Agence de Médecine Préventive

Immunization session attendance, vaccine wastage and coverage

Study conducted by AMP in Burkina Faso in 2009

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Agenda

Study objectives
Burkina Faso presentation
Method and material
Results
  frequency of sessions
  attendance at session
  vaccine wastage
  immunization coverage
Conclusion
Objectives

- To measure immunization session attendance of EPI routine program for different strategies in urban and rural areas
- To calculate vaccine wastage rate during immunization sessions
- To measure attendance by girls in primary and secondary schools in urban and rural areas (HPV vaccine)

WHO commissioned and funded the study (to support VPPAG activities)
AMP developed the protocol and implemented the study in Burkina Faso in 2009

Plan

Study objectives

Burkina Faso presentation

Method and material

Results
- frequency of sessions
- attendance at session
- vaccine wastage
- immunization coverage

Conclusion
### Burkina Faso

- ~ 15 M. hab; 47% < 15 yrs

### National immunization program - overview
- Schedule: 8, 12, 16 wks
- Systematic EPI: Fixed posts and outreach sessions.
- Campaign: + door to door

### Vaccine presentation
- 20 doses / vial: BCG (lyo), OPV (liq), TT (liq)
- 10 doses / vial: MCV (lyo), YF (lyo)
- 1 dose / vial: Penta (liq)

### Imm. Coverage (WHO/UNICEF, 2008)
- Penta 3 = 95%; MCV = 94%

### Vaccine management (WHO, 2008)
- Wastage: BCG = 36%; MCV = 19%
- No stock out in 2008 (central and district level)

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**Presentation – Burkina Faso**

Vaccine management performance at service delivery level (2009 EPI review)
Plan

Study objectives

Burkina Faso situation

Method and material

Results

- frequency of sessions
- attendance at session
- vaccine wastage
- immunization coverage

Conclusion

Method

- **Retrospective study (Jan-Dec 2008)**
- **Routine immunization: fixed post and out reach strategy**
- **Four sites selected in Burkina Faso: Two rural, Two urban**

<table>
<thead>
<tr>
<th>Name of facility</th>
<th>Population Total / 0-11 months</th>
<th>Settings</th>
<th>Distance from vaccine store (district) (km)</th>
<th>Cold chain equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Center Kossodo</td>
<td>9 829 / 414</td>
<td>Urban</td>
<td>0</td>
<td>1 fridge (Sibir)</td>
</tr>
<tr>
<td>Health Center Secteur 23</td>
<td>86 919 / 3 659</td>
<td>Urban</td>
<td>9</td>
<td>2 fridges (Sibir)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 freezer</td>
</tr>
<tr>
<td>Medical Center Tanghin Dassouri</td>
<td>20 006 / 842</td>
<td>Rural</td>
<td>25</td>
<td>2 fridges (Sibir)</td>
</tr>
<tr>
<td>Health Center Yaoghin</td>
<td>3 060 / 128</td>
<td>Rural</td>
<td>50</td>
<td>1 fridge (Sibir)</td>
</tr>
</tbody>
</table>

- **Source of data**
  - Daily immunization register
  - Vaccine stock register
Method – Immunization sessions and coverage

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of immunization session by</td>
<td></td>
</tr>
<tr>
<td>- Health facility</td>
<td></td>
</tr>
<tr>
<td>- Strategy</td>
<td></td>
</tr>
<tr>
<td>- Vaccine</td>
<td></td>
</tr>
<tr>
<td>For the all year 2008</td>
<td></td>
</tr>
<tr>
<td>Number of attendees by</td>
<td></td>
</tr>
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<td>- Health facility</td>
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<tr>
<td>For the all year 2008</td>
<td></td>
</tr>
</tbody>
</table>

Coverage

- Calculation based on the number of doses reported in the tally records (numerator), and the target population of the area of each health facility, provided by the Ministry of Health (denominator).
- Limits:
  - Not possible to affirm that each dose was administered to a beneficiary residing in the area of the health facility.
  - Data of target population issues from 2006 population census

Method - Vaccine wastages calculation

Health facility level

Unopened vials + opened vials
Include losses due to services and losses due to the program.
Measured on the full year 2008 for all vaccines
Calculated from the number of doses reported in the tally register and the number of vaccine vials taken out of the stock of the facility, reported on the vaccine stock register.

Immunization sessions

Opened vials only
include only losses due to the program.
Measured:
1. on the full year 2008 for all vaccines.
2. for each session only for vaccines not covered by the open vial policy (BCG, MCV and YF) and vaccine in single dose (penta).
Calculated from the number of doses and the number of vaccine vials opened during the session, reported in the tally register.
Plan

Study objectives

Burkina Faso presentation

Method and material

Results

- frequency of sessions
- attendance at session
- vaccine wastage
- immunization coverage

Conclusion

Results – immunization session frequency - 2008

- Total number of sessions conducted = 839
- Total number of doses administered = 42 805
- Urban setting: 67% of immunization sessions; 77% of doses administered
- All health structure offered both fixed and outreach immunization services
- Outreach strategy more frequent in rural (40.5%) than urban (14.8%)
Results – immunization session frequency

- Liquide vaccines offered at most of immunization sessions
- Lyophilized vaccines:
  - twice a week to once a month in fixed post
  - Depend on attendance in out reach sessions
  - Follow instruction given by regional health authorities

Results - Vaccination session attendance

- **BCG** = 20 doses/vial:
  - More sessions with attendances 11-20 and 31-40 to limit wastage

- **Pentavalent** = 1 dose/vial
  - Average attendance lower than BCG (5 time more session with pentavalent)
  - No "vial effect"

Average attendance BCG=24,1; Penta=12,5;
Minimum : BCG=7; Penta= 0
Maximum: BCG= 70; Penta=98
Results - Vaccination session attendance

- **Measles** = 10 doses/vial:
  - More sessions with attendances 6-10 and 16-20 to limit wastage
  - TT = 20 doses/vial
  - No “vial effect” because of multi dose vial policy application
  - Average attendance lower than MCV (5 time more session with TT)*
  - Average attendance:
    - MCV=14.9, TT=9.6;
    - Minimum: MCV=1, TT=0
    - Maximum: MCV=71, TT=88

Results – Vaccine wastage

- 41% of MCV wastage happened at store level
- Difference between wastage rates during immunization sessions and at health facility store due to expiration, broken vial, VVM switch, reporting error, ...
- Wastages in outreach sessions more important than in fixed post, especially for lyophilized vaccines.
- Wastages lower than planed in cMYP for all antigens
Results – Immunization coverage - 2008

- Low difference in number of children vaccinated with penta 1 and measles
- Measles offered in one out of 4 immunization sessions (average)
- At region level (2009 EPI review)
  - Low drop out rate Penta 1 – MCV (5.09%)
  - 1.4% of MCV doses administrated were not valid

### Immunization Card Valid dose

<table>
<thead>
<tr>
<th></th>
<th>Immunization Card</th>
<th>Valid dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penta 1</td>
<td>92.2%</td>
<td>90.0%</td>
</tr>
<tr>
<td>MCV</td>
<td>87.5%</td>
<td>72.9%</td>
</tr>
<tr>
<td>FIC</td>
<td>81.5%</td>
<td>64.0%</td>
</tr>
<tr>
<td>Drop-out rate</td>
<td>5.09%</td>
<td></td>
</tr>
</tbody>
</table>

### Vaccination Coverage in the Region (EPI review 2009)

- Number of children receiving a vaccine dose - 2008
  - Plan
  - Study objectives
  - Burkina Faso situation
  - Method and material
  - Results
    - frequency of sessions
    - attendance at session
    - vaccine wastage
    - immunization coverage

### Conclusion
## Conclusion

- Diversity of immunization session organization according to setting (strategy, frequency, attendance…)
- Vaccine vials presentation drives the immunization sessions planning
- Strategies to limit vaccine wastage without significative impact on coverage (following instruction given by health authorities): *limited wastage with high coverage*
- Vaccine vial size as an adjustment parameter for immunization program implementation; health services adapt strategy to gain efficiency in immunization
- Possible impact of vaccine vial size on quality of immunization (high number of unvalid doses)
- Recommendation: Maintain/developp country’s decision making capacity based on evidence, country specificity, immunization multi year plan…
  - Assessment tools, Simulation tools, Decision tree
  - Policy and Improvement plan development and implementation
  - HR skills development

## Conclusion

- Needs further documentation on:
  - Cause of wastage at store and immunization session
  - Missed opportunities due to limited number of session (vaccines excluded by MDVP)
  - Role of vaccine presentation in the validity of immunization
  - Age of immunization
  - Quality of immunization (immunization safety, vaccine efficacy…)
  - Cost / Affordability (cost per dose at district store; cost per dose administered, cost of losses at various level; cost of AEFI, unprotected children, contamination…)
  - …
Aknowledgement

- Césaire Ahanhanzo (AMP)
- Aristide Aplogan (AMP)
- Souleymane Koné (WHO)
- Prosper Djiguemdé (MoH Burkina Faso)

Thank you for your attention