



# **Immunisation Data Quality Audit**

## ***Tanzania***

**12<sup>th</sup> August – 28th August 2002**

**Prepared by: The LATH Consortium \***  
**On behalf of: Global Alliance for Vaccines and Immunisation (GAVI)**  
**10 September 2002**

**\***

**Euro Health Group (EHG)**  
**Deloitte and Touche Tohmatsu, Emerging Markets Group**  
**Liverpool Associates in Tropical Health (LATH)**

## 1. Introduction

The Data Quality Audit (DQA) is part of the Global Alliance of Vaccines and Immunisation (GAVI) programme. It has been designed to assist the countries receiving GAVI support in improve the quality of their information systems for immunisation data. In addition, it calculates a measure of the accuracy of reporting, the country's 'verification factor' for reported DTP3 vaccinations given to children under one year of age (DTP3 <1). In 2002, the DQA is being performed in 16 countries. It is hoped that participation in the DQA will assist each country in understanding the extent and details of the audit while providing guidance on how the country's system for recording and reporting immunisation data can be improved. It is the explicit goal of the DQA to build capacities in the participating countries.

This DQA was undertaken in Tanzania from 12-28 August 2002 by external auditors Maxwell Moyo and Steven Perry and national auditors William Msirikale and Wilfred Yohana. The team worked at the national level of HMIS and EPI before going to district- and health facility levels. Based on a random selection carried out in advance, the following four districts were visited: Kondo, Kyela, Rufiji and Kahama. Six Health Units (HU) were selected randomly in each district plus one additional "alternate" HU to be visited in the event that one of the first six was unreachable. For each site visited (the National Office, 4 districts, and 23 Health Units) a summary analysis worksheet was created. Only five health facilities were visited in Rufiji district and one of these had no health staff available. Time and distance<sup>1</sup> did not allow for the visiting of the sixth facility nor the reserve facility.

A debriefing meeting was held on 27/08/02 with representatives from the Inter-Agency Coordinating Committee. The meeting was chaired by Dr. Mzige, the MOH Director of Preventive Services (as well as the ICC Chair) and the attendees included the EPI Programme Manager, Dr. Caroline Akim, who is also the Secretary of the ICC. A list of key informants for the DQA is found in Annex 1 of this report and includes the persons attending the debriefing. Major points of discussion at the debriefing included how to increase the utility of the HMIS (MTUHA) for the annual EPI report, and the difficulty of insuring continuous supply of the MTUHA forms at the districts and health facilities. The Director of Preventive Services emphasized that the findings and recommendations of this report will be featured at the annual MCH FP meeting in Arusha and again at the annual RMO meeting in Rukwa.

## 2. Background

Administratively, the Tanzanian health system is divided into the national level, regions, districts and health facilities (HF). The Medical Supply Department (MSD), which is responsible for vaccine supply, also operates through zonal stores. Immunization reporting is through the integrated HMIS (MTUHA) utilizing quarterly reports from HFs to districts and districts to regions. Regional reports are sent to the central level on diskettes and input to the central MTUHA database on an ad-hoc

---

<sup>1</sup> Rufiji district is the periphery of the periphery. Communications and logistical constraints prohibited visiting the sixth HU within the time frame of the DQA. Tawi dispensary was an estimated 5-6 hours from the fifth facility visited and from the district headquarters where the debriefing was to take place two hours later on a Saturday afternoon. The reserve facility was located on one of the outer Rufiji delta islands and was only accessible by boat and only at high tide. With the district boat already in use for the census exercise this journey would have been up to 8 hours each way in canoes.

basis. Districts are the focal points for health management under the leadership of the Council Health Management teams (CHMTs). The EPI Programme is in the Reproductive and Child Health Section of the Preventive Services Directory of the Ministry of Health. It should be noted however, that the “mainland” Tanzania EPI programme is only somewhat coordinated with the efforts of the Zanzibar EPI programme and that district data from the Zanzibari districts were not available at the mainland offices and not submitted by the programme for inclusion in the sampling process. This is the second year that the Tanzania DQA was, in essence, a mainland Tanzania audit only.

The EPI programme is assisted with strong support from the country and regional offices of WHO which funds three Country Advisers as EPI Surveillance Officers and one international adviser. All of the advisers were in Arusha at the time of the DQA attending a course in EPI Info.

ICC meetings take place on an ad-hoc basis, but there is discussion of regular quarterly meetings. Other organizations with representatives on the ICC include WHO, UNICEF, Rotary International, JICA, Irish Aid, Red Cross International and the Red Cross of Tanzania.

Primary data recording for the immunization component of the MTUHA relies on child health cards, immunization tally sheets, client registers and vaccine ledgers. These HF records are summarized quarterly and annually in HF reports to the districts where they are aggregated and reported quarterly and annually to the regions.

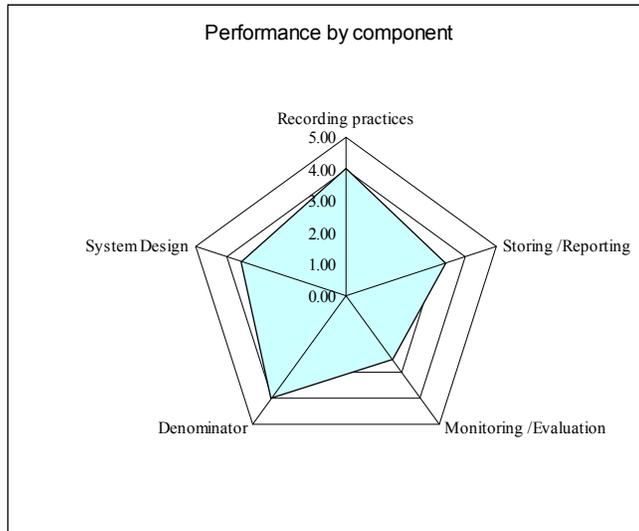
This was the second DQA in Tanzania in two years. Remarkably one district, Kahama, was randomly selected for both DQAs and provides a direct point of comparison.

### **3. KEY FINDINGS**

#### **3.1 NATIONAL LEVEL**

Quality of the system index: This composite indicator of the overall quality of the immunization reporting system is composed of scores in the areas of recording, reporting and storage of data, monitoring and evaluation, denominators and system design (see figure 1 below). For the audit year (2001) the score is 67.5, up from 51.5 in the previous audit year. Areas that were particularly strong are the setting of clear and consistent targets and denominators, the use of charts and tables for programme evaluation and the accurate inventory records at MSD. However, work is needed in storing and reporting, and monitoring and evaluation. Specific issues include the following:

- Lack of regular feedback reports to regions,
- No reporting of wastage rates,
- No regular back-up of the MTUHA database,
- Lack of written procedures for dealing with late reporting



### Reporting and Storage:

MTUHA has guidelines for almost all areas of reporting and storage. The central level up-dates the database on an ad-hoc basis when they receive new information on diskette from the regions. These are not in the form of quarterly reports, but rather an ongoing updating of the regional database. The EPI programme has developed an annual immunization data collection exercise directly from all districts. This was felt

necessary to get complete and timely data that was not available at the central level of MTUHA. Given that the EPI exercise is dependent on immunization data recorded on MTUHA forms at the health facilities, reported to the districts on MTUHA reports and archived in the MTUHA district processing files, it appeared that only the top levels of the integrated MTUHA were under-performing.

District drop-out rates: Were unavailable at the central level as district DPT HB1<1 was not available at the national level.

Monitoring and Evaluation: Throughout the system the lack of regular feedback meetings and reports was noted and can be linked to areas of under-performance.

Timeliness and completeness of reporting: The national level did not monitor the timeliness, completeness, or quality of updates of immunization data from the regions into the MTUHA central database (computerized). Consequently, there was no way to assess the completeness or timeliness of reporting to the national level.

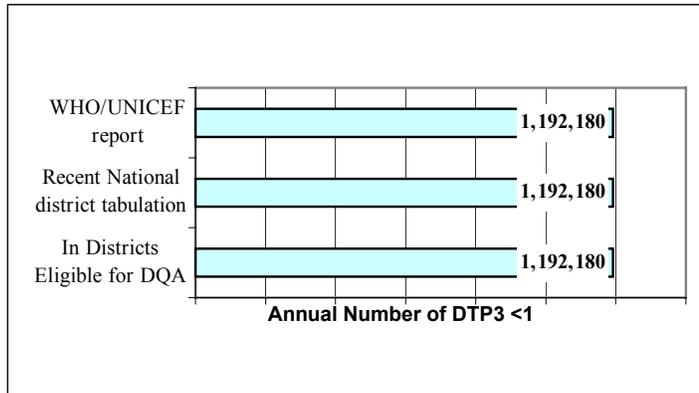
Wastage rate: The 2% national level vaccine wastage rate is based on 96,000 vials of DPT that were not distributed after the national programme change to DPT-HB vaccine. While MSD records are excellent for determining “unopened vial wastage rates” at the central level this information is not being monitored and neither are the wastage rates from lower levels being captured at the national office. The extremely high wastage rate from last year’s DQA was for global wastage which is no longer used as the correct measure of wastage at any level above the Health Facility level.

Selected national level performance indicators: Please see below selected national performance indicators for the 2000 and 2001 DQA audit years. The reason for the drop in the reported DPT3<1, and hence the coverage rate, is due to the current tabulation figure available from the MTUHA which is less than the figure used for the JRF report (1,192,180). This tabulation, which was collected over three months ago, should be less than the MTUHA current tabulation.

**Table1**

Performance Indicators	DQA 2000	DQA 2001
Reported DTP3<1	1,056,603	1,030,419
DTP3<1 coverage rate	79.1%	74.8%
Drop-out Rate	4.1%	5.6%
Quality of System Index	51.5	67.5

**Reporting consistency for audit year (2001)**



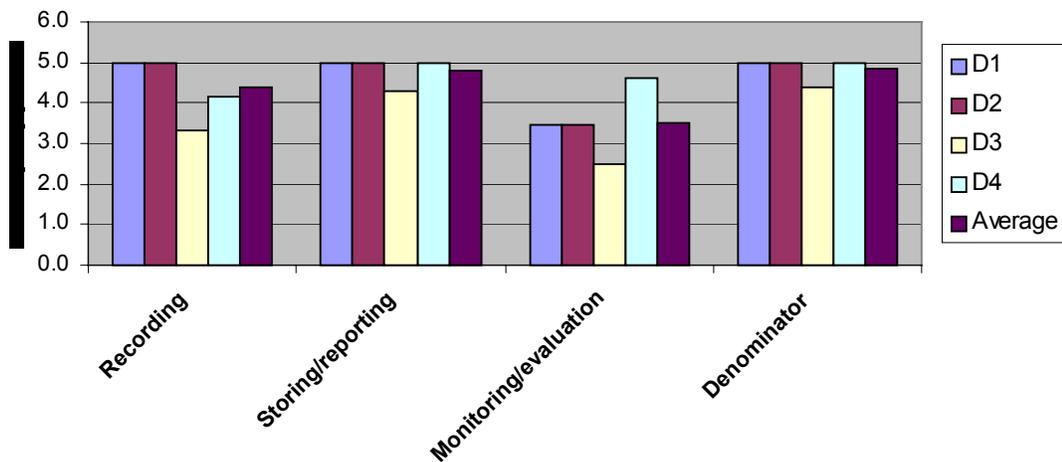
*A perfect level of accuracy is seen between the reported DTP3<1 in the JRF report and the districts eligible for the DQA*

**3.2 DISTRICT LEVEL**

The Quality of System Index for the four districts is indicated in the district analysis worksheets (see Annex 2):

Kondola 88.2%, Kyela 88.2%, Rufigi 69.7%, and Kahama 94.1%.

The four components of the quality system index are shown below for the four districts including the average value:



**Quality of the system index:** Table 2 below presents the quality index scores for each of the districts audited. The actual radial graphs for the four districts are available in Annex 2 and demonstrate that the districts were uniformly strong in calculating denominators, utilizing current charts of immunization performance, and having well organized and complete records and reports.

**Denominators:** Health staff at all districts were clear and consistent in defining the denominators for both the district and health facilities. The HMIS (MTUHA) guidelines calculate both pregnant women, and surviving infants less than one, as 4% of a given population (national, district, or health facility catchment population). It is worth noting that denominators are calculated using the 1988 Census with populations being “aged” for each successive year using district specific population growth rates. The accuracy of the denominators are compromised by the age of the last census and by significant internal migration in the cases of Kahama and Rufiji.

**Monitoring and evaluation:** Overall this was the weakest area for the districts. Kahama was the only one of the four to actually use quarterly feedback reports to the health facilities. Rufiji, which had the lowest score, is constrained by poor communications to remote HUs, and acute human resource shortages at the district office. Given that several key CHMT posts remained unfilled, and 52 HUs, Rufiji utilized a “cascade” supervision system whereby larger health centres were to provide supervision to smaller dispensaries. This system was generally not successful due to resource problems.

One weakness for the EPI programme is that the two district health managers most closely associated with immunization, the DCCO and the DMCHC, are not members of the core CHMTs. When the DHMTs were reorganized into CHMTs the DCCO and DMCHC were designated as associated members of the team which is felt to constrain their ability to supervise and promote immunization services within the districts.

**Table 2**

	<b>Quality Index</b>	<b>Drop-out rate</b>	<b>Change in DPT3&lt;1</b>	<b>Completeness</b>	<b>Timeliness</b>
<b>Kondoa</b>	88.2%,	3.8%	7,277	100%	25%
<b>Kyela</b>	88.2%,	0.1%	-254	100%	50%
<b>Rufiji</b>	69.7%,	4.0%	-1,384	75%	0.0%
<b>Kahama</b>	94.1%	6.9%	4,323	100%	25%

**Selected performance indicators:** Table 2 above highlights uniformly low drop-out rates and the completeness of district reporting uniformly high, but there were problems with timeliness of district reports to the regions and negative growth in DPT HB3<1 in two of the districts. The lateness of district reporting may be a function of the reporting deadlines themselves. HU quarterly reports are due at the district on the 10<sup>th</sup> of the month following the end of the quarter and district reports are due on the 15<sup>th</sup> day of the same month. District staff felt this was insufficient time to complete the extensive MTUHA report and communicate it to the regional offices. Negative growth in immunizations in Rufiji and Kyela were explained as being due to unusually severe flooding in the former and vaccine shortages in the latter.

Data storing and reporting: The high quality of the MTUHA system and data at the district and HU levels was a positive development since the last DQA. HU quarterly report data are immediately entered into the district processing file which is continuously updated and used for preparing the quarterly reports. The MTUHA system facilitates the organization and storage of the data so that it is easily accessible for QA and reporting purposes. Two areas for improvement are: Late HU reports that are not included in the district quarterly reports are included in the district processing file, but are not then included into the next quarterly report. The result is some level of under-reporting of achievements in immunization coverage.

The districts were not using charts to track the timeliness and completeness of HU reports which would greatly facilitate the process given the large numbers of HUs in most districts.

Coverage rates for DPT3<1 ranged from 69-86%. The non-weighted average for the 4 districts was 75.4%.

### **3.3 HEALTH UNIT LEVEL**

Quality of the System index scores for the health units visited ranged from 57.1% to 96.4 with a mean QI score of 83.4% indicating relatively strong performance in all areas. In particular, calculation of denominators and the data recording were very strong.

Recording Practices: HU immunization recording depends on tally sheets for each antigen, as well as child health cards and registers for infants and pregnant women. The system appeared to be well designed and well functioning in the HUs visited. Overall, the completeness of the tally sheets and their accuracy in comparison with reports were the key determinant of the improvements in the verification factor (see below). In aggregate the tally sheets for all health units audited presented 11,288 DPT HB3<1 compared to 11,721 in reports for those facilities found at the district level. As could be expected facilities that are under-staffed and those that have under-trained staff had more difficulties, but even in Rufiji the recording and reporting of immunization data was of a relatively high standard.

Storing and reporting: Shortages of MTUHA tools in many health units hampered efforts to accurately monitor performance. Eight of the 22 facilities for which there was data did not have any sort of ledger for vaccines which made it impossible to assess wastage in those facilities. For the remaining facilities the average global wastage rate was 23.6%. However, half-way through the audit year an open vial policy was introduced which was reducing open vial wastage.

Completeness and timeliness of reporting was mixed. While nearly all reports for the audit year were available only 25% were submitted on time. It is worth noting that many of the "late" reports were only late by a week or less.

Use of the data was limited. Most of the HUs had accurate estimates of their denominator populations and up-to-date immunization performance charts, but were generally unable to answer questions regarding the trends revealed in the charts. Only in Kahama was supervision and feedback strong enough to effect a change in the use of data at the HUs.

### 3.4 VACCINE SAFETY

At the time of the DQA, it was learnt that Tanzania is in the process of developing a national policy for monitoring injection vaccine safety and that discussions are at an advanced stage with all stakeholders including WHO and UNICEF.

The EPI national office has taken some initiative to develop a form for collection of adverse events following immunizations (AEFI) data that was found at almost all the HUs visited. However, there was no evidence of use of the form by staff at any Health Unit. From the Auditors observations, the problem may be with HU staff perceptions of filling out such a form as an admission of guilt or negligence. The form collects information about the patient history, the adverse event itself (that includes the date of vaccination, type, the vaccine batch number, symptoms and any prior history of similar reaction), the vaccinator, outcome of the AEFI and notification information.

Spot checks by the auditing team from the health units visited found that AD syringes and safety boxes were used. The policy is to burn safety boxes whenever they are full.

At all three levels the ledger books monitors receipts, availability, issues, batch numbers and expiry dates of all vaccine supplies apart from safety boxes despite being not up to date at some HUs.

In one district, a supervisory visit to a HU included on the job training on infection prevention and the importance of discarding immunization vaccines.

Active surveillance was found to be intensive. Teamwork amongst the Medical Officers, Maternal and Child Health Coordinators, the District Cold Chain Coordinators, the Health Officers and Health Assistants was very encouraging. Follow ups to households and proper linkages with communities (through village health workers, TBAs and community leaders) was found to be strong and increasing.

### 3.5 WASTAGE

Table 3 below presents DPT HB vaccine wastage rates at the three levels of analysis (HU, District, National). Please note that true, or global, wastage is only measured at the HU level where there is no chance that “wasted” vaccines are held in supply at lower levels. At the district and national levels unaccounted supplies may be available in lower level vaccine stores. At these upper levels only “unopened vial wastage” is included in the wastage rates. At the national level MSD tracks expired, damaged or otherwise not used DPT vaccines. The 96,500 “wasted” vials found at MSD represent DPT vaccine which was discontinued in favour of the new DPT HB vaccine that was introduced during the audit year.

Figures for wastage of unopened vaccine at the district level were not available (NA) because the districts either had no “wasted” stocks, or because they were reluctant to record such incidents.

Wastage at the HU level was based on the discrepancy between what they had received in the audit year (plus what they had at the beginning of the year and minus what remained at the end of the year) and what was recorded as having been given to clients. The average wastage rates for all HUs in a given district give the clearest

indication of what might be lost to the programme. Table 3 below demonstrates averages between 19 and 34 per cent. While these rates are quite high they may be declining with the introduction of the “open vial policy” which allows for opened vials with remaining doses being used for the next vaccination day/s.

**Table 3: DQA Vaccine Wastage Rates**

	Kondoa	Kyela	Rufiji	Kahama
District WR (unopened)	NA	NA	NA	NA
Average Wastage for HUs-Global <sup>2</sup>	23.6%	21.3%	33.7	18.7%

**National WR (unopened):2%**

### 3.6 DATA ACCURACY

The verification factor is the ratio between the DTP HB3<1 recounted from tally sheets or register during the DQA and the figures reported in the monthly (or quarterly) summary reports: Recounts/ reported. The verification factor found for Tanzania for the 2001 audit year was 0.902 with a confidence interval between 0.682 and 1.122. Given the verification factor for the previous year (0.572) **this represents real effort and real achievement.**

While Tanzania demonstrated across the board improvements in performance indicators the most dramatic turn around was for the verification factor. The key determinants of this improvement were:

- Completeness of reporting: 100% of the MTUHA quarterly HU reports expected at the sampled HUs were available at the time of visit. Moreover, 100% of these reports were also available at the district level.
- Completeness of recording: Tally sheets for the audit year were 100% available at all but 4 of the HUs visited.
- Accuracy of reporting: The recounted tally numbers for DPT HB3<1 immunizations closely matched the numbers reported to the district level indicating only one significant transcription errors and differences due to the few missing tally sheets. Table 4 below compares the reported and recounted values, along with completeness of records and reports, by district.

<sup>2</sup> Weighted mean of the 6 HUs in that district. Note beginning balance + receipts – ending balance = total use. Total units used (at all 6 HUs)/Total wasted (at all 6 HUs) = weighted mean for district

Table 4

Districts	Completeness of Tally Sheets	Completeness of Reports	Recounted Values DPT HB3<1	Reported values DPT HB3<1
Kondoa	92%	100%	3,015	3,061
Kyela	100%	100%	2,284	2,256
Rufiji	75%	100%	1,309	1,388 <sup>3</sup>
Kahama	100%	100%	4,680	5,014 <sup>4</sup>

National level data regarding DPT HB3<1 for 2001 was consistent to the degree that the data collected by EPI in their annual evaluation exercise was used at all stages. The Joint Reporting Form (JRF) for the audit year (2001) was compiled in May 2002. Immunization totals from that report remained static through time and were presented again in July 2002 for sampling districts for the DQA. No up to date national tabulations were available from the central HMIS office until the final day of the DQA. The current national tabulations from HMIS made available at the end of the DQA were not available by district and were seemingly less complete than the EPI exercise from May. The JRF, and the tabulation used for district sampling, both reported national DPT HB3<1 immunizations at 1,192,180, whereas the HMIS total as of 27 August 2002 was only 1,090,986.

The advances made in completeness and accuracy of recording and reporting in the sampled districts appeared to be based on hard work by district and HU level staff, and on assistance from central level teams. The activity of EPI support teams was witnessed by signatures in the guest books at intervals over the past year. The support teams included both EPI National Officers and WHO Advisers. There were no observations of new or falsified records and improvements in the VF reflect improvements in the other performance indicators including the quality index.

### 3.7 CHANGES FROM DQA 2001

The primary determinant of the improvements in the verification factor and other performance indicators has been the improvement in the use of the MTUHA records, reports and procedures at the lower levels. While availability of forms continues to be problematic it was not as pronounced as during the previous year, and the old "MCH3" forms were no longer in use at any facility visited. Clearly written, and widely disseminated, MTUHA guidelines have resulted in gains in the standardization of use of the MTUHA and hence the accuracy of data. Two areas where progress has been slow are: 1) consistent supervision and feedback at all levels, and 2) use of wall charts to monitor completeness and timeliness of reporting.

## 4. RECOMMENDATIONS

### National Level

1. There is need for proper maintenance of the MTUHA database at the national level. Quality assurance measures should be put in place to ensure that the database is up-dated in a timely, accurate manner. The central level needs to track completeness of reporting and provide assistance to regions in

<sup>3</sup> The HUs with missing tallies in Rufiji were extremely small dispensaries with low service delivery.

<sup>4</sup> While Kahama actually demonstrated the greatest inflation this was driven entirely by a transcription error at one facility on one quarterly report.

- improving the timeliness of reporting.
2. The MTUHA national level database should be backed up periodically on diskettes/zip drives to ensure safety of data upon break down of system by either viruses or power surge. This is currently in the guidelines, but not followed.
  3. Regional quarterly diskettes sent to the national level should be scanned for virus, input then archived at the national MTUHA Office indicating dates when they were received and merged into the national system.
  4. The EPI annual evaluation exercise should be used to strengthen MTUHA. During the annual EPI evaluation meetings MTUHA staff should be key participants and should take the opportunity to reconcile/update records during the meetings. The annual EPI data collection exercise should be discontinued as soon as the MTUHA central database is maintained to the same accuracy as the exercise now achieves. As important stakeholders in the MTUHA, EPI Officers should work actively with the MTUHA officers to monitor the completeness, timeliness and quality of the data coming from the regions.
  5. The policy on reporting deadlines at HU and district levels should be reviewed. Deadlines of the 15<sup>th</sup> and 30<sup>th</sup> of the month following the end of quarter could be considered for deadlines for health facility and district reports respectively.
  6. The guidelines and forms regarding AEFI and should be reviewed in light of the near total non-compliance from service delivery staff.

#### **District Level**

7. Wall charts for monitoring completeness and timeliness of HU and District quarterly reports should be utilized at all districts.
8. Districts should provide, and monitor, written feedback to the Hus. This should include some analysis of the data being displayed on the EPI wall charts.
9. Districts should monitor injection safety commodities including safety boxes and AD syringes. These should be treated as all other injection supplies being properly recorded in the ledger book.
10. CHMTs should provided Hus with guidance regarding use of data and performance charts generated within the HU. This guidance should highlight interpretation of trends and steps to take to better manage both static and outreach services.
11. DCCOs and DMCH Coordinators are no longer part of the core health management teams at the districts (CHMTs). The MOH should revisit this decision and consider including at least one of these two officers on the core CHMT.

#### **Health Unit Level**

12. Improve the supply of all forms and reports (tally sheets, other MTUHA reports and ledger books) to ensure that HU do not run out of stationery. The Ministry of Health should resolve the question of who will be responsible and at what level for printing and paying for the MTUHA forms and guidelines. Whichever mechanism is chosen it is critical that lead times for ordering and production are taken into account to insure continuous supply.
13. Introduce booklet tally sheets that are simply stapled into quarterly booklets for easy storage. It should be noted that where there are many staff working in a facility (particularly one with numerous workstations), loose tally sheets are often lost.
14. Ensure that ledger books are up to date. Wastage could not be calculated for

many HUs in the audit year (2001) due to incomplete ledger books. Wastage should be monitored closely and efforts made to lower average HU wastage of vaccine.

15. Supervision should include a written record in the supervisory book of objectives and any issues arising provided by MTUHA for easy follow up.

## **ANNEXES**

- a. **Key Informants**
- b. **Summary Worksheet (national, districts and health units)**

## **ANNEX 1: Key Informants**

### **A. NATIONAL LEVEL**

1. Dr. Ali Mzige, Director Preventive Services.
2. Dr. Caroline Akim, EPI Prog. Manager
3. Sakina Othman, APO, EPI/UNICEF
4. Per Kronslev, Logistics Advisor
5. B.A. Msoma, Head of Vaccines
6. Francisco Blanco, CO/Logistics, UNICEF
7. Samuel Ngatunga, Ag. Director, Health Policy and Planning
8. Cyprian Mpemba, RCHS
9. Fabian J. Magoma, MOH
10. Pelagia Muchuruza, Vector Borne Control Unit
11. David Manyanga, EPI Surveillance Officer
12. Mary Kitambi, Lugalo GMH
13. Wilfred Yohana, Ag. Head HMIS
14. William Msilikali, NCCO
15. Conrad Mbuya, Reg. Coordinator TEHIP/MOH
16. Barry Chovitz, Logistics Advisor
17. Theonas Mkoba, EPI Computer Data Processor
18. W. Shijja, Ag. Customer Services and Sales Manager, MSD

### **TEAM 1**

**External Auditor: Maxwell Moyo**  
**National Counterpart: Wilfred Yohana**

#### **Kondoa District**

1. Dr. Charles Ng'ong'o, DMO
2. George Madelemo, DCCO
3. Mary Mapande, MCH Coordinator

#### **Health Units Visited**

1. Kondoa Dist. Hospital
2. Hamai
3. Kisese
4. Kwantoro
5. Kinyamshindo
6. Mpendo
7. Chololo

### **1.1. MBEYA REGION**

1. Dr. D.W. Mmbando, RMO
2. Ms. P. Nyarusi, RMCH Coordinator

### **Kyela District**

1. Dr. S. Mwakapalala, DMO
2. M. Msalale, DHS Secretary
3. Monica Francis, NO/MTUHA Processor
4. David Kikwembe, DCCO
5. Magdalena Sayenda, DRCH Coordinator

#### **1.2. HEALTH UNITS VISITED**

1. Kyela District Hospital
2. Ipinda
3. Katumba Songwe
4. Ngonga
5. Bujonde
6. Lema
7. Itope

### **Team 2**

**External Auditor: Steven Perry**

**National Counterpart: William Msilikali**

### **Pwani Region**

1. Dr. Victoria Kipende, RMO

#### **1.3. RUFJI DIKSTRIC**

1. Dr. I. T. Mwinge, MO
2. Dr. S.M. Mkikima, DMO
3. Lugendo B. Mkwabi, DCCO
4. Ali. R. Nihuka, MTUHA Coordinator

#### **1.4. HEALTH UNITS VISITED**

1. Ikwiriri
2. Bungu
3. Ikwiriri Mission
4. Muyuyu
5. Mchukwi

#### **1.5. SHINYANGA REGION**

1. Raymond Kiwesa, Reg. Health Secretary
2. Francis Jacob, Reg. Cold Chain Coordinator
3. Stella JoligaReg. RCH Coordinator

**1.6. KAHAMA DISTRICT**

1. Dr. C. S. Takoracha, DMO
2. Martin Masele, DCCO
3. Rehema Kantabula, DRCH Coordinator
4. P.A. Kaliminda, District Health Secretary
5. G. Nyanda, District Health Accountant
6. Dr. Magessa, MO
7. Dr. Machumu, District Dental Officer
8. Adelaide Mghase, Malaria Coordinator
9. Grace Kalimenze, DNO

**1.7. HEALTH UNITS VISITED**

1. Mpunze
2. Segese
3. Lowa
4. Mwalugulu
5. Mwime
6. Lunguya