Rubella vaccine!
## Measles & Rubella Elimination

<table>
<thead>
<tr>
<th>2015 Goal or Milestone</th>
<th>Evaluation (based on 2015 data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieve &gt; 95% reduction in estimated measles mortality compared to 2000</td>
<td>Reduction of 79%*</td>
</tr>
<tr>
<td>Reduce annual measles incidence to less than 5 cases/million &amp; maintain that level</td>
<td>Global incidence of 36 per million</td>
</tr>
<tr>
<td>Achieve at least 90% MCV1 coverage nationally, and &gt; 80% coverage in every district or equivalent administrative unit.</td>
<td>119 (61%) countries have MCV1 coverage &gt; 90% at national level.</td>
</tr>
<tr>
<td>Achieve at least 95% coverage with M, MR or MMR during SIAs in every district.</td>
<td>Of 104 SIAs from 2013-2015, 52 (50%) had a reported coverage of ≥95%. Only 19 conducted a post- SIA coverage survey; 9 (47%) reached ≥95% national coverage.</td>
</tr>
<tr>
<td>Establish a rubella/CRS elimination goal in at least three additional WHO regions (i.e., in addition to the AMR and EUR that had established goals before 2012).</td>
<td>One additional region, WPR, has established a rubella elimination goal but no date is associated with it.</td>
</tr>
<tr>
<td>Establish a target date for the global eradication of measles.</td>
<td>No target date for global measles eradication established.</td>
</tr>
</tbody>
</table>

Source: [Midterm review of the Global Measles & Rubella strategic plan 2012-20](#)
Current Status

- Tremendous progress made towards both Measles and Rubella Elimination since 2001. **Significant gains made during 2012 – 2015.**
- 23/194 WHO Member States introduced MCV2. **Global MCV2 coverage rose from 48% to 61%.**
- 17 countries introduced RCV in their schedule. **Global RCV coverage rose from 39% to 46%.**
- 4.25 million deaths estimated to have been averted during 2012 – 2014 relative to no vaccination.

**Neither Measles nor Rubella elimination on track to achieve ambitious goals laid out in the Global Measles and Rubella Strategic Plan, 2012-2020.**

Source: <Midterm review of the Global Measles & Rubella strategic plan 2012-20>
THE REQUIREMENT FOR CONSISTENT SUPPLIES of MCV CONTINUES WELL BEYOND 2020 !!!
MCV Current Manufacturers

- Serum Institute of India Pvt Ltd., India.
- Crucell (exited from the market in 2012).*
- GSK.
- Merck.
- Sanofi.

UNICEF Demand

- Total MCV demand reached 318.8 mio doses (additional demand was due to large outbreak responses & targeting wider age groups).

- 2015:

<table>
<thead>
<tr>
<th>Doses</th>
<th>Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>295 mio doses</td>
<td>Measles vaccine</td>
</tr>
<tr>
<td>131 mio doses</td>
<td>MR vaccine</td>
</tr>
<tr>
<td>15 mio doses</td>
<td>MMR vaccine</td>
</tr>
</tbody>
</table>
DEMAND RISE

The demand has increased considerably from the year 2000 to 2011 and continues to grow.

NEVER HAS THERE BEEN A SUPPLY CONSTRAINT
SUCCESS STORY

DCVMN members currently supply most of the Global Demand

Remain committed for meeting up future demand
Supply Challenges

- Regulatory environment in certain countries.
- Country Registration a prerequisite for supplies.
- At times local clinical trials a prerequisite for granting registration.
- Audit by the country authorities.
- Country specific packaging.

The solution could be consideration for WHO PQ