FIELD CHALLENGES TO MEASLES ELIMINATION IN THE DEMOCRATIC REPUBLIC OF CONGO

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INTRODUCTION

- Morbillivirus, responsible for causing measles, is extremely contagious
  - Vaccine effectiveness only 80-95% with one dose
  - 90-95% population vaccinated for herd immunity
- Democratic Republic of Congo (DRC):
  - Measles elimination goal by 2020
  - Current strategy: 2 doses measles containing vaccine (MCV; single antigen)
    - MCV1 – Routine vaccination at 9 to 11 months of age
    - MCV2 – Supplementary immunization activities (SIA)
  - 2009: Historic low in reported measles cases
  - 2010 to present: Rebound in measles cases with epidemics

RESULTS

Survey demographics, Kunda 2016

<table>
<thead>
<tr>
<th>Age group</th>
<th>Vaccinated</th>
<th>Not vaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 ≤ 59 months</td>
<td>742 (2463)</td>
<td>201 (687)</td>
</tr>
<tr>
<td>5 &lt; 15 years</td>
<td>153 (390)</td>
<td>51 (182)</td>
</tr>
<tr>
<td>Total</td>
<td>995 (4303)</td>
<td>252 (869)</td>
</tr>
</tbody>
</table>

VC of 2016 MSF and MOH campaigns, Kunda

<table>
<thead>
<tr>
<th>Status</th>
<th>N</th>
<th>Vaccinated with card</th>
<th>Vaccinated without card</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-urban</td>
<td>842</td>
<td>36</td>
<td>4.5</td>
</tr>
<tr>
<td>Rural</td>
<td>211</td>
<td>19</td>
<td>10.4</td>
</tr>
</tbody>
</table>

AIM

- Main objective: Assess the measles vaccine coverage (VC) of the 2016 MSF reactive vaccination campaign in Kunda
- Secondary objectives: Assess the measles VC of the 2016 MOH SIA in Kunda; Assess measles vaccine effectiveness (VE) of the 2016 MOH SIA in Kunda

METHODS

- Cross-sectional cluster survey, stratified by:
  - Type of health area:
    - Semi-urban (Bikenge), or Rural (Kabonga, Kapuri, Kasubi, Mbutu, Mwema Mingana)
  - Age: 6 ≤ 59 months, 5 < 15 years
  - Expected VC of 90% (precision 5%; ± 5%; cluster effect 4)
  - Minimum 602 children per strata
  - 30 clusters of 27 households (810 households) per strata
  - Non-response of 10%
  - Household size 5
  - Population: 18% 6 ≤ 59 months, 50% < 15 years
  - Included all children 6 months to 15 years in household
  - Retrospective cohort analysis
  - VE = 100%[1 - (incidence vaccinated / incidence non-vaccinated)]

DISCUSSION AND CONCLUSION

- Combined VC and VE survey
  - Sample size appropriate for VC
  - Wide confidence intervals for VE
  - VC differs between semi-urban and rural areas
  - 2016 MOH SIA suboptimal in semi-urban area for preventing the epidemic
  - Combination of suboptimal VC and VE exacerbates risk of epidemics
  - Despite joint efforts, elimination of measles remains a challenge
  - 2 dose strategy imperative
  - Way forward:
    - Understand why some children remain unvaccinated despite multiple opportunities
    - Develop vaccination strategies tailored to urban contexts
    - Further investigation and documentation of field VE and its determinants