GAVI
DATA QUALITY AUDIT

ZIMBABWE

02.12 – 17.12 2004

LATH - UK
En collaboration avec

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Executive Summary

The Health Information System (HIS) is fully integrated and includes detailed EPI information. Reporting at HU level is manually, based on pre-printed Tally Sheets. The HU data are compiled at the Districts on computer and all further data handling at Provincial and National level is computerised. The flow of reports are well organised from HU to District to Province to National HIS office. The HUs report fixed and outreach EPI activity from well defined catchment areas. Mobile activity is reported from the district. There are written detailed instructions for EPI procedures and management.

The number of annually reported DTP3<1 has decreased from 242.484 in 2002 to 230.428 in 2003. This is reflected in all four districts visited. However, the problems mentioned below about recording and reporting of DTP/HBV has to be kept in mind when analysing the decreased number of vaccinations. The national coverage for DTP3<1 has increased from 57% to 63% due to a revision of the denominator from 427.273 for 2002 to 364.642 for 2003 based on a new census in 2002.

Drop out rates from DTP1<1 to DTP3<1 in 2003 were high with 47% of the Districts with rates higher than 20%.

Reporting on DTP and HBV for 2003 are confused by a shift from tetravalent DTP-HBV to monovalent HBV and DTP as the stocks of the tetravalent vaccine run out, at the National Vaccine Store in April and at HU level in May-June. Tallying on DTP's were in the tetravalent vaccine area usually, but not consistently, done in the HBV rubric and counted and reported as coinciding with HBV vaccinations. However no clear instructions were given to HUs and Districts on how to report in the transition period, where both monovalent and tetravalent HBV were available This have resulted in confusion in reporting on the DTP vaccinations. In most monthly and annual reports for 2003; DTP vaccinations for children <1 are monitored as being equal to the HBV vaccinations which have in some cases resulted in considerable errors.
The electronic filing system at the National EPI office disclosed considerable inconsistencies in annul reporting, with serious impact on the verification factor. In general there is a severe lack of data consistency at District and especially at National level.

Only one of the 4 Districts and six of the 24 HUs have complete vaccine stock registers for the audit year, which means that DTP vaccine wastage can be calculated. Systemic DTP vaccine wastage at the districts is not recorded.

The main issues within EPI encountered for Zimbabwe are the low vaccination coverage and high drop-out rates for many of the districts. Another important issue is the incomplete vaccine stock keeping at District and HU level.

The main problems are already approached in 2004 in the four districts audited.

Objective of DQA:
The DQA has been designed to assist the countries receiving GAVI support to improve the quality of their information systems for immunisation data. In addition, it calculates a measure of the accuracy of reporting.

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Method:
The DQA was undertaken by two external senior auditors, one trainee auditor and two national auditors, who worked at national level of HIS and EPI before visiting four districts and six health facilities in each district. All 24 health facilities were selected randomly. The standard DQA method (GAVI, 2003) was applied, which included use of interviews, administration of questionnaires and recounting.

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DQA Indicator Dashboard:

	2002	DQA 2003	2004 data	
Verification Factor (>0.8) *(Compares recounted to reported DPT3)*		***0.67***		
Core Indicators:				
DTP3 Coverage	56.8	***63.2***	*61.6 (Jan–Oct)*	
Drop Out Rates	16.9	***18.5***	*22.6 (Jan -Oct)*	
Safety of Injections and Vaccine Safety		***Yes***	*yes*	
Wastage Rate	Na	***0.2***		
Completeness of Reporting	75.3	***76.3***		
Vaccine Stock-Outs	Na	***yes***	*no*	
Action Plans for Districts	Yes	***yes***	*yes*	***All 4 districts***
QSI at National Level		***81.1 %***		
Average QSI for Districts		***77.4 %***		
Average QSI for Health Units		***81.7 %***		

Summary of principal findings and prioritised issues:

Reporting: Was of a high standard at all levels. At HU level all reports were available and proper filed, at district level received reports was processed immediately and having procedures for late reporting and proper filing.

Use of Data: At HU level they used updated targets for vaccination of children <1 and pregnant woman, had awareness of catchment area and maintained updated chart of coverage. 18 of the HUs visited monitor drop out rates, but only 8 HU maintain vaccination registers for children <1 and only these HUs trace defaulters. At district level all had micro-plans, set realistic targets and had updated denominators and maps of catchment area. They all monitored coverage, drop out and registered AEFI. Also they all produced annual reports. However vaccine wastage was not monitored and vaccine stock registers were not complete. At national level completeness of reporting and weekly VPDs were monitored and district performance was displayed. However drop out rates were not displayed and timeliness of reporting is not monitored. Also at national level the calculation of vaccine wastage was not don according to generally accepted standards for the audit year.

Design: The EPI reporting system was integrated at all levels with clearly defined flow of reports. Using well designed pre-printed reporting formats, including tallies. The well introduced standard operation procedures (SOP's) for EPI management secure uniform management at Districts and HUs.

Key Recommendations:

- Improve vaccination coverage for children <1 year
  - Interacting with community (Radio, Newspaper etc.) to increase demand for immunisation services
  - Decrease dropout rates by re-introducing standardised vaccination registers for children < 1
  - Trace defaulters

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- Improve data management at national and districts level including e.g. procedures for accurate data filing and a system for continuous updating of summarising reports. Strengthening of vaccine stock management
- Inform and train personnel in due time when new EPI procedures are introduced

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1. Introduction

The Data Quality Verification (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 2003, the DQA is being performed in up to 14 countries. It is hoped that participation in the DQA will assist each country in understanding the extent and details of the verification 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 Zimbabwe, 1/12 – 17/12 2004*, by the following team:*

Name	***Position***	***Districts Visited***
Knut Wallevik	*External Auditor (Senior)*	*Bulilima Mangwe and Gokwe North and South*
Charles Shey Wiysonge	*External Auditor (Trainee)*	*Bulilima Mangwe and Gokwe North and South*
Rete Trap	*External Auditor (Senior)*	*UMP and Chimanimani*
Marry Nyengeterai Munyoro	*National Auditor*	*UMP and Chimanimani*
Joshua Katiyo	*National Auditor*	*Bulilima Mangwe and Gokwe North and South*

All newly WHO trained auditors are accompanied by an experienced senior auditor in their first country DQA.

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: Bulilima - Mangwe, UMP, Chimanimani, Gorkwe North and South and Six Health Units (HU) were selected randomly in each district. As the audit was undertaken in the rainy season 5 of the HU in Bulilima - Mangwe and 4 in Gokwe were non-eligible because of destroyed roads and non-existent bridges. In UMP and Chimanimani respectively 10 and 11 HU were NE because they were closed down (no personnel at the HU, reports not retrievable). Both teams visited each 12 HU, without using the reserve HU

A debriefing on the DQA was done 17.12.2004 at an ICC meeting chaired by its chairman and attended by the Permanent Secretary in the Ministry of Health and Child Welfare, WHO, UNICEF, the EPI Manager, the National Health Information Officer, EPI staff at central level, and other officials of the Ministry of Health and Child Welfare. *A comprehensive list of persons met during the DQA including the debriefing is included in Annex 1 of this report*.

After presentation of the results, the following issues were raised and discussed:
Was the verification factor at the pass or fail level?
Would the problematic issues for each QSI not have been detailed enough to include a recommendation for every unacceptable QSI answer?
To the question of pass or fail, it was made clear that 80% is the GAVI indicator.

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As to the brevity of the recommendations, it was made clear that the report is much more exhaustive than the presentation.
What happens next? After the presentation, a draft report will be submitted to the Ministry of Health and Child Welfare. When the ministry have made its comments, a final report will be worked out and submitted to GAVI, who would then contact the Ministry of Health.
The Permanent Secretary thanked the DQA team and insisted that the final report be submitted to the MoHCW as soon as possible, so appropriate actions could be taken, in consultation with its partners, to address the situation. The ICC Chairman then closed the meeting officially.

2. Background

2.1 National Context

The population of Zimbabwe in 2004 is 11.892.000 and the children under one year are 385.495. Zimbabwe is divided into 9 provinces with altogether 59 districts, and 3 of the largest towns (Harare, Bulawayo and Chitungwiza) which constitutes the 62 reporting units in the Districts reporting health information data. Districts data are reported to the National Health Information office. The reporting system is fully integrated and the flow of reports is well defined and consistent, following the administrative set-up of the country: Primary health care facilities (Health Units, mission hospitals), District Hospitals, Provincial Medical Directorates, and finally Ministry of Health and Child Welfare Headquarters in Harare.
The Zimbabwe Expanded Programme on Immunisation was launched in 1992. It aimed at providing immunization to mothers and children against the six target diseases. In 1996 the programme was expanded to include Hepatitis B vaccination of children < 1. The vaccine launched was the combined HBV-DTP. However in 2002 the programme was forced to exchange the combined vaccine with monovalent HBV and DTP because of economical constraints.
The national Health Information System (HIS) was reviewed in 1984, with the designing and implementation of the integrated reporting system that involves tallying of outpatient data, including EPI data and disease surveillance. The information is transferred to a monthly report (T5), and sent to the district office where data is computed and forwarded to the provincial Health Office for analysis and for onward transmission to the national level (the HIS office) through email.
Child health Cards has been used since launching of the EPI programme containing all information of importance for the medical and social history of the child including vaccination records. Bach numbers of the vaccines are recorded together with the notation of each vaccination
The present DQA is the first performed in Zimbabwe.

2.2 Approach and Mobilisation

Selection of the health units at the districts:

Gokwe and Bulilima-Mangwe.
At the time the first district was to be visited it was not clear to the audit teams, which numbers represented the true value of DTP3<1 reported monthly throughout the year.

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Gokwe (see Annex IV): In case the HBV3<1 data for the HUs were used for the selection, the NENYUNGA CLINIC would have been excluded from participating and if the reported DTP3<1 were used, 6 of the other HUs would not have been included. So in order to have all vaccinating HUs participating in the selection, the sum of the HBV3<1's and DTP3<1's were applied.
When visiting the HUs it was disclosed that the transition from combined to monovalent HBV was in May-June 2003 and a more reliable counting of the DTP3<1 could be initiated.
It was also realised that the DTP3<1 counts closest to the true DTP3<1 are the HBV3<1 reported to and from the District.

For District **Bulilima-Mangwe** the experience gained from Gokwe was applied for the selection of HUs and the monthly HBV3<1 for all HUs in the district were entered into the" District Data" work-sheet for January to May, while from June to December the DTP3<1 data were entered, in order to get the most reliable count for DTP3<1 vaccinations given in the District.

Chimanimani and UMP: The same principles were used as for Gokwe and Bulilima-Mangwe except that the reported DTP3<1 were used as basis for the selection in Chimanimani, as they seemed more complete than was the case in Gokwe. [1].

3. Key findings

3.1 Data Accuracy

Data accuracy is measured by the verification factor (VF). The latter refers to the ratio of the DTP3<1 recounted from tally sheets (or under-one immunisation registers) at the selected health facilities to the DTP3<1 reported by the health facilities to the district, which is extrapolated to the whole district and the national level. The pre-requisites for a high verification factor are:

- Complete, well organised, and easily retrievable tally sheets (or under one immunization registers) for the audit year available at all health facilities.
- Complete monthly reports available at the National (district report and WHO/UNICEF Joint Reporting Form [JRF]), District (health facility and district reports), and Health Facility (health facility reports) levels.
- Most recent reported National DTP3<1 value reflects the exact number of children less than one year of age vaccinated and tallied.

The verification factor for Zimbabwe in the DQA for audit year 2003 was 0.669 (confidence interval [CI] 0.157 to 1.182).

The main reasons for the relative low VF of 0.669 in this DQA[2] are related to the recording of DTP3<1 at the national level for two of the four districts. The unexplained high most recent national tabulation of districts figures for the audit year for district Chimanimani with 5,051 DTP3<1 vis-à-vis the figures found at district level, districts reports at national level and sampling data has an overall impact on the VF with about 0.09. The "confusion" about the HBV and DTP recording for district

[1] Because of a change in strata selection in UMP, the Mtawatawa Hosp has not been selected as a default but as a Reserve HU.
[2] Lower than the 0,766 presented at the debriefing

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Gokwe at national level with 10,761 DTP3<1 recorded for the audit year vis-à-vis 6,762 DTP3<1 recorded at district level has an overall impact on the VF with around 0.205. Neither of these issues were satisfactorily explained or clarified.

The tally sheets were complete, well organised, and easily retrievable in 23 health facilities. Only in one health facility tally sheets were missing (for January to February). In 2003, the DTP vaccination administered to children under-one was changed from combined HBV/DTP to DTP only. This was not preceded by proper training nor followed by adequate supportive supervision. Consequently, there was a lot of confusion in tallying and reporting the values, leading to some health units and districts reporting DTP3<1 in the rubric for DTP and some reporting them as HBV's[3] Had it not been for the confusion at national level on the DTP3<1 figures for Gokwe Health District and the discrepancy for Chimanimani's most recent district tabulation at national level vis-à-vis district reports, the VF value would have been 0.969. The latter would have had tighter confidence intervals, reflecting the excellent tallying of vaccination acts at and reporting from health facility level. The figure of DTP3<1 reported by Gokwe Health District was 6,710[4]. The national level had reported 10,761 for the district, a difference of 4,051. Gokwe district was split into two districts, Gokwe North and Gokwe South, in 2002. On the 2003 integrated reporting database at national level, there are two health facilities known as Gokwe North and Gokwe South. The annual DTP3<1 values for the two health facilities in the audit year 2003 were 1,403 and 2,648 (total 4051) respectively. From our understanding of things, these virtual health facilities were created on the database to measure the performance of either new district for planning purposes. Then half way through the year it was thought that this was not necessary, and the 'health facilities' were dropped. However, while compiling the annual figures for vaccination acts, nobody remembered to delete these 'health facilities' from the database. This was done for all health data, vaccination and non-vaccination alike. It was only when the DQA team discovered these apparently fictitious health facilities, and dropped them out of the selection of health facilities eligible for the DQA, that an investigation was initiated. We initially thought they might refer to district level outreach/mobile activities, but the DTP3<1 figures for Gokwe district outreach activities, which were not incorporated into the reported values for 2003, were only about 600 children. Back at national level, after hours on the database, the national health information officer 'remembered' what transpired then.

On the JRF, Zimbabwe had reported that 230,428 children were vaccinated in 2003. During the DQA, the most recent national tabulation showed a figure of 268,172 (an increase of 16.4%). Se figure 1 below.

[3] The number of annual DTP3<1 reported from the District (Dist HU Rep in the DQA workbook) are for calculation of the Verification Factor, given as the DTP3's<1 recorded according to the change in tallying practice connected to the switch from tetravalent HBV-DTP to monovalent HBV in June 2003.

[4] Bearing in mind the confusion with reporting DTP3<1 vaccinations that arose from the change from combined HBV/DTP to monovalent HBV and DTP during the course of the year.

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Figure 1: National EPI office DPT3<1 2003. Reporting from different tabulations

2003	JRF	Last National tabulation (Nat. Input)	Difference from JRF	National. Sampling for DQA	Difference from JRF
Denominator for chn < 1	364 .642	364.642	0	364.642	0
DPT3<1	230.428	268.172	37.744	233.812	3.384
Coverage	63.2 %	73.5 %	10.3%	64.1%	0.9%

This was explained by the fact that by the time the JRF was compiled, the data used was incomplete. Later on, the remaining reports were forwarded to national office from the districts, and incorporated. The most recent annual DTP3<1 tabulation for district Chimanimani (5.051) at national level is not consistent with the district's reported value found at both national and district level (2,348) nor the district's figure used in the tabulation forwarded for sampling (and most likely identical to the tabulation used for JRF at national level). However, neither the EPI nor the HIS office could clarify or explain this issue, which most likely is due to problems with the data management at national level. For district Gokwe the different figures at national level (most recent tabulation, sampling and JRF tabulation and district reports) vis-à-vis the district's own tabulation and reports was partly explained at national level, but both incidences however indicates problems at national level due to either a separation of a larger district into two smaller units or double entry in the national database (three out of seven months are registered with exactly the double value of the monthly reported figure).

When looking through the most recent 2003 annual tabulation for the 62 reporting Districts (The work book, Nat. inp.) it is remarkable that all data from the Province Manicaland (which include Chimanimani) shows odd figures for DTP3<1 coverage and Drop-out rates. (All 7 Districts have 2003 coverage > 100%, and 3 have substantial negative Drop-out rates) The inconsistencies was discussed with the EPI office in due time before termination of the audit, but new revised data have not been presented.

3.2 KEY ISSUES AT NATIONAL LEVEL

The quality of the system index (QSI) is a composite indicator of the overall quality of the immunization reporting system, which is calculated for each health unit and district visited, as well as for the national level. Please note the national QSI is not a composite of the scores at all other levels, but rather a score for findings at one level only. At the national level the QSI is composed of scores in five specific areas, namely: "Recording", "Reporting/Storage", "Monitoring/Evaluation", "Denominators" and "System Design".

The national level QSI average for audit year 2003 is 81.1 %.

Areas that were particularly strong include:

- **Recording practice:** Immunisation forms were sufficient in all districts in 2004 and reports from previous month had all been processed. Vaccine stock is up to date and Expiring date and batch number are registered. Also

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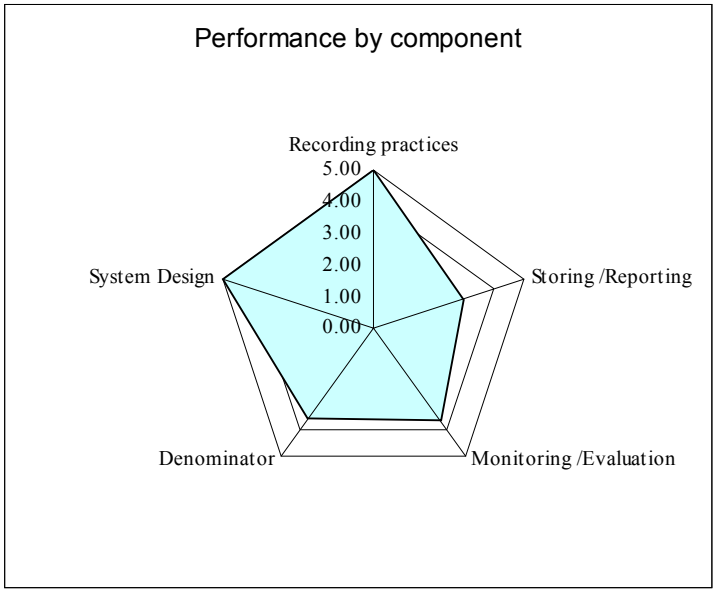
we found stock keeping for syringes and safety boxes. Scoring 5.0 see figure 2 below.

- **System Design:** The reporting system both from HU to District and from District to National level was integrated with clearly defined flow of reports. There were well designed pre printed reporting formats and standard operation procedures (SOP's) for EPI management and the reporting of DTP3 for children <1 was separate. Also we found written procedure for late reporting and for reporting of AEFI. Scoring 5.0.

Figure 2: A graphic presentation of the scores in the five QSI components.



System Design (5.00): We found that the computerised vaccine monitoring system at national level was well functioning, but even though the monthly ordering forms gave information of vaccine wastage from each HU it was not used for monitoring.
Data Reporting and Storage (3.00): Although filing of the EPI data is computerised, we found lack of overview and substantial difficulties in retrieving national and district data. (see "Data Accuracy")

Denominator (3.50): Denominators for child and tetanus immunisation were consistent with the WHO definition and updated annually. But having a new census in 2002 the denominator decreased with 14.7%. Se Figure 3 below.
We found that 7 of the reporting units (59 districts and 3 towns) for the audit year had immunisation coverage > 100%, (all in Manicaland province) the reason for this was uncertain (see "Data Accuracy") , but it might, at least partly, be due to the denominator issue.

Figure 3: The Coherence with Denominators, Coverage Rate and Dropout Rate.

Year	Denominator	Coverage (No of DTP3<1)	Dropout Rate
2002	427.273	56.8 % (242.484)	16.9 %
2003	364.642	63.2 % (230.428)	18.5 %

Monitoring and Evaluation (3.61): The completeness of reporting is monitored (except for the large city's, Harare, Bulawayo and Chitungwiza) and updated country maps on district performance are displayed. Feedback to lower level is given regularly and supervision is monitored. The Current year immunisation coverage and dropout was not displayed on charts or tables. Timeliness of reporting is not monitored but only recorded and as mentioned above vaccine wastage is not monitored so for the JRF reports wastage is only given as an estimate.

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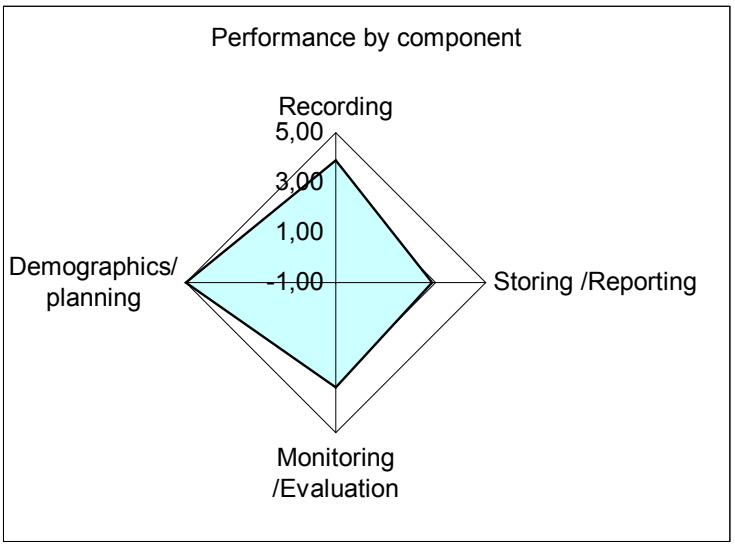
National Level DPT3<1 Reporting: The figures reported in the JRF for 2003 are different from the most recent national tabulation (see the section “Data Accuracy”)

3.2 KEY ISSUES AT DISTRICT LEVEL

Figure 4: Qualify Indicator Score from UMP Health District



The four components of the district QSI are demographics and planning, recording, storing and reporting, and monitoring and evaluation. The QSI per district was 73.7% for Gokwe, 75.7% for UMP, 78.4% for Chimanimani, and 81.6% for Bulilima-Mangwe. The mean district score was 77.4%.

Figure 4 presents the radar graph of the performance of UMP Health District, which is typical of the four districts assessed. The highest mean score was for demographics/planning and the least for storing/reporting.

Demographics/planning: Figure 5 below presents a graphic depiction of the QSI component scores for each district. All four districts scored relatively well in demographics and planning with a mean score of 4.5/5. Each district had an up-to-date micro-plan with realistic targets for both childhood and pregnant women immunisation. The main issues of concern were differences in denominator values between district and national levels, and poor knowledge of the proportion of the target district population that could be reached by each vaccination strategy.

Recording: The mean score for recording practices was 3.61/5. Immunisation forms were of the same format in all health facilities visited and were available in sufficient quantities. A major problem was the absence of up-to-date vaccine management stock registers. Only one district had complete records of DTP vaccine supply/issue for 2003. However, in 2004 only Gokwe does not have an up-to-date vaccine management system. The Auto-disposable syringe stocks are well managed with stock cards or ledgers.

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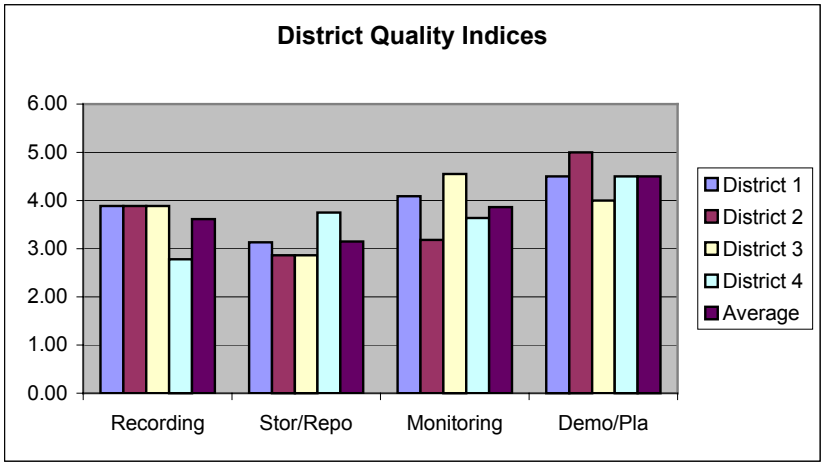
Figure 5: Quality Score Indicator all districts



Storing/reporting: All four districts scored relatively low in storing/reporting, with a mean score of 3.15/5. Health facility reports were processed as promptly as they were received and were well filed. In addition, backup of data is regularly done and there are procedures for dealing with late reports. However, there were no written backup procedures and the date of production or printing was not indicated on charts and tables.

Monitoring/planning: The districts did fairly well in monitoring and evaluation with a mean score of 3.87/5. District programme managers work closely with the health information officers to analyse and interpret the immunization data. There was routine feedback to health facilities and regular meetings with health facility staff during which immunisation are discussed. In addition, each district had an up-to-date monitoring chart for immunisation coverage and drop-out rates, supervision was monitored, and there is a system in place for reporting and individual investigation of adverse events following immunisation. However, the districts did not monitor health facility vaccine wastage and stock-outs.

Quantitative analysis: The four Districts experienced a decrease in the absolute number of children less than one year of age who received DTP3, as shown in Table 1. The percentage decrease for each district, based on district data, was 7.8 % for Bulilima-Mangwe, 17.9 % for UMP, 21.5 % for Chimanimani, and 41.1 % for Gokwe. The utilisation of immunisation services was poor in 2003 with the DTP1-DTP3 drop-out rates worsening between 2002 and 2003 in all districts. For district Gokwe see comments above about possible explanations for the large difference between figures recorded at national and district level for 2002 and 2003.

Table 1: Performance indicators for the 4 districts visited, 2002-2003

District	DTP3<1 in 2002	DTP3<1 in 2003	Percentage improvement	Drop-out rate in 2002	Drop-out in 2003	Percentage improvement
Bulilima-Mangwe	4,393	4,050	-07.8 %	16.1 %	17.9 %	-11.2 %
UMP	2,649	2,176	-17.9 %	20.6 %	26.1 %	-27.7 %
Chimanimani[5]	2,990	2,348	-21.5 %	16.2 %	29.6 %	-82.7 %
Gokwe	11,400	6,710	-41.1 %	27.8 %	42.3 %	-52.2 %

[5] If latest National tabulation was used for the calculations the coverage will be: 124.1% and the drop out rate: -51.4% (DQA workbook: Nat-Imp)

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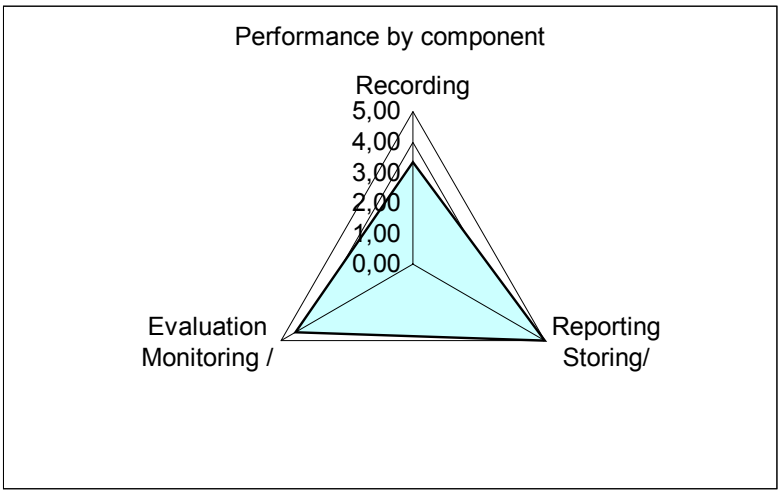
The decreased vaccination activity in 2003 was explained by shortage of staff, interruption of gas delivery, which meant that many HUs could not store vaccines and lack of transport for outreach/mobile activity.

3.4 KEY ISSUES AT HEALTH UNIT LEVEL

The three components of the Health Units QSI are recording, storing and reporting, and monitoring and evaluation. The mean HU QSI per district was 80.9 % for Gokwe, 84.5% for UMP, 80.4 % for Chimanimani, and 82.5 % for Bulilima-Mangwe. The mean HU score was 82.1 %.

Figure 6 below presents the radar graph of the performance of Sowa Health Unit in UMP district, which is typical of the 24 HU assessed.

Figure 6: System Index by Component year 2003, Sowa HU, UMP.



The majority of HU in all four districts had an equal and relatively high quality of both Recording, Monitoring/ Evaluation and especially Storing and Reporting. See figure 6.

The issues we want to point out in each of the three components of the quality index are as follows

Storing /Reporting practises: In all HU the immunisations reports were available, proper filled by date and easy to retrieve. In one HU tallies were missing for 4 month of the audit year. Also we found that all 24 HU were aware of standard operating procedures and reporting of AEFI. The mean score was 5.00/5.

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Recording practice: Although all HU, except one, had tally sheets available and updated, only 19 HU kept TT vaccination registers for pregnant woman and only 8 HU had vaccination registers for children < 1 year. We also found an issue on vaccination stock control, as only 6 of the HU had complete vaccine stock cards for 2003 and only 14 had up to date stock cards. The mean score was 3.76/5.

Monitoring and Evaluation: The majority (19/24) of HU monitored wastage rates, but did not do it according to WHO recommendations. All 24 HU used target for vaccination of children and pregnant woman, 23 HU were aware of new birth in catchment area and all used maps of catchment area but without strategy type displayed. However only the 8 HU with vaccination registers for children <1 traced defaulters and only 18 HU interacted with community regarding immunisation. The mean score was 4.23.

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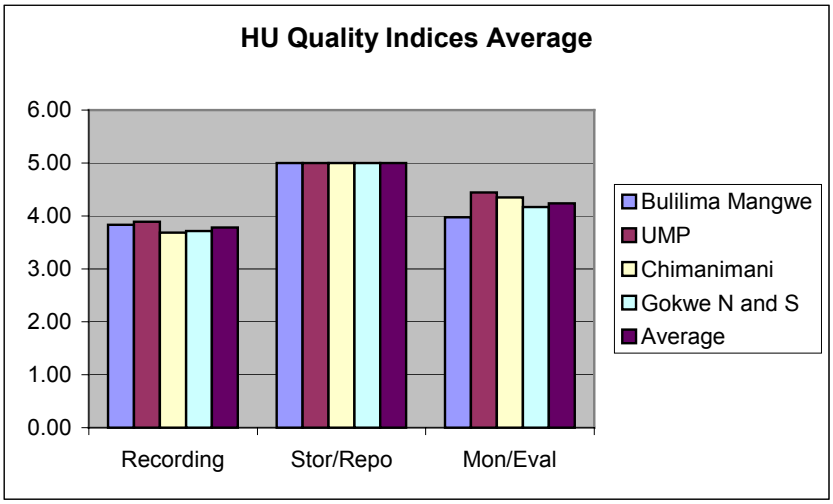
Figure 7: Health Units Quality Indices



3.5CORE INDICATORS

Vaccine Safety

Syringe supply is properly monitored at National level. At the district level three of the four districts had functioning syringe ledgers. At HU level, syringe ledgers are practically non-existent. HUs just maintain a record of receipts of syringes. Even though safety boxes are not registered in any ledger, they were sufficiently available in all HU, and consistently used.
In 2003 conventional disposable syringes were used, AD syringes were only introduced in Zimbabwe in 2004.
AEFI Surveillance: All HU had forms for AEFI surveillance and there were detailed written instructions for using them. However, a revised format is being discussed at the National level to accommodate other relevant information, AEFI's are rare and the reporting format is seldom in use.

Wastage

Wastage rate refers to the proportion of doses of vaccines that are in the system but that will never reach a child. Wastage may be due either to unopened vials that get expired, broken frozen etc. (unopened or system wastage) or doses in opened vials remaining after vaccination sessions, which are no longer usable (administrative wastage). Global wastage refers to the combination of both and is possible to calculate at the HU level only. To estimate vaccine wastage for a given vaccine in a given period of time we need two sets of information: the number of doses actually administered during this period of time and the total number of doses delivered,

Global wastage: In 19 of the selected 24 HU the global wastage rate (opened and unopened) was reported to the district on the monthly ordering forms but only in 6 of the HU the vaccine stock cards were complete for the audit year 2003. At district level none of the 4 districts monitored wastage from HU and only one district (Bulilima) had complete vaccine stock cards for the year 2003.

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Unopened (systemic) wastage: Wastage occurring within the vaccine stores due to losses of unopened vials can only be estimated if such data are registered in the vaccines stock management ledgers. Therefore, as ledgers at districts and national level either do not exist or are incomplete for the audit year, lost and expired vials, could only bee identified for one of the four districts However a 0.2% systemic loss of DTP vaccine at national level was encountered for 2003. In 2002-2003 the Central National vaccine store had experienced a substantial systemic loss of BCG and Measles vaccines due to expired vials.

Table 2: DQA Vaccine Wastage Rates (Weighted Means)

	Bulilima-Mangwe	UMP	Chimanimani	Gokwe S and N
District WR (unopened)	**0.0 %**	**NA**	**NA**	**NA**
Average WR for HUs(opened and unopened) [6]	**34.7 %** (3 of the 6 HU had NA)	**NA** (6 of the 6 HU had NA)	**36.55 %** (2 of the 6 HU had NA)	**14.5 %** (5 of the 6 HU had NA)

National WR (unopened): 0.2 %
Weighted Mean of the 6 HU wastage rates: 31.95 %

Completeness of Reporting

At National level the completeness of reports has increased from 75.3% in year 2002 to 76.3 % for Audit Year 2003. The completeness of reporting was availed for the 59 districts, but could not bee obtained for the 3 major towns reporting independently. The report completeness for the selected districts was of 100% at national level and at district level from 89.7% to 107.9 %. The completeness of reports in Gokwe exceeded 100% because several reports in the integrated reporting system were received at the district from prisons, institutions etc. without EPI information (The average of reports at district for the Selected HU was 99.31%. Comparatively, the report completeness found at HU level was 100 %. This is in accordance with the high standard of storing and reporting practice, found at all HUs and also at district level, where we found that all four districts had procedures for late reporting, updated processing of received reports and proper filing.

Table 3. Report Availability District Average

District	at District Total HU	at District Selected HU	at Selected HU
Bulilima-Mangwe	99.3 %	100 %	100 %
UMP	97.2 %	100 %	100 %
Chimanimani	89.7 %	97.2 %	100 %
Gorkwe N and S	107.9 %	100 %	100 %
Average (only HUs with EPI data)	96.6%	99,3%	100%

[6] 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

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Accuracy of reporting

From HU level to District:
As mentioned a serious problem was encountered in 2003 regarding reporting of DTP vaccinations due to the shift from the combined tetravalent DTP-HBV to monovalent HBV and trivalent DTP. However the problems at HU level are not caused by inaccurate tallying, but uncertainty of where to register the counted vaccinations on the T5 reporting form. In the tetravalent vaccine area DTP vaccinations were not registered separately but as HBV vaccinations and counted accordingly. When the shift to monovalent HBV was fully implemented after 2 months transition period (May-June) the two types of vaccinations were mostly correctly tallied and registered in the correct part of the forms. However the DTP vaccinations on the monthly and annual T5 reports continued in 2003 to be counted as equal to the HBV vaccinations, and that turned out not always to be the case, especially for the two month transition period where the vaccines sometimes were given as combined, sometimes separately.
To get a more accurate count of the DTP vaccinations given in 2003 the auditors were forced to also register the HBV 1, 2 and 3. The problems are illustrated (partly) in figure 8 below.

Figure 8: Reported and Recounted Vaccinations

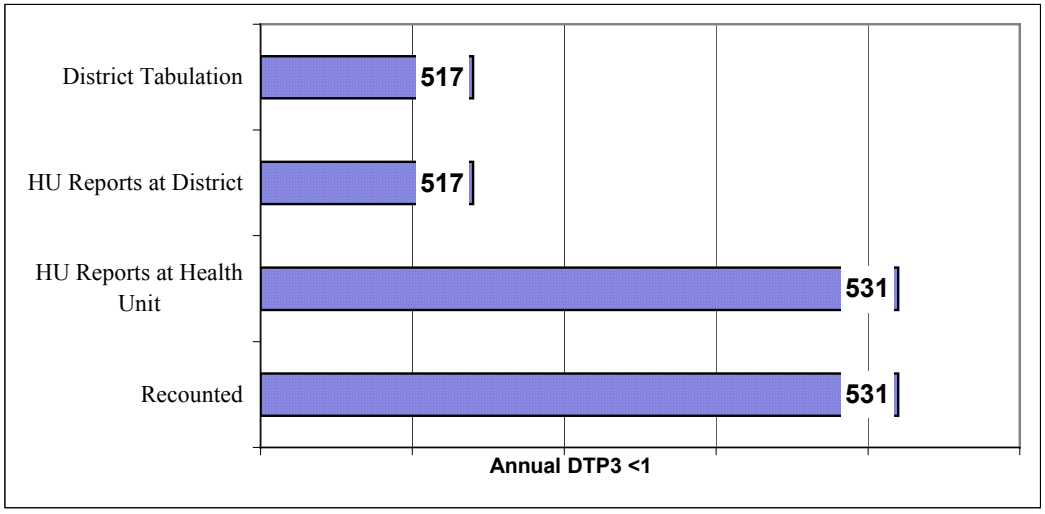

Table 4: DTP + HBV reported figures

Rep period	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Report DTP3<1	0	0	0	0	19	42	40	28	26	38	44	48	531
Report HBV3<1	60	60	43	45	38	45	40	28	26	38	44	48	515

Dependent on how the tallied vaccinations are transferred to the monthly T5 reports and summarised you can get 515 annual DTP3<1 (only HBV3<1), 531 (HBV3<1 until and including May + DTP3<1 from May to Dec.) or even 512 if you have defined the flip-over point to be between May and June.

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(The discrepancy between 515 and 517 is caused by a transcription error from the HU report at the district for September where the report at district indicate 28 instead of the tallied and reported 26)

Similar registration and counting problems were encountered at many of the HUs and must be explained by lack of instructions from higher level on how to manage the counting and reporting in the month's of transition from combined vaccine to monovalent HBV and DTP. Therefore the confusion cannot only be a result of inaccuracy in tallying and compiling data at the HUs. The HUs ability to tally and report properly are demonstrated by often complete coherence between tallied and reported numbers for measles and TT2+ vaccinations.

At the District level there seems to be either no recognition of the problem or a similar confusion on how to tackle the further registration and reporting on the DTP vaccinations which seems to follow the data right to national level.

As a consequence there was at the National EPI and HIS office some confusion on which numbers should represent the monthly DTP3<1 for the 4 districts to be visited. There were the numbers for HBV3<1 which had been used for the official reporting on DTP3<1, but there were in addition inconsistent reporting on DTP3<1. As we could get no clear information at the EPI headquarter on which date (month) the tetravalent HBV-DTP was exchanged with monovalent HBV and trivalent DTP we had only after visiting the HU basis for deciding whether or not these DTP3's should be added to the HBV3<1 numbers to get the true DTP3<1 vaccination activity.

Data consistency

The consistency in reporting between the three reporting levels (National-District-HU) is illustrated in table 5.

Table 5: Annual DTP3<1 reported at different reporting levels for the 4 selected districts

	Bulilima	UMP	Chimanimani	Gokwe
Nat-Samp tab.	3,694	2,271	2,348	10,761
Nat-Inp distr. tab.	3,694	2,271	5,051	10,761
Nat Dist Rep reports	3,730 (9 reports)	2,271 (8 reports)	2,348 (11 reports)	10,761 (11 reports)
Dist tab	4,050	2,176	2,348	6,710
Dist reports	4,057 (12 reports)	2,113 (12 reports)	2,348 (12 reports)	6,762 (12 reports)
Dist samp HU	4,075	2,076	1,977	6,524

The consistency in reporting at the three levels in general must be considered as relatively poor, and it seems as if the National level constitute a particular problem depicted by:

- the large difference in Chimanimani District between the district reports found at the EPI office (Nat Dist Rep) and the latest National tabulation (Nat-Imp distr. tab.),
- the large difference in Gokwe District between National tabulations and the reports found at the District level.

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- and the substantial differences between the National annual reporting of total DTP3<1 vaccinations in Zimbabwe.

The problems at National level with inconsistent reporting for Chimanimani and Gokwe is discussed and partially enlightened in the section "Data Accuracy". However it is the auditors' observation, working with the data management clerks in the computer room, that a contributing explanation for the reporting inconsistencies will be a poor organisation of the computerised filing of the incoming reports, making it difficult to retrieve the data in a consistent manner.
The relatively small inconsistencies in reporting between HU and District level and district tabulation (table 6) can to a certain extent be explained by the confusion in recording/reporting, connected to the replacement of the combined tetravalent HBV-DTP vaccine with monovalent HBV and DTP.

The HBV-DTP issue can explain part of the differences between the National- and District tabulation of the monthly DTP3<1 for the four Districts visited as illustrated

Table 6: National/ District tabulation of monthly DTP3<1

	Jan'03	Feb'03	Mar'03	Apr'03	May'03	Jun'03	Jul'03	Aug'03	Sep'03	Oct'03	Nov'03	Dec'03
D1-nat	294	350	341	441	216	277	433	356	365	263	261	133
D1-dist	294	492	437	484	336	201	433	340	365	257	267	151
D2-nat	244	169	214	207	118	186	202	166	175	106	180	304
D2-dist	244	169	214	207	133	222	137	166	175	106	171	169
D3-nat	201	200	164	138	73	166	206	165	301	210	281	243
D3-dist	201	200	164	138	73	166	206	165	301	210	281	243
D4-nat	1380	1290	1896	1036	936	594	1006	810	499	430	437	447
D4-dist	690	611	967	537	479	297	558	810	499	430	437	447

Only district three (Chimanimani) has 12 monthly reports matching at national and district level. Five months (Aug to Dec) are matching for district four, whereas two months (Jan and June) are double at national level. This could be double data entry. Whatever the explanation could be for the inconsistencies, they illustrate that the data, thoroughly tallied and recorded/reported at HU level, are not properly computer managed in the flow from District to- and at the National level

Other Core Indicators

DTP3 coverage: At national level and in all four selected district the reported DTP3<1 decreased from the year 2002 to 2003. In Bulilima-Mangwe and at national level the DTP3 coverage raised, but in the other three districts the coverage rate dropped, in Gokwe coverage decreased to the very low level of 36.1 %.

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Drop out rates for DTP<1 to DTP3<1 for the audit year 2003 in the four selected districts were 17.9% (Bulilima-Mangwe), 26.1% (UMP), 29,6% (Chimanimani) and 42,3 % (Gokwe N and S). In general the drop-out rates for Zimbabwe's 59 Districts for the audit year were high (see DQA workbook: Nat-Imp.) with 28 of the Districts having drop-outs more than 20%. In Gokwe the drop-out of 42.3% was partly due to the decrease in DTP3<1 from the 10.761 reported at the national office to the 6.710 reported from the District, partly to the observation that only one HU in Gokwe had Child health registers and only two traced defaulters. Only one of the HU did monitor the drop out rates.

Vaccine stock-outs: We were informed that district vaccine stock-out was monitored at provincial level, but no documentation was given. HU stock out was monitored on monthly ordering forms at provincial level.

Action plans: All districts had well-organized micro plans.

4. RECOMMENDATIONS

4.1 PRIORITY RECOMMENDATIONS

- Improve Vaccination coverage for children <1 year
- Introduce stringent data management systems and procedures for capturing, recording, storing and analysing vaccinations data at the national level and to some degree improve the system at district level with inbuilt checks and controls. .
- Strengthening of vaccine stock management
- Inform and train health workers in due time when new EPI procedures are introduced

4.2 OTHER RECOMMENDATIONS

Recording

- Decrease dropout rates by re-introducing vaccination registers for children <1 year

Storing/Reporting

- Create a more easily retrievable filing system at National level
- Produce written procedures for back up of computerised reporting
- Indicate date of production of charts and documents

Monitoring/Evaluation

- Monitor timeliness of reporting at all levels
- Monitor vaccine wastage (systemic and administrative) at all levels
- Monitor vaccine stock-outs at all levels
- Trace defaulters
- Interacting with community (Radio, Newspaper etc.) to increase demand for immunisation services
- Monitor drop-out rates at all levels

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Demographics and planning

- The proportion of children to be vaccinated by strategy should be worked out at all levels

System Design

- Maintain the excellent integrated health information reporting system

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5. ANNEXES

5.1 KEY INFORMANTS

5.2 QUALITY INDEX ANALYSIS TABLE

5.3 CORE INDICATOR TABLES (NATIONAL AND 4 DISTRICTS)

National, district, and HU performance indicators (any additional analysis that is not presented in the body of the report) represented by facility, district and country of the data quality questionnaire.

5.4 BASIC DATA FOR SELECTION OF HU AT DISTRICT LEVEL (GOKWE)

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ANNEX I

KEY INFORMANTS (DISTRICT AND NATIONAL) AND HEALTH UNITS VISITED

Health Units by District

Bulilima - Mangwe	UMP	Chimanimani	Gorkwe N and S
Dingumuzi	Chikuwa	Mutambare	Kana
Ndiweni	Nhakiwa	Nyanyadzi	Chireya
Empandeni	Nyanzou	Chimanimani	Cheziya
Sikhatini	Dindi	Biriviri	Mutora
Lady Baring	Muskwe	Charter	Mtanke
Embakwe	Sowa	Arda Rusitu	Jirindoza

District 1 Bulilima–Mangwe 09.12.2004

Name	Position
J.E.Godzi	Acting Matron
K. Mahlobo	Acting Administrator
S. Mlotshwa	Health information assistant
C Maposa	DNO
J. Makora Nurse	Provincial Nursing Officer
C.T. Dube	MCH nurse
J. Muwunganirwa	Principal Environmental health technician
C. Mushai	EPI Disease Surveillance officer
Dr Kabamba	Acting DMO
Dr. Bondeke	AIDMO

District 2 UMP 10.12.2004

Name	Position
S.Shoko	Acting District Nursing officer
V. Maretekwa	Hospital Matron
M. Mangere	Community Health Sister
A. Kufuka	Health Information Clerk
M.N. Munyoro	NPO /EPI. National Auditor
R. Trap	External Auditor

District 3 Chimanimani 06.12.2004

Name	Position
Sibongile Sifouo	Sister In charge Community
Barbra Dima	Registered General Nurse
Kennedy Nyakwina	Health Information Clerk
M.N. Munyoro	NPO /EPI. National Auditor
R. Trap	External Auditor

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District 4 Gokwe N and S **06.12.2004**	
Name	**Position**
O. Ziro	DNO- Gokwe south
Sv Mashavakure	DNO Gokwe North
P. Nyanoka	Community Health Nurse Gokwe North
J.Moyo	Health Information Assistant
J. Chikunya	Sister in Charge Community Gokwe North
DT Matiyenga	Sister in charge Community
D. Mukotsi	Principal Environmental Health Officer
E.L.Dube	District Environmental Health officer
A.P. Chikara	Clinical officer
J. Chijuwa	Sister in charge
H.A.Gusengo	District health services administrator

National Level **2 – 3. 12. 2004**	
Name	**Position**
Dr.D. G. Dhlakama	Director Technical services
Ms. M. Nyandoro	Reproductive Health Coordinator
MRS M. Kamypota	National EPI Manager
K. Chindedza	EPI Manager Logistician
S. Chamburutca	EPI Logistician
M.N. Munyoro	National Auditor
J. Katiyo	National Auditor
K. Wallevik	External Auditor
R. Trap	External Auditor
C. Shey Wiysonge	External Auditor
Debriefing 17.12.2004	
Name	**Position**
Dr. E Xaba	Secretary for Health and CW
M. Nyandoro	Rh and Child Coordinator
D. MacDonald	Chairperson ICC
M. Kamupota	EPI Maniger
M. Munyoro	NPO, National Auditor
K. Chindedza	Logistician
S. Chamburuka	Logistician
J. Katiyo	HIO National Auditor
R. Makunike	MPN (WHO)
R. Monasch	Programme Coordinator (UNICEF)
Dr. J Ortiz	Head of HNC (UNICEF)
R.Trap	External auditor
K.Wallevik	External auditor
C. Shey Wiysonge	External auditor

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ANNEX II

CORE INDICATORS TABLES

Core indicators at National level

	JRF	Reported at time of audit
Districts with DPT3<1 coverage > 80%	10%	21%
Districts with measles<1 coverage > 90%	6 %	6 %
Drop-out rate< 10 %	24%	13 %
Type of syringes	Non AD Syringes	Non AD Syringes
Districts with AD syringes	0%	0% (100 % 2004)
Introduction HVB	1999	1999
Introduction Hib	Na	Na
Vaccine wastage DPT	Estimate 7 %	0.2 % (systemic)
Wastage rate HVB	0 %	0%
Wastage rate Hib	Na	Na
Interruption in vaccine supply 2003		No
Number of Districts with interruption in vaccine supply 2003	14	Several, not with number
% District disease surveillance reports received/expected	100 %	65 %
% District coverage reports received/expected		76.3%
% District coverage reports received on time		Na
Number of District supervised at least once in 2003		All
Number of Districts which supervised all HUs in 2003	Na	All
Number of Districts with microplans including routine immunisation	59	All

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Core indicators at District level

		Bulilima-Mangwe	UMP	Chimanimani	Gokwe N and S
District DPT3 coverage	At national	57.3 %	63.3 %	124.1 %	53.8 %
	At District	62.4 %	62.0 %	63.0 %	36.1 %
District measles coverage	At national[7]				
	At District	61.8 %	70.5 %	80.7 %	51.4 %
District Drop-out DPT1-3[8]	At national	20.6 %	21.0 %	-51.4 %	39.7 %
	At District	17.9 %	26.1 %	29.6 %	42.3 %
Syringes supplied in 2003	At national	Na	Na	Na	Na
	At District	Na	Na	Na	Na
Number of District coverage reports received/sent	At national	12/12	12/12	12/12	12/12
	At District	12/12	12/12	12/12	12/12
Number of coverage reports received on time/sent on time	At national	Na	Na	Na	Na
	At District	Na	Na	Na	Na
Number of HU coverage reports received/sent	At national				
	At District	12/12	12/12	12/12	45/49
Number of HU reports received/sent on time	At national				
	At District	Na	Na	Na	45/49
District vaccine stock out	At national	Na	Na	Na	Na
	At District	No	No	Yes	No
Has the District been supervised by higher level on 2003	At national	Yes	Yes	Yes	Yes
	At District	Yes	Yes	Yes	Yes
Has the District been able to supervise all HUs in 2003	At national	All	All	All	All
	At District	Yes	Yes	No [9]	Yes
Did the District have a microplan for 2002	At national	Yes	Yes	Yes	Yes
	At District	Yes	Yes	Yes	Yes

[7] Information not collected at national level.
[8] Unable to estimate due to the fact that the HMIS does not routinely collect DPT1 data.
[9] 25% have been visited.

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ANNEX III

QUALITY INDEX ANALYSIS TABLE

District Quality Indices and District average (over 5)

	Recording	Stor/Repo	Monitoring	Demo/Pla
Bulilima-Mangwe	3.89	3.13	4.09	4.5
UMP	3.89	2.86	2.18	5.0
Chimanimani	3,89	2.86	4.55	4.0
Gokwe	2.78	3.75	3.64	4.5
District Average	3.61	3.15	3.87	4.5

HU Quality indices and HU average (over 5)

	Bulilima-Mongwe				UMP		
	Record.	Stor/Rep.	Mon/Eval		Recording	Stor/Repo	Mon/Eval
Dingumuzi	5.0	5.0	3.33	Chikuwa	4.33	5.0	5.0
Ndiweni	3.0	5.0	4.44	Nhakiwa	3.33	5.0	3.89
Empandeni	3.33	5.0	3.89	Nyanzou	4.67	5.0	5.0
Sikhatini	4.33	5.0	5.0	Dindi	3.0	5.0	4.44
Lady Baring	3.67	5.0	3.33	Muskwe	4.67	5.0	3.89
Embakwe	3.67	5.0	3.87	Sowa	3.33	5.0	4.44
HU average	**3.83**	5.0	**3.98**	**HU average**	**3.88**	5.0	**4.44**

	Chimanimani				Gokwe N and S		
	Record.	Stor/Rep.	Mon/Eval		Recording	Stor/Repo	Mon/Eval
Mutambare	4.33	5.0	5.0	Kana	3.93	5.0	5.0
Nyanzyazi	3.33	5.0	4.44	Chireya	3.67	5.0	4.44
Chimanimani	4.0	5.0	4.44	Cheziya	3.0	5.0	3.89
Biriviri	2.67	5.0	3.89	Mutora	3.33	5.0	3.89
Charter	4.44	5.0	4.44	Mtanke	4.67	5.0	5.0
Arda Rusitu	3.33	5.0	3.89	Jirindoza	3.33	5.0	2.78
HU average	**3.68**	5.0	**4.35**	**HU average**	**3.66**	5.0	**4.16**

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Annex IV
Table of selection of HU, based on DTP / HBV

GOKWE			
	HBV3	DTP3	HBV3+DTP3
HEALTH FACILITY	2003	2003	2003
CHEMAHORORO CLINIC	93	7	100
Cheziya Clinic	499	300	799
CHIREYA HOSPITAL	739	409	1148
Chitave Clinic	79	28	107
DENDA CLINIC	37	39	76
GAWA CLINIC	23	19	42
GOKWE HOSPITAL	886	532	1418
GOREDEMA CLINIC	83	1	84
GUMUNYU CLINIC	52	39	91
GWANYIKA R.H.C.	26	0	26
HUCHU	75	61	136
JIRI/NDOZA CLINIC	3	22	25
KADZIDIRIRE R.H.C.	31	11	42
KAHOBO CLINIC	9	16	25
KANA HOSPITAL	884	444	1328
KURIMA CLINIC	49	50	99
KUWIRIRANA CLINIC	207	27	234
MADZIVAZVIDO R.H.C.	94	0	94
MANGIDI CLINIC	59	31	90
MANOTI CLINIC	213	111	324
MANYONI CLINIC	60	39	99
MASHAME R.H.C.	21	0	21
MASUKA CLINIC	12	13	25
MATETA R.H.C.	154	35	189
MOKOKA CLINIC	19	0	19
MSALA CLINIC	19	14	33
MTANKE CLINIC	82	75	157
MUSADZI R.H.C.	105	70	175
MUSITA CLINIC	84	40	124
MUTORA HOSPITAL	453	199	652
NENYUNGA CLINIC	0	2	2
NORAH R.H.C.	10	10	20
NYAJE R.H.C.	73	15	88
NYAMHUNGA CLINIC	31	17	48
RUBATSIRO	62	37	99
SAI CLINIC	4	7	11
SESSAMI CLINIC	567	278	845
SIMCHEMBU R.H.C.	90	58	148

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SVISVI CLINIC	129	87	216
TONGWE CLINIC	159	108	267
TSUNGAI R.H.C.	83	27	110
Zhamba Clinic	120	0	120
ZHOMBA CLINIC	46	20	66
ZRP Camp Clinic	0	0	0
Total for district	6524	3298	9822
Annually reported at Nat. level.	10761	3922	

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