Table 1: Availability and utilization of Vaccine Logistics Management Information System forms in public health facilities, Amhara Region, Ethiopia; March 2022.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***SN*** | ***Vaccine Logistics Management Information System forms for Vaccine management (N=99)*** | ***Availability*** | ***Utilization status***  | ***Supply for 3+ months*** | ***Supply for < 3 months*** |
| **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
|  | Vaccine forecasting tool (Paper, Word, Excel) | 59 | 59.6 | 58 | 58.6 | 56 | 56.6 | 2 | 2 |
|  | Vaccine Request Form (VRF) | 96 | 97 | 94 | 94.9 | 93 | 93.9 | 1 | 1 |
|  | Model 19/H | 27 | 27.3 | 26 | 26.3 | 24 | 24.2 | 2 | 2 |
|  | Model 22/H | 27 | 27.3 | 26 | 26.3 | 24 | 24.2 | 2 | 2 |
|  | Bin Card  | 1 | 1 | 0 | 0 | - | - | - | - |
|  | Stock Card  | 0 | 0 | 0 | 0 | - | - | - | - |
| 1. -
 | Vaccine stock management ledger book | 94 | 94.9 | 75 | 75.8 | 82 | 85.9 | 3 | 3 |
|  | Physical Inventory form  | 32 | 32.3 | 30 | 30.3 | 30 | 30.3 | 0 | 0 |
|  | Temperature Monitoring chart | 94 | 94.9 | 88 | 88.9 | 89 | 89.9 | 0 | 0 |
|  | VRF accuracy analysis tool (Excel, word) | 5 | 5.1 | 5 | 5.1 | 5 | 5.1 | 0 | 0 |
|  | Monthly Vaccine wastage monitoring form  | 44 | 44.4 | 34 | 34.3 | 39 | 39.4 | 0 | 0 |
|  | Damaged vaccine registration format (excel, word) | 32 | 32.3 | 30 | 30.3 | 30 | 30.3 | 0 | 0 |
|  | Immunization self-assessment tool  | 66 | 66.7 | 61 | 61.6 | 63 | 63.6 | 0 | 0 |
|  | Temperature monitoring data summary sheet  | 44 | 44.4 | 41 | 41.4 | 40 | 40.4 | 1 | 1 |
|  | Vaccine Management Key Performance Indicator Monthly Report Template | 34 | 34.3 | 33 | 33.3 | 32 | 32.3 | 1 | 1 |

Table 2: Average percentage completeness of Vaccine Request Form (Urban Form) in public health facilities of Amhara Region, Ethiopia; March 2022 (N=26).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SN** | **List of** V**accines** | **Beginning balance** | **Quantity received** | **Loss/****Adjustment** | **Ending Balance** | **Calculated consumption** | **Maximum stock** | **Quantity needed to (Requested amount)** | **Average**  |
|  | Bacillus Calmette-Guerin Vaccine  | 92.3 | 92.3 | 76.9 | 96.2 | 92.3 | 84.6 | 84.6 | **88.5** |
|  | Measles Vaccine  | 92.3 | 96.2 | 76.9 | 96.2 | 92.3 | 84.6 | 84.6 | **89.0** |
|  | Pentavalent Vaccine  | 92.3 | 96.2 | 76.9 | 96.2 | 92.3 | 84.6 | 84.6 | **89.0** |
|  | Tetanus and Diphtheria Vaccine  | 92.3 | 96.2 | 76.9 | 96.2 | 92.3 | 84.6 | 84.6 | **89.0** |
|  | Pneumococcal Conjugate Vaccine | 92.3 | 96.2 | 73.1 | 92.3 | 88.5 | 80.8 | 80.8 | **86.3** |
|  | Rotavirus Vaccine  | 92.0 | 96.0 | 76.0 | 96.0 | 92.0 | 84.0 | 84.0 | **88.6** |
|  | Inactivated Poliovirus Vaccine | 92.0 | 96.0 | 76.0 | 96.0 | 92.0 | 84.0 | 84.0 | **88.6** |
|  | Bivalent Oral Polio Vaccine | 92.0 | 96.0 | 76.0 | 96.0 | 92.0 | 84.0 | 84.0 | **88.6** |
|  **Average**  | **92.2** | **95.6** | **76.1** | **95.6** | **91.7** | **83.9** | **83.9** | **88.4** |

Table 3: Average percentage completeness of Vaccine Request Form (Rural Form) in public health facilities of Amhara Region, Ethiopia; March 2022 (N=60).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SN | List of Vaccines | *Beginning Balance*  | *Receiving during the last supply period*  | *Used/dispatched to a lower level* | *Doses discarded*  | *Current balance*  | *125% Requirement for the next supply period* | *Requested amount*  | *Vaccinations are given in the last supply period*  | ***Average***  |
|  | Bacillus Calmette-Guerin Vaccine  | 98.3 | 96.7 | 93.3 | 78.3 | 96.7 | 95.0 | 95.0 | 61.7 | **89.4** |
|  | Measles Vaccine  | 98.3 | 98.3 | 95.0 | 80.0 | 98.3 | 96.7 | 96.7 | 38.3 | **87.7** |
|  | Pentavalent Vaccine  | 98.3 | 98.3 | 95.0 | 80.0 | 98.3 | 96.7 | 96.7 | 38.3 | **87.7** |
|  | Tetanus and Diphtheria Vaccine  | 98.3 | 98.3 | 95.0 | 80.0 | 98.3 | 96.7 | 96.7 | 38.3 | **87.7** |
|  | Pneumococcal Conjugate Vaccine | 98.3 | 98.3 | 95.0 | 80.0 | 98.3 | 96.7 | 96.7 | 38.3 | **87.7** |
|  | Rotavirus Vaccine  | 98.3 | 98.3 | 95.0 | 80.0 | 98.3 | 96.7 | 95.0 | 38.3 | **87.5** |
|  | Inactivated Poliovirus Vaccine | 98.3 | 98.3 | 95.0 | 80.0 | 98.3 | 96.7 | 95.0 | 36.7 | **87.3** |
|  | Bivalent Oral Polio Vaccine | 98.3 | 98.3 | 95.0 | 80.0 | 98.3 | 96.7 | 96.7 | 36.7 | **87.5** |
| **Average** | **98.3** | **98.1** | **94.8** | **79.8** | **98.1** | **96.5** | **96.0** | **40.8** |  |

Table 4: Average percentage accuracy of Vaccine Request Form report (Urban Form) in public health facilities of Amhara Region, Ethiopia; March 2022 (N=24).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SN** | **List of** V**accines** | **Beginning balance** | **Quantity received** | **Loss/****Adjustment** | **Ending Balance** | **Calculated consumption** | **Maximum Stock** | **Quantity needed to (Requested amount)** | **Average**  |
|  | Bacillus Calmette-Guerin Vaccine  | 83.3 | 87.5 | 75.0 | 70.8 | 70.8 | 58.3 | 62.5 | **72.6** |
|  | Measles Vaccine  | 83.3 | 91.7 | 75.0 | 70.8 | 75.0 | 58.3 | 62.5 | **73.8** |
|  | Pentavalent Vaccine  | 83.3 | 87.5 | 75.0 | 70.8 | 70.8 | 58.3 | 62.5 | **72.6** |
|  | Tetanus and Diphtheria Vaccine  | 83.3 | 91.7 | 75.0 | 70.8 | 75.0 | 58.3 | 62.5 | **73.8** |
|  | Pneumococcal Conjugate Vaccine | 79.2 | 91.7 | 75.0 | 70.8 | 70.8 | 58.3 | 62.5 | **72.6** |
|  | Rotavirus Vaccine  | 83.3 | 91.7 | 75.0 | 70.8 | 75.0 | 58.3 | 62.5 | **73.8** |
|  | Inactivated Poliovirus Vaccine | 83.3 | 91.7 | 75.0 | 70.8 | 75.0 | 58.3 | 62.5 | **73.8** |
|  | Bivalent Oral Polio Vaccine | 83.3 | 91.7 | 75.0 | 70.8 | 75.0 | 58.3 | 62.5 | **73.8** |
|  **Average**  | **82.8** | **90.6** | **75.0** | **70.8** | **73.4** | **58.3** | **62.5** | **73.4** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SN | List of Vaccines | *Beginning Balance*  | *Receiving during the last Supply Period*  | *Used/dispatched to the lower level* | *Doses discarded*  | *Current balance*  | *125% Requirement for the next supply period* | *Requested amount*  | *Vaccinations are given in the last Supply Period* | *Average*  |
|  | Bacillus Calmette-Guerin Vaccine  | 85.0 | 91.7 | 71.7 | 63.3 | 65.0 | 85.0 | 75.0 | 30.0 | **70.8** |
|  | Measles Vaccine  | 80.0 | 91.7 | 71.7 | 63.3 | 65.0 | 83.3 | 73.3 | 31.7 | **70.0** |
|  | Pentavalent Vaccine  | 83.3 | 85.0 | 71.7 | 63.3 | 65.0 | 85.0 | 73.3 | 31.7 | **69.8** |
|  | Tetanus and Diphtheria Vaccine  | 80.0 | 86.7 | 71.7 | 63.3 | 63.3 | 83.3 | 71.7 | 31.7 | **69.0** |
|  | Pneumococcal Conjugate Vaccine | 81.7 | 91.7 | 71.7 | 63.3 | 63.3 | 83.3 | 71.7 | 31.7 | **69.8** |
|  | Rotavirus Vaccine  | 81.7 | 90.0 | 71.7 | 63.3 | 65.0 | 83.3 | 71.7 | 31.7 | **69.8** |
|  | Inactivated Poliovirus Vaccine | 81.7 | 88.3 | 71.7 | 63.3 | 65.0 | 83.3 | 71.7 | 31.7 | **69.6** |
|  | Bivalent Oral Polio Vaccine | 85.0 | 90.0 | 71.7 | 63.3 | 50.0 | 83.3 | 71.7 | 30.0 | **68.1** |
| Average | **82.3** | **89.4** | **71.7** | **63.3** | **62.7** | **83.8** | **72.5** | **31.3** | **69.6** |

Table 5: Average percentage accuracy of Vaccine Request Form report (Rural Form) in public health facilities of Amhara Region, Ethiopia; March 2022 (N=60).

Table 6: Challenges of Vaccine Logistics Management Information System and suggestions for improvement in public health facilities of Amhara Region, Ethiopia; March 2022 (Reflections from Expanded Program for Immunization focal persons)

|  |  |
| --- | --- |
| ***Challenges for Vaccine Logistics Management Information System***  | ***Recommendations***  |
| * *Vaccine damage due to cold chain interruption over the weekend time*
* *Electric power interruption due to lack of alternative power backup*
* *Demand fluctuation and high forecasting error*
* *Lack of commitment from health professionals*
* *High workload due to staff shortage*
* *Lack of frequent maintenance for refrigerators*
* *Absence of dedicated room for vaccine storage*
* *Poor attitude and perception toward vaccines*
* *Shortage of refrigerators*
* *Delay in vaccine supply*
* *Mix up different vaccines together (e.g., Anti-rabies)*
* *Lack of computer to print out different vaccine logistics management information system forms*
* *Poor vaccine management skills of Health Extension Workers*
* *Lack of support and integration from higher government offices (Woreda Health Office, Zonal Health Department, Regional Health Bureau, Federal Ministry of Health)*
* *The vaccines transportation problem in keeping the cold chain system*
* *Shortage of vaccine reporting and recording forms*
* *Lack of regular support and feedback from the respective higher offices*
* *Absence of a digital system for vaccine logistics management information system*
 | * *Improve vaccine storage and cold chain management*
* *Provide regular integrated supportive supervision, evaluation, and feedback.*
* *Fix a consistent power supply system for vaccines*
* *Increase the number of fridges and spare parts*
* *Provide dedicated room for vaccine storage*
* *Improve vaccine demand assumption and forecasting*
* *Increase Expanded Program for Immunization workforce*
* *Hire biomedical technicians for fridge maintenance*
* *Avail computers and vaccine logistics management information system forms*
* *Provide training on vaccine logistics & vaccine logistics management information system for focal persons and Health Extension Workers.*
* *Increase staff commitment with motivation.*
* *Establish strong collaboration and integration among different stakeholders.*
* *Improve the transportation system keeping the cold chain system*
* *Digitalize vaccine logistics management information system*
* *Improve the road infrastructure to health facilities*
 |