Using Routine Immunization to Eliminate Measles & Rubella: Time for a change?

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Global Immunization Division
Centers for Disease Control and Prevention
What is Routine Immunization?
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Wiki Answers website

• No standard definition
  — Hard to define
  — Means different things to different people
What is Routine Immunization?

- Coverage Improvement?
  - Global targets
    - 90% national MCV1 coverage in all countries
    - 80% MCV1 coverage in every district
  - Coverage improvement = RI system strengthening?
What is Routine Immunization?

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• No standard definition
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• Sum of human and logistical activities/events to ensure the regular delivery & uptake of vaccines & the monitoring of their positive & adverse impact
  — Implies the "regular" delivery, i.e., known schedule, of EPI vaccines

• Fixed posts &/or outreach
  — Part of a larger plan
  — Not time limited
  — Goal to provide needed vaccines to all eligible persons and to successive birth cohorts
What is the Routine Immunization System?

- **GLOBAL**
  - Supply planning
  - Inventory management
  - Manufacturing
  - Storage and distribution
  - Procurement & distribution
  - Supply chain data
- **NATIONAL**
  - Sufficient supplies at health posts
  - Collection & use of data
  - Data to guide national decision making
  - National training / professional programs and supervision
  - National motivation
- **LOCAL**
  - Health worker
  - Individual
  - Community engagement & demand creation
  - Supervisors & FLWs
  - National & sub-national program managers

**POINT OF VACCINATION**

- **Supplies**
  - Global guidelines
- **Motivation**
  - Global indicators
- **Training & mentorship**
  - Global resources for health
- **Supervisors & FLWs**
  - National & sub-national program managers
- **National training / professional programs and supervision**
  - National training / professional programs and supervision
- **Collection & use of data**
  - Data to guide national decision making
- **Health worker**
  - Global guidelines

**POLITICAL COMMITMENT**

**FINANCING & PRICING**

**ENABLING PARTNER ENVIRONMENT**

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Courtesy of BMGF
What is the Routine Immunization System?

- Bring quality vaccine and supplies to vaccination site
- Bring trained vaccinators to vaccination site
- Informed caregiver brings child to vaccination site
What is the Routine Immunization System?

Bring quality vaccine and supplies to vaccination site

1. National procurement
2. Inventory management
3. Cold chain
4. Logistics / Distribution
5. Vaccine Forecasting
What is the Routine Immunization System?

Bring trained vaccinators to vaccination site

1. Human resources
2. Training / Mentorship / Capacity building
3. Supervision
4. Motivation
What is the Routine Immunization System?

Informed caregiver brings child to vaccination site

1. Community engagement
2. Social mobilization
3. Communications
What is the Routine Immunization System?

The Wheels of Routine Immunization

1. Political commitment
2. Enabling partner environment
3. Monitoring and use of data
4. Planning and Management
What is the Routine Immunization System?

The RI Road (Coverage)
What is the Routine Immunization System?

The RI Road
(Coverage)
What is the Routine Immunization System?

RI coverage shouldn’t be a destination or endpoint
What is the Routine Immunization System?
What is the Routine Immunization System?
What is the Routine Immunization System?

Goal is to ATTAIN and SUSTAIN RI coverage
Synergy between Routine Immunization and Measles & Rubella Elimination

Measles/Rubella Elimination
SIAs
Outbreak response

Routine Immunization
Strengthening
MRCV1
MRCV2

MRCV = measles- and rubella-containing vaccine
Challenges to Increase MRCV Coverage

• Missed opportunities
  • Fear of wastage
  • Fear of stockout
  • False contraindications

• Weak platform for vaccination in 2\textsuperscript{nd} year of life

Reluctance to open vial
## Missed Opportunities

<table>
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<th>Consequences</th>
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<td>Measles vaccine on specific days to increase session size (weekly or monthly)</td>
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Opening Vial: Impact on Coverage

Coverage by session size if health worker opens 10 dose vials only for sessions where ≥50% of doses will be used (≥ 5 eligible children present)

## Practices Related to Wastage

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Cambodia</th>
<th>Nigeria</th>
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<tr>
<td>Average measles vaccine wastage rate in health centers</td>
<td>58%</td>
<td>19%</td>
</tr>
<tr>
<td>Average number of children before opening measles vaccine vial</td>
<td>2.2</td>
<td>6.2</td>
</tr>
<tr>
<td>Proportion of parents saying they were turned away for vaccination</td>
<td>4%</td>
<td>30%</td>
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### How to reduce the threshold to open a vaccine vial?

Source: unpublished data, 2011 Nigeria CDC/WHO/NPHCDA study, 2013 Cambodia WHO/CDC/MOH study in nationally representative samples of health facilities
### Wastage and Vial Size

<table>
<thead>
<tr>
<th>Vial size</th>
<th>Estimated wastage rate</th>
<th>Estimated wastage factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single dose</td>
<td>&lt;5%</td>
<td>1.05</td>
</tr>
<tr>
<td>5 doses/vial</td>
<td>30–40%</td>
<td>1.43–1.67</td>
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• Missed opportunities
  • Fear of wastage
  • Fear of stockout
  • False contraindications

• Weak platform for vaccination in 2\textsuperscript{nd} year of life
Vaccination in 2nd Year of Life

Benefits to Stronger Platform in 2nd Year of Life

1) Higher coverage of second dose of measles-containing vaccine (MCV2) / DTP booster doses

2) Catch-up (higher coverage) of antigens offered in first year of life (e.g. DTP, MCV1)

3) Strong platform for newer vaccines (e.g. malaria)

4) Opportunities to integrate with other health interventions
## MCV2 Schedules in 2012

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of countries</th>
<th>No MCV2</th>
<th>≤2 years</th>
<th>3-7 years</th>
<th>&gt;7 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>46</td>
<td>34 (74%)</td>
<td>9 (20%)</td>
<td>3 (7%)</td>
<td>-</td>
</tr>
<tr>
<td>AMR</td>
<td>35</td>
<td>4 (11%)</td>
<td>8 (23%)</td>
<td>23 (66%)</td>
<td>-</td>
</tr>
<tr>
<td>EMR</td>
<td>22</td>
<td>2 (9%)</td>
<td>17 (77%)</td>
<td>3 (14%)</td>
<td>-</td>
</tr>
<tr>
<td>EUR</td>
<td>53</td>
<td>0 (0)</td>
<td>6 (11%)</td>
<td>37 (70%)</td>
<td>10 (19%)</td>
</tr>
<tr>
<td>SEAR</td>
<td>11</td>
<td>2 (18%)</td>
<td>6 (55%)</td>
<td>3 (27%)</td>
<td>-</td>
</tr>
<tr>
<td>WPR</td>
<td>27</td>
<td>3 (11%)</td>
<td>13 (48%)</td>
<td>11 (41%)</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>45 (23%)</td>
<td>59 (30%)</td>
<td>80 (41%)</td>
<td>10 (5%)</td>
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Vaccination in 2nd Year of Life

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MRR1 Coverage by Age and Region, Belize, 2005 - 2008

Presented at the Caribbean EPI Managers Meeting 2009
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Vaccination in 2\textsuperscript{nd} Year of Life

Challenges to Establishing Stronger Platform

1) Monitoring and accountability
   • Should coverage for all vaccines be measured in 24-35 month olds in addition to 12-23 month olds?

2) Restrictive government policies

3) Poor recording/reporting for vaccinating in 2\textsuperscript{nd} year of life

4) Need to improve vaccine forecasting (minimize stockouts)

5) Need to retrain and educate health workers

6) Need to increase awareness with communities
Summary

- Strengthening routine immunization system is not equal to improving coverage
- Routine immunization system has multiple components working together to attain and sustain coverage
- To achieve measles and rubella elimination consider specific routine immunization issues affecting MRCV coverage
  - Reluctance to open vaccine vial
  - Platform for vaccination in 2nd year of life
Thank you!
## Wastage and 2 Dose Schedule

<table>
<thead>
<tr>
<th>Vial size</th>
<th>For 1 dose schedule</th>
<th></th>
<th>For 2 dose schedule</th>
<th></th>
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<tbody>
<tr>
<td></td>
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<td>1.82–2.50</td>
<td>25–35%</td>
<td>1.33–1.54</td>
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### 2012 Top 15 Unimmunized MCV1

#### 21.2 million unimmunized globally

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Coverage</th>
<th>Unimmunized</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>India</td>
<td>74</td>
<td>6,371,156</td>
</tr>
<tr>
<td>2</td>
<td>Nigeria</td>
<td>42</td>
<td>3,760,114</td>
</tr>
<tr>
<td>3</td>
<td>Ethiopia</td>
<td>66</td>
<td>995,893</td>
</tr>
<tr>
<td>4</td>
<td>Indonesia</td>
<td>80</td>
<td>922,723</td>
</tr>
<tr>
<td>5</td>
<td>Pakistan</td>
<td>83</td>
<td>731,167</td>
</tr>
<tr>
<td>6</td>
<td>DR Congo</td>
<td>73</td>
<td>682,752</td>
</tr>
<tr>
<td>7</td>
<td>Philippines</td>
<td>85</td>
<td>349,873</td>
</tr>
<tr>
<td>8</td>
<td>USA</td>
<td>92</td>
<td>335,952</td>
</tr>
<tr>
<td>9</td>
<td>Afghanistan</td>
<td>68</td>
<td>314,077</td>
</tr>
<tr>
<td>10</td>
<td>Iraq</td>
<td>69</td>
<td>312,193</td>
</tr>
<tr>
<td>11</td>
<td>Uganda</td>
<td>82</td>
<td>269,810</td>
</tr>
<tr>
<td>12</td>
<td>Mali</td>
<td>59</td>
<td>263,527</td>
</tr>
<tr>
<td>13</td>
<td>Madagascar</td>
<td>69</td>
<td>232,913</td>
</tr>
<tr>
<td>14</td>
<td>Somalia</td>
<td>46</td>
<td>224,540</td>
</tr>
<tr>
<td>15</td>
<td>South Africa</td>
<td>79</td>
<td>222,200</td>
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*Based on WHO/UNICEF estimates*