Expanded Programme on Immunization

Guidelines for Vaccine Wastage Monitoring
Sentinel Project in Ghana

EPI
WHO Ghana
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Forward

Vaccines and their management form a major component of the national immunization programme. Regular supply of vaccines and their efficient management is paramount to the success and effectiveness of all immunization programmes.

In the present times, it is significant to note that the demand for vaccines by the developing countries is increasing whilst at the same time the supply is decreasing. The decrease in vaccine supply has been attributed mainly to rising cost of production, a situation that poses great threat to many national immunization programmes. Although for many developing countries, access to vaccines is limited due to weak financial positions there is evidence of high vaccine wastage rates due to inadequate knowledge and skills of the staff managing the scarce resources.

To address this situation, without compromising the lives of children, it is important to institute effective and efficient management system to monitor vaccine use in all national immunization programmes.

It is in this regard that I find this booklet ‘Guidelines for Vaccine Wastage Monitoring Sentinel Project in Ghana’ very handy and appropriate for the purpose. It is well presented in simple language, very comprehensive and easy to follow. It meets the needs of mid-level managers and field staff involved in management of vaccine in national immunization programmes at all levels. It will improve the knowledge and skills of staff to manage vaccines efficiently for an effective programme.

It is in this light that I recommend the booklet to health workers in all countries, especially in the developing countries, who share common experiences in Vaccine management in their immunization programmes.

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Introduction to Vaccine Wastage Sentinel monitoring study

Definitions
Vaccine wastage sentinel monitoring is study process through which wastage is monitored through regular and standard reporting format in randomly selected health facilities and vaccine stores during a well specified period with operations and lessons well documented for references and training.

Purpose
To maximize efficient use of vaccine in the wake of:
- Increasing demand for vaccine
- Increasing cost of vaccine
- Decreasing supply of vaccine
- Decreasing external support for immunization services
- Increase in other health priorities (other than immunization) receiving immediate attention
- Mandatory for countries receiving GAVI support to reduce wastage rates drastically.

Objectives and process
- Objectives - To determine the weaknesses in the management of vaccines and to draw lessons for improvement in the immunization programme.
- Process – This is to be done
  - Through regular and specified reporting period
  - Through use of standard reporting format
  - At designated levels (Service and Vaccine stores levels respectively)
  - In randomly selected sites using cluster sampling technique.

Data requirements
The minimum data required at service level are:
- Start balance
- Doses received
- Doses discarded unopened
- Doses opened for use
- Number of children immunized

Selection of sites
- 80 service delivery points randomly selected
  - 10 facilities per region (in 8 regions) or 8 facilities per region (in all 10 regions)
- 10 vaccine stores per region participating in the programme

Actors/Coordinators
- National level – National EPI logistician with support of EPI/NPO (WHO)
- Regional – Regional EPI and surveillance officers
- District – Disease control officers
- Facility level – Community health nurses and disease control officers

All actors and coordinators are required to
- Compile and submit monthly reports
- Go on regular support and monitoring visits to lower level to enhance quality of service/data and timeliness of report

Training documents to use
- Tasks and Guidelines for filling sentinel forms by levels
- Monthly reports forms and summary sheets
- Supervisor’s checklist
GUIDELINE FOR COMPLETING VACCINE WASTAGE REPORTING FORM FROM SENTINEL SITES

GUIDE FOR SERVICE LEVEL STAFF

Tasks
1. All columns must be filled
2. Complete one form for each vaccine
3. Update the form daily for all antigens
4. Report any difficulties to the district coordinator
5. Update the temperature charts 2-times daily as required
6. Submit timely monthly reports on all antigens to district coordinator

Steps by step guide to complete and update the wastage monitoring form

1. **Vaccine wastage for** - enter name of vaccine in the space provided eg – BCG
2. **Name of health facility** – enter actual name of the service delivery point eg – Agona health centre
3. **Reporting period** – Enter name of the current month and year at the spaces provided eg, January, 2005
4. **Region** – Enter name of the region in which the health facility is located – eg, Western
5. **District** – Enter name of the district in which the health facility is located – eg, Ahanta West
6. **Sub-district** – Enter the name of the sub-district, eg – Agona
7. **Target population for the month** – Enter the monthly vaccination target (0-11 months) for the health facility
8. **Date** – Enter date from beginning to end of the month in the appropriate column
9. **Column A: Start balance** – Enter the stock balance at the beginning of the day. This column must be filled every morning before the start of any vaccination session. At the end of the month, repeat the balance at the start of the month (thus balance on first day of the month) at the total column
10. **Column B: Number of doses received** - Enter number of doses of the vaccine received against the date of receipt. This column must be updated anytime new deliveries are received
11. **Column C: Number of doses (unopened) discarded** – Enter for each day the number of doses of the particular vaccine that have been discarded due to expiry, VVM indication, heat exposure, and breakages at the facility during operation. This column must be updated at the end of every day. Sum up the total for each category at the end of the month and put total in the space provided
12. **Column D: Number of doses opened** – This is the number of doses opened for administrative use during immunization sessions. Enter number opened each day for vaccination sessions. Sum up the total doses opened during the month and put the total in the space provided.
13. **Column E: Number of children immunized** – This is the number of children in the target group (0-11 months) vaccinated during each session. Enter the number of children vaccinated on each day a session is held. This may include vaccination during outreach session. Sum up the total of children immunized at the end of the month in the space provided.
14. **Column F: End balance** – This is the balance at the end of each until the end of the month. This is the difference between \{A+B\} and \{C+D\}, where:
   - A = balance at the start of the day
   - B = number of doses received
   - C = number of doses discarded (unopened), and
   - D = number of doses opened for use during vaccination session in the day.

\[ F = \{A+B\} - \{C+D\} \]
• F then becomes the start balance at the beginning of the next day. Balance at the end of the last day of the month is then the end balance for the month

15. Calculate required rates (output indicators)

1. Vaccine usage rate $H$ :

$$H = \frac{E \times 100}{{A+B-F}},$$

where:

- $E = $ Total number of children vaccinated during the month (assuming this is 1054)
- $A = $ Start balance at the beginning of the month (assuming this is 500 doses)
- $B = $ Total doses received during the month (assuming this is 1600 doses)
- $F = $ Total balance at end of the month (assuming this is 500 doses)

$$H = \frac{1054 \times 100}{500+1600-500} = \frac{1054 \times 100}{1600} = 65.9\%$$

2. Vaccine wastage rate $I$ :

$$I = \left(\frac{\text{Total doses used} - E \text{ (No. of chn immunized)}}{\text{Total doses used}}\right) \times 100$$

- Total doses used is the sum total of doses discarded (unopened): $\{C\}$ and doses opened for administrative use $\{D\} = \{C+D\}$
- Assuming doses discarded $\{C\}$ was 230 and doses opened $\{D\}$ was 1370
- Then total doses used = 1600
- $E = $ Total number of children vaccinated as at the end of the month (assuming this is 1054)

$$I = \frac{(1600-1054) \times 100}{1600} = \frac{546 \times 100}{1600} = 34.1\%$$

Similarly, $I = 100 - H$, Then $I = 100 - 65.9\% = 34.1\%$
3. Immunization coverage rate: 

\[
\text{Immunization coverage rate} = \frac{E \times 100}{\text{Target population for the month}},
\]

where:
- \( E = \) Total number of children vaccinated during the month (assuming this is 1054)
- Immunization target for the month (assuming this to be 4680)

Then immunization coverage rate: 

\[
\frac{1054 \times 100}{4680} = 21.7\%
\]

4. Calculating immunization coverage rate for multiple dose vaccines (OPV) and (Pentavalent).

Although Pentavalent has 3 doses (penta 1, penta 2 and penta 3) and OPV has 4 doses (OPV0, OPV1, OPV2 and OPV3), the coverage should be calculated for each dose as a unique entity like BCG or measles.

Calculating the immunization coverage for Pentavalent, given Penta1 = 1040; Penta2 = 980 and Penta3 = 900. The monthly vaccination target for (0-11 months) = 4680.

<table>
<thead>
<tr>
<th>Penta 1 Coverage rate</th>
<th>( \frac{1040 \times 100}{4680} )</th>
<th>= 22.2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penta 2 Coverage rate</td>
<td>( \frac{980 \times 100}{4680} )</td>
<td>= 20.9%</td>
</tr>
<tr>
<td>Penta 3 Coverage rate</td>
<td>( \frac{900 \times 100}{4680} )</td>
<td>= 19.2%</td>
</tr>
</tbody>
</table>

Use the same procedure to calculate coverage for OPV 1, 2 and 3.

Perform these tasks at the end of every month.
GUIDE FOR VACCINE STORAGE FACILITY LEVEL STAFF
DISTRICT /SUB-DISTRICT

Tasks
1. All columns must be filled
2. Complete one form for each vaccine
3. Update the form regularly for all antigens
4. Visit the health facilities 2 times every month
5. Report any difficulties to the Regional coordinator
6. Update the temperature charts 2-times daily as required
7. Submit timely monthly reports on all antigens to the Regional coordinator

Steps by step guide to complete and update the wastage monitoring form

1. **Vaccine wastage for** - enter name of vaccine in the space provided eg – BCG
2. **Name of Vaccine store** – enter name of the vaccine store eg – Ahanta West district cold room
3. **Reporting period** – Enter name of the current month and year at the spaces provided eg, January, 2005
4. **Region** – Enter name of the region in which the store is located – eg, Western
5. **District/sub district** – Enter name of the district/sub-district in which the store is located – eg, Ahanta West/Agona
6. **Column A: Start balance** – Enter the stock balance at the beginning of the month. This column must be filled every morning before the start of any vaccination session. At the end of the month, repeat the balance at the start of the month (thus balance on first day of the month) at the total column
7. **Column B: Number of doses received** - Enter number of doses of the vaccine received This column must be updated anytime new deliveries are received
8. **Column C: Number of dose distributed** – This is the number of doses of the vaccine distributed to the health facilities in the catchment area for vaccination activities.
9. **Columns {D – I}: Number of doses discarded** – Enter for the month the number of doses of the particular vaccine that have been discarded due to expiry, VVM indication, heat exposure, and breakages etc at the store in the appropriate columns.
10. **Column J: Total number of doses discarded** – This is the sum total of columns {D-I}
11. **Column K: End balance** – This is the balance at the end of the month. This is the difference between {A+B} and {C+J}, where:
   - A = balance at the start of the month
   - B = number of doses received during the month
   - C = number of doses distributed to health facilities and
   - J = number of doses discarded at the store level.
   - K = {A+B} – {C+J}
   - L proportional wastage rate at the store level. This wastage rate is specific only to the vaccine store
\[
L \rightarrow \frac{J \times 100}{\{A+B\}}, \text{ where:}
\]

\[
\begin{align*}
\{A+B\} & \\
\text{J} &= \text{number of doses discarded at the store level (assuming this is 210)} \\
\text{A} &= \text{balance at the start of the month (assuming this is 2500)} \\
\text{B} &= \text{number of doses received during the month (assuming this is 1400)}
\end{align*}
\]

\[
L \rightarrow \frac{210 \times 100}{\{2500 + 1400\}}
\]

\[
\frac{210 \times 100}{3900} = 5.4\%
\]
Checklist (for Regional and District Coordinators) during monitoring and supervisory visit

1. District Coordinators should visit the sentinel site 2 times in the month
2. Regional Coordinators should visit the district store at least once every month
3. Ensure the designated site has all the reporting forms and enough vaccines for all antigens

What to do during your visit to the site

1. Verify that temperature charts for all fridges are monitored/filed correctly each day for all antigens.
2. Verify that the facility or the district store has regular supply of power and indicate any observations.
3. Review all columns of the wastage reporting form thoroughly and record your observation. For example:
   - Has staff indicated name of facility or district store
   - Has the type of vaccine being monitored indicated in the column provided?
   - Has staff entered region, district, name of facility, type of specific vaccine, sub-district, current month, year, or monthly target correctly in the spaces provided

Data Collection
- Has the officer indicated all dates of activities during the months?
- Has the officer entered correctly the number of doses of the vaccine received during the month?
- Has the officer entered all vaccines discarded (unopened) due to expiry, VVM indication, heat exposure and breakages etc correctly in spaces provided?
- Has the officer entered appropriately all doses opened for vaccination sessions?
- Has the officer entered the correct number of children vaccinated within the target (0 – 11 months only)?
- Has the officer (at facility level) calculated the end balance appropriately? Has the officer entered end balance as the start balance for the next day?
- Verify that the officer has calculated all totals at the end of the month correctly.
- Verify that the officer has calculated the key indicators: vaccine usage rate (H), vaccine wastage rate (I) and immunization coverage, using the formula adequately and entered in the specified columns.

In your monitoring and supervisory visits:
1. Document adequately your observations – good and weaknesses at the center, failures and mistakes, as part of your monthly report to the Regional Coordinator/National Coordinator.
2. Provide any relevant orientation required to the staff to improve on the exercise.
3. Submit timely monthly reports to the Regional/National Coordinator.