



**FINAL REPORT**  
**ON THE**  
**DATA QUALITY AUDIT (DQA)**  
**COVERING THE YEAR 2003**

**THE UNION OF MYANMAR**

*PricewaterhouseCoopers is pleased to submit herewith its draft report on the 2003 DQA by our affiliated office in:*

*Myanmar*

*(Yangon, June 2004)*

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## Introduction

From the 8<sup>th</sup> to the 30<sup>th</sup> of June 2004, Myanmar Vigour Company, the local successor to PwC Singapore which has ceased its operation in Myanmar, performed the first Data Quality Audit (DQA) in Myanmar. Together with a team of internal auditors from the National EPI office, we assessed the quality of the Expanded Program on Immunization (EPI) data and systems and audited the reported number of doses of DTP3<1 administered in the year 2003, through visits to a random selection of health care administrations, including:

- The Health Ministry Information Systems (HMIS) office of the Department of Health Planning, and the national CEPI office and Central Cold Room of the Department of Health, the Ministry of Health.
- Of the 324 districts comprising the Union of Myanmar, 318 implement routine immunization. The remaining 6 districts/townships implementing what are termed “crash programmes”, as described below. 181 districts/townships have more than six health centers and four districts/townships were randomly selected out of these. 137 townships were considered non-eligible because they either had fewer than 6 reporting health centers or were known at the time of mobilization to be inaccessible due to security concerns and weather conditions. The four districts/townships level administrations sampled were: Pantanaw of Ayeyarwaddy Division; Thegone of Bago (West) Division; NaungCho of Shan (North) State; and Chauk of Magway Division.

*NB: The usage of the terms “district” and “township” in Myanmar is interpreted as the same.*

- Twenty-four health centers were visited, six in each district, sampled from the list of all the eligible health facilities in each sampled district, including: Urban Health Centers, Station Health Unit, Rural Health Centers, Sub Rural Health Centers.

The findings of this audit are included in this report and were also discussed during a debriefing meeting with the Inter-Agency Coordinating Committee (ICC) on 9<sup>th</sup> September 2004.


## Summary of findings and conclusions

The Verification Factor was 87%, and hence exceeds the 80% threshold set by GAVI. The reasons for this result are principally that immunisation registers were readily available, and that there was a high level of consistency between doses recounted by the audit team and the doses reported by health units. As for the quality of the system, our findings indicate that the Quality of the System Index (QSI) was higher at the district and health unit levels visited than at the national level, as indicated below:

- QSI at the national level: 79%
- Average QSI for the 4 districts: 91%
- QSI for each district:
  - Pantanaw 88%
  - Thegone 94%
  - NaungCho 91%
  - Chauk 91%
- Average QSI for the 24 health units: 91%

### Summary of National findings

- Monitoring and Evaluation
  - Up-to-date monitoring charts of the current year's immunization coverage, drop-out rate, vaccine wastage and reporting completeness were not displayed.
  - A separate immunization report was not issued; rather, immunization information was integrated in the annual HMIS report, encompassing more than eighteen projects of which the EPI was only one. The annual report for the year 2003 was not available at the time of DQA.
  - Observed that immunization forms were not available in sufficient quantity in the districts visited.



- Denominators

- There are 27 districts with immunisation coverage in excess of 100% for the audit year. It is noted that most of these districts are located in border areas, and hence the >100% coverage rates were attributed to population migrations in these areas.
- The number of surviving infants used in the audit year is not consistent with that used in other health programmes.
- We observed that 19 districts had TT2+ coverage for pregnant women in excess of 100% during the audit year. As described above, this was attributed to population migrations.
- The denominator values for infant immunizations in use in the four districts sampled were different from the denominator value found at national level (CEPI unit). In three districts visited (with the exception of Pantanaw), the denominator value used in the audit year agreed to the HMIS's values.

- System design

- Observed that vaccine stock book did not allow for the recording of separate batch numbers and expiry dates of vaccine balances.
- Immunizations administered to children over one year old are not reported separately in the routine reporting formats. This is a specifically pressing issue for reporting on the “crash programmes”, which are targeted at children between 0 and 3 years old.

- Recording

- Only an annual back-up procedure is prescribed at the HMIS. Hence, the date of the last back-up found by the audit team was not within the week previous to our visit.

### **Summary of findings at the 4 districts**

- Recording/storing

- Immunization forms were not available in sufficient quantity in the health units visited during the current year.
- In three of the districts visited, dates were not stamped on HU reports upon receipt.
- For the Thegone district, there was different reporting value between HMIS and the national tabulations. This difference is attributed to a typographical error in compiling the annual evaluation report at the divisional level.

- ❑ Monitoring and Evaluation

- The format for monthly reporting from health unit to district does not provide a column to report the quantity of stock received, issued, damaged and balance in hand. Consequently, health unit monthly wastage figures were not available at the districts.

- ❑ Denominators

- We observed that the denominator value in use at the Pantanaw district was not the same as that in use at the HMIS. Further, as mentioned above under national findings, the denominator values in all visited districts were different from that in use at national level (CEPI unit).

### **Summary of findings at the 24 health units**

- ❑ Recording/storing

- Vaccine batch numbers and expiry dates were not recorded in stock ledgers at the HUs.

- ❑ Monitoring and Evaluation

- Vaccine wastage was not calculated and monitored at the HUs.
- Drop-out rates were not monitored at HUs.
- There was no up-to-date chart or table on display showing the number of child vaccinations for the current year. Such visual aids exist, but they are kept in files.

Based on these findings, we recommend that monitoring and evaluation activities at all levels be reinforced, and in particular that health units report immunizations administered to children over one year old, separately. The provision of detailed written instructions and procedures for all operational levels (Districts and Health Units), the training of district supervisors and health workers, and adequate monitoring practices, are considered to be the most important actions to be taken.

The details of the above are provided in the *findings and recommendations* section at each review level.

### **Other issues**

- ❑ System design

- Reporting forms to the upper level from both health units and districts did not include numbers of doses/vials used so as to allow calculation and monitoring of monthly vaccine wastage.

## National context

The Expanded Programme on Immunisation was introduced in the Union of Myanmar in 1978.

The EPI in Myanmar employs four distinct strategies in order to reach as many children as possible. Apart from the traditional fixed, mobile and outreach strategies, “crash programmes” are organised in remote areas, during dry season only. These can be described as intensified routine immunisation sessions.

The EPI receives all immunisation data through the HMIS, which is managed by the Department of Health Planning. The EPI staff has no direct access to the reports, but it receives a yearly analysis and can request data at any given time. Data on crash programmes are received directly from the townships involved and incorporated into the overall tabulations.

An annual report had not been issued at the time of audit. Nor is a separate immunization report issued, but rather immunization information is included in the annual report of HMIS, which covers a number of projects including the EPI.

The programme faces specific challenges, as the majority of immunisations are administered through outreach sessions. Overall, less than 25% of routine immunisations are administered through fixed strategy. This leads to high wastage rates. Moreover, performance is limited because of budgetary constraints, in particular because the necessary resources for travel are not readily available.

## Acknowledgements

We would like to take this opportunity to express our appreciation for the co-operation and courtesy afforded to us by officials and staff from Department Of Health and Department of Health Planning during the DQA. Special thanks to Dr. Tin Linn Myint, Director (Department of Health Planning), Dr. Than Htain Win, EPI Project Manager, Dr Tin Tin Aye, the Assistant Director (CEU) and Dr Ye Thi Ha, the Assistant Project Manager (CEPI) who accompanied the auditors during the visits to four districts and 24 health units and other Ministry of Health (MOH) officials and staff for their kind assistance and patience.



## Background

Myanmar is one of the countries supported by the immunisation services sub-account of the fund established by the Global Alliance for Vaccines and Immunization (GAVI). This fund has been established to assist eligible countries to strengthen routine childhood immunisation programmes. As funding levels are linked to the number of third dose diphtheria, tetanus and pertussis vaccinations delivered to children under the age of one year (DTP3<1), countries are being encouraged to strengthen vaccination reporting systems. The DQA has been developed by World Health Organisation (WHO) to assess the quality of vaccination systems and improve their reporting, evaluation and monitoring systems. The EPI in Myanmar is one of the country programmes selected for the round of DQA concerning the audit year 2003.

### Objectives of the DQA

The overall goal of the DQA is to ensure that management of immunisation services and the allocation of GAVI funds are based on sound and accurate data. This goal is met by:

- Assessing the reliability and accuracy of administrative immunisation reporting systems, but not immunisation service delivery.
- Auditing the reported DTP3<1 vaccinations for the audit year (2003) and estimating the national verification factor (ratio of recounted / reported vaccinations) for use in the allocation of GAVI fund shares.

The above objectives are achieved by examining data and the information system in operation at all levels of administration – from collection of data at the point of vaccination to the periodic compilation of this data at district level and at national headquarters. This is done on the basis of randomly selected samples of administrative levels.

Furthermore, in practice the DQA is also a capacity-building exercise, and an opportunity for exchange of experience between the external auditors and the national counterparts.

## **Our approach**

The PwC/Myanmar Vigour team members were from our office in Yangon. In preparation for the DQA, we organized an in-country training session in the DQA methodology, in which the quality assurance manager for the region trained both the PwC/Myanmar Vigour team and the national counterparts appointed by the Government.

## **Summary of work done**

Two audit teams were formed, comprising one external auditor (Myanmar Vigour) and one national auditor. The teams worked together at national level and then split up, each visiting two operational districts and twelve health centres.

We carried out the tasks detailed in the DQA methodology, which included among others:

- Random selection of four operational districts and twenty four health centres.
- Discussion of the immunisation system in place including system design (national level only), denominator issues (national and district levels only), recording, reporting and storage practices, monitoring and evaluation.
- Recount of vaccines administered for DTP3<1 (at least) at health unit level, and comparison of recorded with reported figures at all administrative levels.
- Review of the cold chain at all administrative levels.
- Review of vaccine supply and stock procedures in place.
- Review of the procedure for reporting and investigating Adverse Events Following Immunisation (AEFI) at all administrative levels.
- Performance of the Child Health Card exercise or observation of a vaccination session.

## **Mobilisation**

Prior to commencement of the DQA, Myanmar Vigour Company and PwC staff (the external auditors) briefed officers of the Expanded Programme on Immunisation (EPI) and Ministry of Health (MOH) on the objectives, purpose and

methodology of the exercise. During the same sessions, the EPI and MOH officers briefed the external auditors on the national context, including major public health and vaccination and immunisation issues and policies.

The team for the DQA in Myanmar was composed of:

<b>Name</b>	<b>Title</b>	<b>Location</b>
Dr Tin Linn Myint	Director	National level, Department of Health Planning (HMIS)
Dr Than Htain Win	EPI Project Manager	National level
Dr Tin Tin Aye	National Auditor	National level, Districts and Health Units
Dr Ye Thi Ha	National Auditor	National level, Districts and Health Units
Dr Khin Mar Aye	Township Medical Officer	Pantanaw District
Dr Zaw Win	Township Medical Officer	Thegone District
Dr Tin Maung Oo	Township Medical Officer	NaungCho District
Dr Nay Win	Township Medical Officer	Chauk District
Soe Win	Director - Myanmar Vigour	National level
Nu Nu Win	Myanmar Vigour Auditor	National level, Districts and Health Units
Maw Maw Soe	Myanmar Vigour Auditor	National level, Districts and Health Units
Jan Grevendonk	PwC QA Manager	Training and National level



## National context

The reported coverage for DPT3, for surviving infants under 1 year old, for the audit year of 2003, was 76.6%, a decrease from 78.5% in 2002. However, the number of districts with coverage over 80% increased from 43.2% to 48.4% in the same period.

## Verification Factor

The verification factor is calculated based on data collected during the DQA (recounted / reported vaccinations) and is a measure to verify the reported performance at national level. It compares the number of vaccinated doses recounted from the health centre register to the vaccinations that were reported to the higher levels. The verification factor for the audit year 2003 is 87%.

At health unit level, immunization registers were widely available, and recounted doses showed a good match with the reported doses. Recounted and reported numbers were highly consistent in 19 health units; only 5 HUs had a variation of more than 10%.

Furthermore, in three districts there was high level of consistency between the tabulations at district level and national level. Only in the case of Thegone, was there a substantial difference which affected the Verification Factor negatively (4,174 at national level vs. 2,242 at district level).

## Quality of the System Index

QSI at national level:	79%
Recording practices	4.2 / 5.0
Storing and reporting	4.0 / 5.0
Monitoring and evaluation	3.9 / 5.0
Denominator	3.0 / 5.0
System design	4.6 / 5.0

## **Strong points**

At national level, controls are in place over system design, data-processing and reporting. Monthly district immunization reports are maintained, processed and stored in a system. The reporting chain from district to national level appears to be functioning well. Timeliness of monthly reports received at national level is monitored. These strong points are reflected in Quality of the System Index scores for recording (see further).

## **Areas for improvement**

- 1) Monthly reporting forms to national level from the districts did not include a column to report calculations of vaccine wastage nor a column to indicate the drop-out rate.
- 2) The denominator value for infant immunisations observed at the national level was different from that in use in the districts visited.
- 3) Key metrics such as immunization coverage, drop-out and vaccine wastage rates were not routinely calculated and displayed.
- 4) There were discrepancies between the annual evaluation report issued by the CEPI unit and HMIS data. Consequently, there are differences between immunization data produced by the HMIS and by the EPI.
- 5) The format of the vaccine ledgers does not provide for the effective monitoring of inventory expiry dates and batch numbers.
- 6) Vaccines damaged and wastages are not recorded in the ledgers. As a result, balances as per stock ledger did not agree with physical balances as at 31 December 2003.
- 7) Sufficient immunization data-collection forms such as pre-printed formats, child register books, stock ledgers, weight charts etc. were lacking at both district and HU levels.
- 8) A written Data Recovery Procedures (DRP) and regular back-ups are required to safeguard data against loss.

### Recording practice (4.2 / 5.0)

Issue observed	1. Sufficient immunization forms were lacking during the current year.
Recommendation	1. Immunization forms should be made available all districts and health units
EPI management comment	1. Pre printed forms and child register (Immunization Report book) and stock ledger and Immunization chart (Immunization Cards) are already distributed to the whole country in July 2004. Insufficiency was due to distribution gap waiting for the new forms filling of new Hepatitis B vaccine introduction for the whole country.

### Storing and reporting (4.0 / 5.0)

Issue observed	1. There was no written weekly or monthly back-up procedure for computerized data.
Recommendation	1. A written back-up procedure should be prepared and implemented. Weekly or monthly back-up of the data is required to help recovering data in case of any computer problem.
EPI management comment	1. Back up server for HMIS was under servicing at the time of audit. To negotiate with the HMIS reporting system. We are going to plan a written Monthly back up procedure for Immunization data to help recovering data.

### Monitoring and Evaluation (3.9 / 5.0)

Issue observed	<ol style="list-style-type: none"> <li>1. At national level, there is no month-by-month monitoring of programme performance. Only yearly data is analysed after the yearly report is received from the HMIS. There is no up-to-date monitoring chart or table displayed showing the current year's immunisation coverage, drop-out rate, or completeness of immunisation reports.</li> <li>2. Annual report for the year 2003 from HMIS was not issued at the time of audit.</li> </ol>
Recommendation	<ol style="list-style-type: none"> <li>1. Arrangements should be made to receive townships monthly performance reports from the HMIS by EPI. These should be printed out in tables, charts and/or maps and prominently displayed in the offices. A chart or table monitoring the current year's immunisation should include coverage, drop-out rate and completeness of immunisation reporting.</li> <li>2. Understand that annual report for the year 2003 may be available once the necessary data on all eighteen projects covered in it, including EPI, have been collected.</li> </ol>
EPI management comment	<ol style="list-style-type: none"> <li>1. At National Level we are going to plan the computer network for data sharing with HMIS for monitoring and evaluation for monthly basis. Discussed and have agreement with HMIS that reports will be provided to CEPI quarterly.</li> <li>2. Immunization report was not issued separately but included in the annual report of HMIS after covering more than eighteen projects including EPI. The annual report was not issued at the time of audit.</li> </ol>

### Denominators (3.0 / 5.0)

Issue observed	<ol style="list-style-type: none"> <li>1. Infant immunization DPT 3 &lt; 1 coverage rates for the audit year were above 100% for 27 districts mainly due to migrated populations.</li> <li>2. TT2+ coverage rates for pregnant women for the audit year were over 100% for 19 districts.</li> <li>3. Number of surviving infants for the audit year was not consistent with other health programmes.</li> <li>4. For the audit year, the denominator value (for infants immunization) used by a district</li> </ol>
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	was different from the denominator value information available at the national level.					
Recommendation	<p>1. &amp; 2. Coverage rate above 100% is to be investigated and population for each district updated on a timely basis.</p> <p>3. Number of surviving infants for the audit year should be consistent with other health programmes.</p> <p>4. The number of infants for immunization should be consistent between national and district and HU levels. In case of inconsistency, a consensus should be developed on the right number to use. The detailed differences are shown in the table below:-</p>					
EPI management comment	<p>1. &amp; 2. Denominators issue is mainly based on 1983 Census. Total population is annually increased in Year 2000 up to 51.11 million and projected according to the Population Department.</p> <p>3. Number of surviving infants in HMIS and nutrition program is not comparable, because nutrition program is based on surveillance area and not represent for all jurisdiction areas. But HMIS covered all jurisdiction areas.</p> <p>4. Township level individual denominator is mainly rely on head count at the end of the year. Sometimes it is difficult to obtain consistency, where the population migration is substantial at border townships.</p>					
	<b>Denominator</b>			<b>Differences</b>		
	<b>National</b>	<b>HMIS</b>	<b>Districts</b>	<b>National-HMIS</b>	<b>National-District</b>	<b>HMIS-District</b>
Pantanaw	6891	5922	5814	969	1077	108
Thegone	4342	2195	2195	2147	2147	0
Naung Cho	3120	2640	2640	480	480	0
Chauk	7149	6612	6612	537	537	0

### System design (4.6 / 5.0)

Issues observed	1. Vaccine ledger book did not contain information in respect of separate batch numbers and expiry dates of vaccines. Consequently, stock balances could not be monitored by expiry date.
Recommendations	1. For effective control over stock balances, vaccine expiry dates and batch numbers should be recorded in the vaccine ledger or by keeping bin cards identifying expiry dates and batch numbers.
EPI management comments	1. New vaccine ledger books which contain complete information is distributed in July 2004 for the whole country. Bin Cards system is also developed especially in sub depot of State and Division level. Training of effective vaccine management will be conducted on 1 <sup>st</sup> Spetember 2004 for all State and Divisional Sub depot people at Central.

### Vaccine wastage rates

Annual country wastage rate of DPT is calculated at national level based on information provided by states and divisions. System wastage at national level was reported to be 0. As per the JRF, vaccine wastage for DPT vaccine was 34.5%. The vaccine wastages mainly result from lack of cold storage at RHC and health unit levels, and from the more frequent practice of outreach and mobile sessions versus fixed. Moreover, an open multi-dose vial policy has not been implemented yet due to lack of electricity supply and cold storage.

Monthly vaccine wastage rates cannot be calculated at national level due to the weaknesses described above in the reporting system.



## **Reporting Adverse Events Following Immunisation (AEFI)**

There is no system in place for the aggregate reporting of AEFI. However, guidelines exist outlining the procedure for follow-up on a case-by-case basis.

### **Availability and completeness of reports**

All district monthly reports are available at the HMIS office. Reporting completeness is monitored.

### **Other issues**

Reporting formats do not allow for the reporting of doses administered to over-ones, because the routine programme is targeted at under-ones. However, as outlined above, the crash programmes carried out in the country are aimed at children between 0 and 3 years old. Crash programme doses are neither tallied nor are the reported doses segregated according to under-ones or over-ones. This leads to inconsistency between numerator and denominator values, and to a systematic reporting of the number of under-ones being immunised. It was observed that where children over one are immunised, these doses are not reported, which has a negative impact on wastage rates.

Reporting of under-ones during crash programmes should be separate. Separate reporting of doses administered to over-ones in the routine programme should also be considered.

## Townships – findings and recommendations

### Township context

In the audit year, the Union of Myanmar had 324 districts of which 318 are routine immunisation implementing districts. 181 of these districts have more than six health centres.

At health unit level, sub-centres submit monthly reports to Rural Health Centres (RHC) by the 25<sup>th</sup> of each month and the RHC in turn submits its monthly report to the district by 28<sup>th</sup> of the same month.

In general, cold chain equipment is located at districts and in certain station health unit centres, in order to maintain a supply of vaccines. Most health centres do not have cold chain equipment but use a cold box which can only store vaccines for a short period.

There was no significant change for the average coverage rates of four districts for DPT3<1 from 2002 to 2003. The average QSI for the four districts was 92% with a range between 79% and 97%.

<b>District</b>	<b>Coverage 2003</b>	<b>Coverage 2002</b>
Pantanaw	94.60%	91.70%
Thegone	102.10%	104.30%
NaungCho	97.40%	95.20%
Chauk	91.40%	94.50%

### Data accuracy

<b>District</b>	<b>DPT3 &lt;1 coverage (District tabulation)</b>	<b>DPT3 &lt;1 coverage (From HU reports)</b>
Pantanaw	5,499	5,499
Thegone	2,242	2,242
NaungCho	2,571	2,571
Chauk	6,046	6,057

Health centre reports are kept at their respective Rural Health Centres (RHC) and RHC reports are submitted to district level. Based on the RHC reports, district reports are prepared and submitted to HMIS and States and Divisions.

Monthly RHC reports are available at district level. This is the formatted report that RHC can use for monthly reporting purposes. No significant inconsistencies were noted during the course of our audit.

Variances were noted in reports at national and district levels in two districts: Thegone (National 4174: District 2242) and NaungCho (National 2636: District 2613). The smaller variance found for NaungCho district is attributed to a transcription error. The larger variance observed between the EPI tabulation and the district tabulation for Thegone is attributed to a typographical error in the compilation of the annual evaluation report at divisional level.

There were no significant variances found between HMIS and district level for the districts sampled, and those minor differences found were again due to transcription errors.

## Quality of the System Index

Average QSI at state level: 91% (range between 70% and 100%)  
Average score recording: 4.0 / 5.0  
Average score storing and reporting: 5.0 / 5.0  
Average score monitoring and evaluation: 4.6 / 5.0  
Average score demographics and planning: 4.9 / 5.0

	Pantanaw	Thegone	NaungCho	Chauk
Recording	3.89	4.44	3.89	3.89
Storing	5.00	5.00	5.00	5.00
Monitoring	4.55	4.55	4.55	4.55
Demographics	4.50	5.00	5.00	5.00

**Recording (score: 4.0 / 5.0)**

Issues observed	<ol style="list-style-type: none"><li>1. Immunisation forms were not available in sufficient supply in districts and health units visited.</li><li>2. No date is stamped or written on the HU reports at district level as they are received.</li></ol>
N° of districts in which these were observed	<ol style="list-style-type: none"><li>1. All four sampled had insufficient supply of forms.</li><li>2. Three districts (Pantanaw, NaungCho and Chauk) did not stamp reports.</li></ol>
Recommendations	<ol style="list-style-type: none"><li>1. All immunisation forms should be made available in all districts and health units as a minimum requirement for adequate reporting.</li><li>2. District staff should promptly write the receipt date on reports, in the interests (<i>inter alia</i>) of identifying the final version.</li></ol>
EPI management comments	<ol style="list-style-type: none"><li>1. Sufficient amounts of new immunization forms including Hepatitis B are already printed and distributed to all Divisions in July 2004 and all States for July 2005 along with the new Hepatitis B vaccine introduction for the whole country.</li><li>2. All focal persons for HMIS reports at township level will be instructed by TMOs to note the date received on the HU reports.</li></ol>

### Monitoring and Evaluation (score: 4.6 / 5.0)

Issues observed	<ol style="list-style-type: none"> <li>1. Although no drop-out rate was <i>displayed</i> in a monitoring chart or table, the rate can be calculated, as the value of DPT1 and DPT3 are tracked using tabular aids.</li> <li>2. The format for monthly reporting from health unit to district did not provide for indications of quantity of stock received, issued, damaged and balances in hand. Consequently, health unit wastages are not monitored at districts.</li> </ol>
N° of districts in which these were observed	<ol style="list-style-type: none"> <li>1. All sampled districts</li> </ol>
Recommendations	<ol style="list-style-type: none"> <li>1. Vaccine wastage should be recorded and monitored. The current format can be updated or separate report for this purpose can be prepared.</li> </ol>
EPI management comments	<ol style="list-style-type: none"> <li>1. All the districts up to Health Unit Level the EPI monitor charts are distributed and displayed.  The monitor chart shows the drop out of DPT1 and DPT3, OPV1 and OPV3, BCG and Measles and also TT1 and TT2.  Training to calculate for all BHS for how to use the EPI monitoring charts for monitoring of drop out and increasing the immunization coverage at all levels.  Vaccine wastage calculation at all levels will be strengthened by reaching to the every district (RED) strategy training for whole country during 2004 and 2005.</li> </ol>

### Denominators/planning (score: 4.9 / 5.0)

Issue observed	<ol style="list-style-type: none"> <li>1. Observed that denominator values used in all selected districts were different from that used at National level. Further, the denominator used in one district did not agree with the HMIS value (HMIS 5,922: District 5,814).</li> </ol>
No of districts in which this was	<ol style="list-style-type: none"> <li>1. One: Pantanaw district.</li> </ol>



observed	
Recommendation	1. A consistent “under-one” target should be agreed at all levels.
EPI management comments	1. National denominator is based on the Population Department and individual township-wise denominators are based on own head counts. Central denominator is higher than that of their own township. Population migration is one of the problems.

### **Vaccine wastage rates**

No system wastage was reported at district level. Districts directly receive vaccines from the division/state stores and distribute these to health units. Annual overall district wastage could be calculated based on vaccines issued to health units and doses administered.

### **Reporting Adverse Events Following Immunisation (AEFI)**

During the audit, it was noted that there is a guideline and format for reporting AEFI from HU to district level (but not, as mentioned earlier, for aggregate reporting of AEFI).

### **Timeliness and availability of reports**

All health unit reports are collected at the respective rural health centres. Rural health centres prepare monthly reports which they submit to the district. All rural health centre immunisation reports were found to be available at the districts.

### **Other issues**

Reports are kept at sub-centres and data can be retrieved from these. However, weaknesses were observed in the filing system, resulting a delay during the audit which could have been avoided had an orderly system been in place.

Computer storage and back-up systems available at district level should be used for this purpose.

## Health Centres – findings and recommendations

### Health Centre context

Twenty-four health units, including station health units, rural health centres, sub rural health centres and health units, were randomly selected and all units were visited. Most of the vaccinators are properly trained but weaknesses were observed in the maintenance of records. Vaccines are distributed to the health units directly from the districts and shortages of vaccines are infrequent.

### Data accuracy

Child registers for routine immunisation were used and available at all health units. Recounts of reported data were performed using these child registers. Recounted and reported numbers were consistent in 19 health units, while 5 HUs had a variation of more than 10% between recounted/reported doses.

### Quality of the System Index

Average QSI at health unit level:	91% (range between 71% and 100%)
Average score recording:	4.5 / 5.0
Average score storing and reporting:	5.0 / 5.0
Average score monitoring and evaluation:	4.5 / 5.0

**Recording (score: 4.5 / 5.0)**

Issue observed	1. Vaccine batch numbers and expiry dates were not recorded in stock ledgers (as vaccines are used within a short period).
No of health centres in which these were observed	1. 21 health units.
Recommendations	1. Vaccine batch number and expiry dates should be recorded properly in the respective registers.
EPI management comments	1. New stock ledgers including batch number of vaccine and expiry date and manufacturer's names are distributed to whole country in July 2004 up to Sub RHC Level.

**Monitoring and evaluation (score: 4.5 / 5.0)**

Issue observed	1. Vaccine wastage was not calculated and monitored. 2. No drop-out rates were shown on the current year's monitoring chart or table, and certain health workers did not know the drop-out rate for their unit.
No of health centres in which these were observed	1. 12 health units – health workers could not tell the calculation and rate for the unit. 2. 8 health units – health workers could not tell the calculation and rate for the unit.
Recommendations	1. Vaccine wastage should be calculated and investigated to identify causes and find possible ways and means to reduce wastage. 2. Immunization drop-out rates should be calculated to evaluate health unit's performance and future planning.
EPI management comments	1. Vaccine wastage calculation is done in annual evaluation at each and every district. Monthly calculation is needed to be strengthened. 2. Drop out rate at all levels are needed to calculate and strengthening the RED (Reaching to the every district) strategy to all States and Divisions up to township level. TMOs of whole country are strengthening for increasing coverage and decreasing drop out.

## Drop-out rates

Though some health units were able to calculate the drop-out rate, it was observed that the calculation and monitoring of drop-out rates was not a regular practice, in places where drop-out rates are high. An overview of the reported drop-out rates in the selected districts and Health Units is given below:

S. No.	Health Unit Name	District Name	Drop out DPT1 to DPT3	Comments
1	KhaNweKhaBo - Main	Patanaw	-6.00%	
2	YeiPaw – Main	Patanaw	-3.40%	
3	KinnWaGyi	Patanaw	-16.40%	
4	PaThwe	Patanaw	-1.40%	
5	MCH – East	Patanaw	-8.10%	
6	KaTauSuk	Patanaw	1.20%	
7	PuTeeGone – Main	Thegone	13.80%	
8	LinnLe	Thegone	2.00%	
9	Sinemeeswe – Main	Thegone	13.30%	
10	TheinThaung	Thegone	8.20%	
11	LoneHla	Thegone	8.60%	
12	TaGonDaing	Thegone	-4.90%	
13	Kyainganaing	Naungcho	7.80%	
14	Kankyee – Main	Naungcho	2.30%	
15	Thonesai – Main	Naungcho	22.20%	
16	Thayetkone – Main	Naungcho	2.10%	

<b>S. No.</b>	<b>Health Unit Name</b>	<b>District Name</b>	<b>Drop out DPT1 to DPT3</b>	<b>Comments</b>
17	Shwepyinyunt – Main	Naungcho	13.40%	
18	Ohnmakhar	Naungcho	8.60%	
19	Myotma (2)	Chauk	0.30%	
20	Myotma (1)	Chauk	1.00%	
21	GwayPin – Main	Chauk	0.00%	
22	ThaLoneThwe	Chauk	-9.00%	
23	LetPanKyune	Chauk	2.20%	
24	OuYin	Chauk	-22.0%	

There were 12 health units which are under 10%, 4 health units over 10% and 8 health units have a negative drop-out rate. The main reasons reported for over 10% and negative drop-out rates were population migrations.

## Vaccine wastage rates

Vaccine wastage rates were not calculated at health unit level. Wastages at two health units, Kankyee-main and LoneHla cannot be calculated, as stock receipts and usage were not recorded. Vaccine wastage was mainly due to lack of cold storage at health unit level and more frequent immunisation sessions using an outreach or mobile strategy as opposed to fixed.

S. No.	Health Unit Name	District Name	Wastage Rate DPT	Comments
1	KhaNweKhaBo – Main	Patanaw	40.90%	
2	YeiPaw – Main	Patanaw	53.00%	
3	KinnWaGyi	Patanaw	34.70%	
4	PaThwe	Patanaw	49.70%	
5	MCH – East	Patanaw	41.10%	
6	KaTauSuk	Patanaw	49.60%	
7	PuTeeGone – Main	Thegone	34.80%	
8	LinnLe	Thegone	54.50%	
9	Sinemeeswe – Main	Thegone	55.00%	
10	TheinThaung	Thegone	56.50%	
11	TaGonDaing	Thegone	60.80%	
12	Kyainganaing	Thegone	70.40%	
13	Thonesai – Main	Naungcho	38.20%	
14	Thayetkone – Main	Naungcho	50.10%	

<b>S. No.</b>	<b>Health Unit Name</b>	<b>District Name</b>	<b>Wastage Rate DPT</b>	<b>Comments</b>
15	Shwepyinyunt – Main	Naungcho	22.10%	
16	Ohnmakhar	Naungcho	32.10%	
17	Myotma (2)	Chauk	32.60%	
18	Myotma (1)	Chauk	45.50%	
19	GwayPin – Main	Chauk	49.10%	
20	ThaLoneThwe	Chauk	46.90%	
21	LetPanKyune	Chauk	46.60%	
22	OuYin	Chauk	53.10%	

### **Reporting Adverse Events Following Immunization (AEFI)**

There was no aggregated reporting system for AEFI. In case, an AEFI is reported to health unit, health unit staff fills in the AEFI form with all necessary information and forwards it to the district.

### **Timeliness and availability of reports**

Monthly reports are available at the health units and submitted to the RHC before the end of month. The timely submission of monthly immunisation reports is monitored and fed back by a district focal person.



## Other issues

1. Books are used when pre-printed registers and vaccination forms are not sufficient or available.
2. Due to in-sufficient resources, staff at the health units often use their own resources to cover stationery and transportation requirements/expenses.
3. No procedures exist for handing over registers to new health unit staff members when staff transfers occur.
4. Whereas no monthly health unit reports were available for certain months, Universal Child Immunisation (UCI) reports were used for obtaining immunisation data.
5. Transcription errors were found by the audit team in monthly health unit reports. Supervisors at all levels should check the consistency of immunisation data.
6. Health workers should note down remarks in the child register for migrating children to be excluded from “under one” target. This is not only important in controlling vaccination wastage but also to avoid immunisation inaccuracies and possible financial implications. It is suggested that an indication for “migrating children” be incorporated in the monthly reporting forms.



### Coverage/change in DPT3 reported

S. No	Health Unit Name	Reported DPT3 2003	Reported DPT3 2002	Inc / (Dec) in reported DPT3
1	KhaNweKhaBo - Main	212	196	16
2	YeiPaw - Main	184	156	28
3	KinnWaGyi	170	136	34
4	PaThwe	150	147	3
5	MCH - East	93	121	(28)
6	KaTauSuk	84	70	14
7	PuTeeGone - Main	224	224	0
8	LinnLe	149	93	56
9	Sinemeeswe - Main	117	109	8
10	TheinThaung	67	73	(6)
11	LoneHla	64	76	(12)
12	TaGonDaing	64	78	(14)
13	Kyainganaing	71	74	(3)
14	Kankyee - Main	168	139	29
15	Thonesai - Main	137	143	(6)

	<b>Health Unit Name</b>	<b>Reported DPT3 2003</b>	<b>Reported DPT3 2002</b>	<b>Inc / (Dec) in reported DPT3</b>
16	Thayetkone – Main	141	128	13
17	Shwepyinyunt – Main	58	43	15
18	Ohnmakhar	53	56	(3)
19	Myotma (2)	322	339	(17)
20	Myotma (1)	300	307	(7)
21	GwayPin – Main	146	155	(9)
22	ThaLoneThwe	133	120	13
23	LetPanKyune	88	84	4
24	OuYin	72	59	13

### **Way forward and lessons learned**

Supervision from each level of the lower level should be reinforced and training implemented. Issuance of procedures and instructions in the form of an operational handbook to all levels is strongly recommended.

## APPENDIX I. CORE INDICATORS

Core indicator		As per Joint Reporting Form (JRF)	As reported at the time of the audit	EPI Comments
Number of districts in the country		324	324	
Districts with DPT3 coverage $\geq$ 80% (Admin, DPT3<1)	N	161	253	35%
	%	50	80.5%	(based upon data for 5 mths only ie: Jan'04 to May'04)
Districts with measles coverage $\geq$ 90% (Admin measles<1)	N	69	258	35%
	%	21	82.2%	
Districts with dor < 10% (Admin, DOR DPT1 – DPT3 )	N	276	236	
	%	85	75.2%	
Type of syringes used in the country		AD Syringes	AD Syringes	
% of districts that have been supplied with adequate (equal or more) number of AD syringes for all routine immunizations (less OPV) during the year		100%	100%	
Introduction of Hepatitis B (yes /no when/ partially/ specify presentation)		Yes, partially	Yes, partially	
Introduction of Hib (yes /no when/ partially/ specify presentation)		No	No	

<b>Core indicator</b>	<b>JRF</b>	<b>As reported at the time of the audit</b>	<b>Comments</b>
Country wastage rate of DPT	34.5%	38.2%	
Country Wastage rate of Hep B vaccine	Na	No data	
Country Wastage rate of Hib vaccine	NA	NA	
Interruption in vaccine supply (any vaccine) during the audit year at national stock		No	
How many districts had an interruption in vaccine supply (any vaccine) during the audit year		No	
% district disease surveillance reports received at national level compared to number of reports expected (routine reporting of VPD)	100%	100%	
% of district coverage reports received at national level compared to number of reports expected	98%	98%	
% of district coverage reports received on time at national level compared to number of reports expected		96%	
Number of districts which have been supervised at least once by higher level during the audit year		263 / 83.7%	

<b>Core indicator</b>	<b>JRF</b>	<b>As reported at the time of the audit</b>	<b>Comments</b>
Number of districts which have supervised all HUs during the audit year	o/s	152 / 48.4%	
Number of districts with micro plans Including routine immunization	324	265 / 84.4%	

Na : Not available

NA : Not applicable

## APPENDIX II. NATIONAL PERFORMANCE INDICATORS

### Performance Indicators - 2002 and 2003

Calendar year	Reported DPT3 <1	Change in reported DPT3 <1	DPT3 <1 coverage rate	%Districts DPT3 <1 coverage >= 80%	%dropout DPT1 <1 to DPT3 <1	%Districts dropout < 10%	%DPT vaccine system wastage	Quality of the System Index Score
2002	1,023,186		78.5%	43.2%	4.3%	83.9%		
2003	1,034,459	11,273	76.6%	48.4%	3.8%	86.8%	0.0%	78.8%

On a scale from "0" to "5".

## APPENDIX III. DISTRICT PERFORMANCE INDICATORS

<b>Performance Indicators, Pantanaw - 2002 and 2003</b>						
Calendar year	Reported DPT3 <1	Change in reported DPT3 <1	DPT3 <1 coverage rate	%dropout DPT1<1 to DPT3<1	%DPT vaccine system wastage	Quality of System Index Score
2002	5,235		91.7%	2.9%		
2003	5,499	264	94.6%	1.9%	0.0%	87.9%

<b>Performance Indicators, Thegone - 2002 and 2003</b>						
Calendar year	Reported DPT3 <1	Change in reported DPT3 <1	DPT3 <1 coverage rate	%dropout DPT1<1 to DPT3<1	%DPT vaccine system wastage	Quality of System Index Score
2002	2,144		104.3%	-7.8%		
2003	2,242	98	102.1%	2.9%	0.0%	93.9%

<b>Performance Indicators, NaungCho - 2002 and 2003</b>						
Calendar year	Reported DPT3 <1	Change in reported DPT3 <1	DPT3 <1 coverage rate	%dropout DPT1<1 to DPT3<1	%DPT vaccine system wastage	Quality of System Index Score
2002	2,466		95.2%	4.0%		
2003	2,571	105	97.4%	2.5%	0.0%	90.9%

<b>Performance Indicators, Chauk - 2002 and 2003</b>						
Calendar year	Reported DPT3 <1	Change in reported DPT3 <1	DPT3 <1 coverage rate	%dropout DPT1<1 to DPT3<1	%DPT vaccine system wastage	Quality of System Index Score
2002	6,138		94.5%	1.5%		
2003	6,046	-92	91.4%	-1.0%	0.0%	90.9%

On a scale from "0" to "5".



## APPENDIX IV. HEALTH UNIT PERFORMANCE INDICATORS

Name of the health unit	Reported DPT3<1		Change in reported DPT3<1	% Dropout DPT1<1 to DPT3<1	% DPT vaccine wastage	QSI Score
	2002	2003				
KhaNweKhaBo - Main	196	212	16	-6.0%	40.9%	96.2%
YeiPaw - Main	156	184	28	-3.40%	53.0%	88.5%
KinnWaGyi	136	170	34	-16.4%	34.7%	84.6%
PaThwe	147	150	3	-1.4%	49.7%	96.2%
MCH - East	121	93	-28	-8.1%	41.1%	96.2%
KaTauSuk	70	84	14	1.2%	49.6%	96.2%
PuTeeGone - Main	224	224	0	13.8%	34.8%	80.8%
LinnLe	93	149	56	2.0%	54.5%	84.6%
Sinemeeswe - Main	109	117	8	13.3%	55.0%	96.2%
TheinThaung	73	67	-6	8.2%	56.5%	96.2%
LoneHla	76	64	-12	8.6%	missing	71.4%
TaGonDaing	78	64	-14	-4.9%	60.8%	88.5%

Name of the health unit	Reported DPT3<1		Change in reported DPT3<1	% Dropout	% DPT vaccine wastage	QSI Score
	2002	2003		DPT1<1 to DPT3<1		

Kyainganaing	74	71	-3	7.8%	70.4%	96.2%
Kankyee - Main	139	168	29	2.3%	missing	86.2%
Thonesai - Main	143	137	-6	22.2%	38.2%	96.2%
Thayetkone - Main	128	141	13	2.1%	50.1%	82.8%
Shwepyinyunt - Main	43	58	15	13.4%	22.1%	92.3%
Ohnmakhar	56	53	-3	8.6%	32.1%	92.3%
Myotma (2)	339	322	-17	0.3%	32.6%	96.6%
Myotma (1)	307	300	-7	1.0%	45.5%	96.6%
GwayPin - Main	155	146	-9	0.0%	49.1%	100.0%
ThaLoneThwe	120	133	13	-9.0%	46.9%	100.0%
LetPanKyune	84	88	4	2.2%	46.6%	79.3%
OuYin	59	72	13	-22.0%	53.1%	92.3%

On a scale from "0" to "5".