GAVI

Immunisation Data Quality Audit (DQA)

Nigeria

January – February 2004

AUDIT YEAR 2002

Prepared by: The LATH Consortium*

On behalf of: GAVI (Global Alliance for Vaccines and Immunisation)

12 February 2004

*Liverpool Associates in Tropical Health (LATH)

Euro Health Group (EHG)

Deloitte and Touche Tohmatsu, Emerging Markets Group

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1. Introduction

The Data Quality Audit (DQA) is part of the Global Alliance for Vaccines and Immunisation (GAVI) programme. The programme is 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 or agreement between the recounted and reported DPT3 doses in under 1s (DPT3<1). In 2003, the DQA was performed in up to 15 countries.

Participation in the DQA is aimed to 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. The explicit goal of the DQA is to build capacities in the participating countries.

This particular DQA (audit year 2002) was undertaken in Nigeria, from 26 January – 11 February 2004. The international and internal auditors from the Federal NPI carried out the DQA. The external auditors were Mr. Maxwell Moyo and Dr. Xavier Bosch-Capblanch, and the national auditors, Mr. OA Akinyele (Deputy Director of Accounts, NPI Abuja) and Mr. Henry Osawe (Assistant Director of Finance, NPI Abuja). The Team assessed the quality of EPI data and systems and audited the reported number of doses of DPT3<1 administered in the year 2002, through visits to a random sample of health care administrations, including:

- The Federal NPI
- Four District-level administrations
- Twenty-four health units

The team worked at the national level of National Programme on Immunisation (NPI) before visiting the Local Government Authorities (LGAs) and health units (HU) levels.

The findings and conclusions of this DQA are included in this report and they were discussed in a debriefing meeting held on 10 February 2004 with the Chief Executive and staff of the NPI.

2. Summary of findings and conclusions

Nigeria's immunisation reporting system has to respond to the needs of the NHMIS, the National Programme on Immunisation (NPI) as well as other programmes and stakeholders. This has resulted in duplicity of forms and pathways of reporting with an overall deterioration in recording and reporting practices. These factors translate to relatively poor Quality of the System Index (QSI) score:

- 51% at National level,
- 43% average for the 4 LGAs and
- 37% average for the 24 HUs visited.

Due to lack of DTP3<1 data being available at the National level, it was not possible to calculate the verification factor. As a proxy, an agreement (accuracy) factor was calculated based on a comparison between recounted and reported DTP3<1 values at LGA/HU level. This was relatively low at around

- 50%, in three of the four LGAs, and
- 93% in the 4th LGA.

Inconsistencies were also found between DTP3 <1 value reported in the JRF and vaccines received. However, NHMIS, NPI and other actors in the country are well aware of these difficulties, and are currently tabling many of these issues for discussion in the very near future.

Coverage estimates at national level are low, consistently below 30% and, though reporting is far from complete, this correlates well with the observed long-standing problems in stock-outs of vaccines and breaks in the cold chain. Injection safety procedures were also strikingly poor.

At HU level, immunisations are recorded in child health books or in tally sheets. The former often had incomplete information (e.g. lack of children's ages) and tally sheets were rarely stored. Half of the HU reports could not be found at HU level. However, LGA reports were generally available at LGA level. State reporting to the national level was reported to be poor, which partly explains the low national DPT3 coverage figures.

Although data is collected for tracking defaulters, estimation of dropout rates and vaccine wastage, this information was not found. Data for planning and assessment of performance, e.g. catchment population, number of expected pregnant women and under-1s were generally not available at HU and LGA levels. No evidence of immunisation targets being set was found at any level. This was explained by a lack of staff training and the relative disconnection between LGA M&E offices and HUs.

The conclusion is that the following key issues that need to be addressed -

1. Clarification of the reporting system and standardisation of all reporting formats. All forms, reports, and guidelines should be available at all levels of the system.
2. The reporting system should be improved to monitor completeness and timeliness, with country-wide procedures to deal with late reporting. Monitoring and evaluation has to be strengthened to use existing data.
3. Vaccine safety procedures and stock-outs of vaccines need to be addressed urgently.
4. The weakness of the cold chain at LGA and HU levels needs to be urgently addressed.

5. Underlying these principle recommendations is the need for extensive training to ensure that staff
   a) are aware and able to record, report, analyse and use data at each level of the system, and
   b) are able to improve injection safety.

3. Acknowledgements

The audit team is very grateful for the full co-operation and support provided by the counterparts and key stakeholders throughout the audit mission. In particular, the team wish to thank –

Dr. A. Awosika, Chief Executive of NPI and all of his staff

Dr. Abdulai Tinorgah, Chief SECC UNICEF, and his staff

4. Background

4.1 National context

Nigerian official country estimates show that DPT3 coverage in Nigeria increased steadily between 1984 (5%) and 1990 (56%). Since then this coverage has fluctuated between 26 and 39%[1]. The last available country estimate of DPT3 coverage is for 2000: 34% (approximately 1.6 million doses administered to a target population of 4.6 million surviving infants).

Administratively, the health system is divided into 36 states and 774 LGAs. The administrative system is organised in three levels: the National, the State, and the LGA levels. Reporting information from HUs is compiled following the inverse pathway: from HU up to the National level.

Immunization performance reporting is included in the routine NHMIS, which relies on monthly reports from HUs to LGAs, from LGAs to State Level, and quarterly reports to the National level.

4.2 Objectives of this study

The goal of the DQA is to assure that management of immunisation services and the allocation of GAVI funding for immunisation services are based on sound and accurate data. The specific objectives of the DQA are to-

- Assess the quality, accuracy, timeliness and completeness of administrative reporting systems, and to

[1] WHO. Vaccines and Biologicals. WHO Vaccine-preventable diseases: monitoring system. 2002 Global Summary. WHO, Geneva, 2002.

- Audit the reported DTP3 vaccinations given to children under one year of age (DTP3<1) in the calendar year 2002 and then estimate the National Verification factor (recounted/reported) for use in the allocation of GAVI Fund shares.

4.3 Our approach

A mixed team of international and national auditors are part of our methodology. It is beneficial if the national auditors are from the national level EPI programme, so that they can learn how the whole tool is used and so that they will be able to understand and implement the changes required. There is also a capacity building aspect expected from the whole process, which GAVI encourage.

The chosen team of four experts worked at the national level of the National Programme on Immunisation (NPI) before visiting Local Government Authorities (LGAs) and health unit (HU) levels. This enabled the team to examine strategies and practices at the national level and to compare and contrast their impact at local level.

A random sampling of four LGAs was done in advance of the start of the audit. The sampling was chosen on the basis of population figures for each LGA due to the lack of DPT3<1 figures. The following LGAs were visited:

- Obio/Akpor LGA (Rivers State),
- Ikpoba Okha LGA (Edo State),
- Yewa South LGA (Ogun State) and
- Ibi LGA (Taraba State).

Six Health Units (HUs) were randomly chosen in each LGA plus one additional "reserve" HU, to be visited in the event that one of the first six was unreachable. This selection was based on the HUs' DPT3<1 found in the LGAs annual tabulations. In two LGAs, the reserve HU was used.

To conduct the DQA the standard method previously used on other countries was applied at national, LGA and health unit levels. This method consists of –

1. A set of questions concerning –

1. the functioning of the EPI programme,
2. HMIS and
3. vaccines stock management at each level;

2. A set of questions specific for each level –

- to estimate the quality scores, and

3. A recounting of DPT3 doses –

- Administered to under 1s during the audit year from the tally sheets present at health unit level.

Two of the four selected LGAs were relatively urban:

- Ikpoba Okpa LGA (380,000 inhabitants and 10,000 under 1s) and
- Obio/Akpor LGA (350,000 inhabitants and 15,000 under 1s), while
- Yewa South LGA (165,000 inhabitants, with 6,500 under 1s) and
- Ibi (145,000 inhabitants and 4,500 under 1s) were predominantly rural.

All but Ibi were readily accessible by plane from Abuja and then by road.

Ibi had to be reached by road in a whole day journey, including the crossing of the Makurdi river. The LGAs headquarters are located in Ibi, east of the river, while the majority of HUs are west of the river. Therefore, supplies and supervision are only available by crossing the river. Although the LGA manages a ferry there is a clear accessibility problem.

On arrival at national level, NPI state managers, the National strategic cold store responsible and the national Monitoring and Evaluation officer were in a training workshop.

Contacts were made with the UNICEF and WHO national offices in Abuja and the NPI acting officer, since the NPI chief executive was on leave. Much of the work at national level was conducted with the help of three accounting officers of the NPI in Abuja, while only a brief meeting could be held with the Data manager of the Monitoring and Evaluation officer in the NPI.

The team dedicated three days at the national level and 12 days at the LGA and HU levels, including in-country travel. A national holiday, which occurred on the second Monday of the week, was an unforeseen constraint that obliged the teams to finish two LGAs before that event.

A debriefing meeting was organised by the NPI and held in the NPI headquarters on Tuesday 10 February 2004 with staff from the NPI. No other stakeholders attended. The meeting was chaired by the NPI Chief Executive. A comprehensive list of persons met during the DQA including the debriefing is at Annex 1 of this report.

5. National level - Findings

5.1 HMIS

At state level information is sent to both the HMIS at the Federal Ministry of Health (FMOH) and to the NPI by the NPI State Managers. The HMIS is a well-designed system devised in line with the principles to establish a core National Minimum Data sets that is established and comparable across all health facilities. Immunization data sets are fully captured in the HMIS at all levels in the system. Information reported includes the number of BCG, OPV0, OPV1, OPV2, OPV3, DPT1, DPT2, DPT3, measles, yellow fever (for 0-11 and 12-24 months ages groups), TT2 and TT2+ immunizations and vaccines vial used.

State reports at national level are usually incomplete and contain LGA data. However, in the debriefing with NPI on 10 February 2004 it was indicated that NPI at national level is not supposed to have any LGA data[2]. The NPI does not produce any standard reporting forms, but gets the information from NMIH forms and reports. The Federal MOH is the only agency that can release information. However, data found at the NPI headquarters could not be found at the FMOH.

The National Health Management Information System has all the necessary forms and guidelines regarding data collection for all data sets, including number of vaccines vials used. There is a Monitoring and Evaluation Officer at the state level, and each LGA is responsible

[2] This is why the National tabulation for LGAs data field is left empty in the DQA workbook. In retrospect the provincial (State) model for sampling should have been applied in Nigeria; however based on the information supplied from NPI, district (LGA) model was applied.

for the collation of reports, making summaries, which are sent to the Federal Ministry of Health. At national level, no DPT3 data could be retrieved from the NHMIS.

There were different interpretations in relation to the current reporting system. There is a lack of clarity as to whether there is a single system (NHMIS) from where data is retrieved by the different programmes, or whether there are several pathways for reporting.

Despite the existence of a robust integrated HMIS that includes immunization data, there is a strong indication that NPI wants to maintain a parallel system for reporting immunization data. Compounding the problem are the limited resources available at the peripheral level whereby HU staff are lacking stationery to the extent that some LGAs do not have a single recording and reporting form. It was clear during the visit that HMIS recording/ reporting forms have not rolled out to the HU level in two LGAs thereby forcing staff in those LGAs to develop their own reporting forms.

The NPI has taken efforts to address immunization data reporting system, which should impact on the accuracy of the reports. Amongst the NPI strategies adopted are:

- Improved linkage with M&E Officers in the states and LGAs. The M&E Officers are also HMIS focal points.
- Collaboration with private health facilities providing immunization at all levels.
- Use of simple monitoring indicators and tools.
- Training of M&E Officers in immunization data management.
- Supportive supervision to strengthen the capacity of NPI state desk officers regularly to obtain records.

5.2 National Level DPT3<1 Reporting:

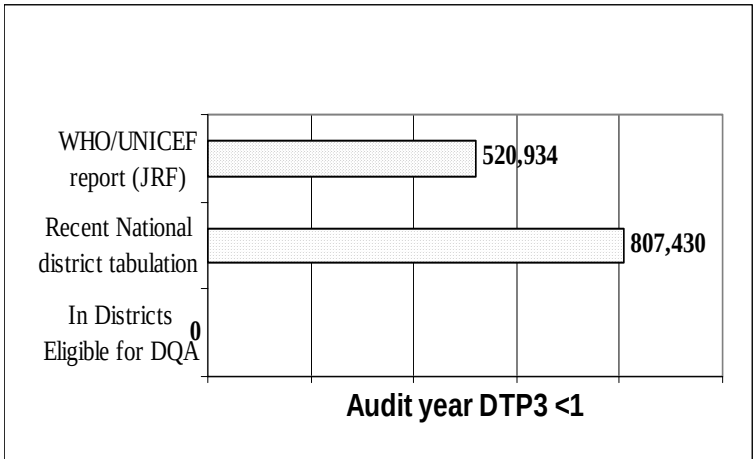
Figure 1. Number of under 1s and DPT3 doses from different sources (2002)

2002	JRF	National tabulation	Difference
Under 1	5,054,374	4,712,502	-341,872
DPT3	520,934	807,430	286,496
Coverage	10.3%	17.1%	-6.8%

Differences in Under-1s could not be explained. Differences in DPT3 were attributed to late reporting. National tabulation is based on State reports.

At national level, the consistency of the total national DPT3<1 in 2002 reported by different sources shows a big difference between the national tabulation (based on state data) and the data presented in the JRF (see Figure 1). These differences have been justified by late reporting. The auditors could not establish the source of data for the JRF.

Figure 2. Reported DPT3 doses in under 1s for the year 2002 according to JRF and state tabulations.



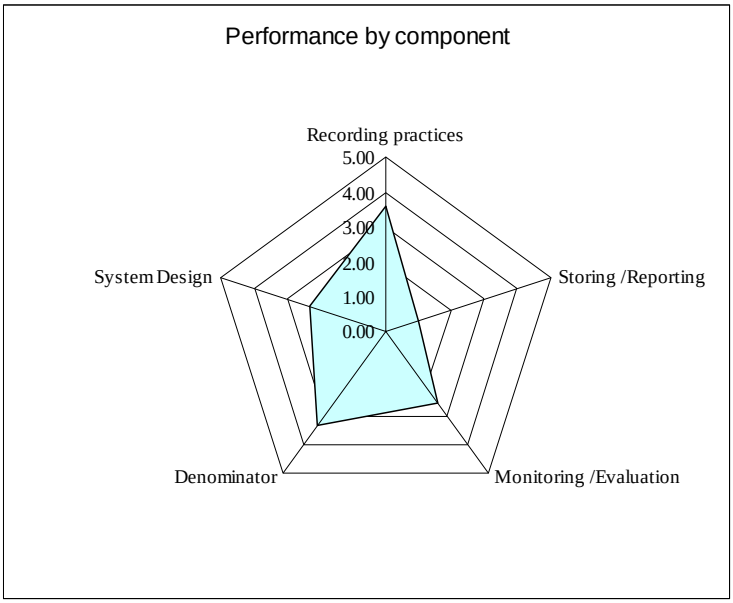
5.3 Quality system index

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 LGA visited, as well as for the national level. The team noted that the national QSI is not a composite of the scores at all other levels, but rather a score for findings at that very level only. At the national level the QSI is composed of scores in the areas of –

- Recording,
- Reporting and storage of data,
- Monitoring and evaluation,
- Demographics and planning, and
- System design.

The national level QSI for audit year 2002 was 51%. Figure 2 below is a graphic presentation of the scores in the five components. Areas that were particularly strong include the recording of vaccine stock data including batch number and expiry dates and the availability of denominators for the under one population and pregnant women. Listed below are some areas for improvement in each of the QSI components.

Figure 3. Scores of quality indicators for the national level



Recording: At the national vaccine store, the stock control system was complete. Staff at the national store did record all receipts and issues of all immunization supplies that included vaccines and syringes which allowed monitoring receipts, issues, and wastage of these supplies.

Monitoring and Evaluation: Despite claims from national level to possessing data for the audit year, retrieval of requested data was not easy. Use of data to monitor performance was minimal with no charts or tables to support evidence of data use. The M&E section of NPI claimed to be in direct link with the HMIS office (and sometime conducted round table meetings), however, the NPI office seem to get their information directly from the NPI state managers as opposed to using the NHMIS.

Denominators: Populations of pregnant women and children under one were 5,150,480 and 4,712,502 respectively. However, denominators were not used at the LGA and HU levels to estimate coverage. These figures differ from the data provided in the JRF which were 6,304,750 and 5,054,374 respectively. It was not possible to check whether the same denominators were used by other programmes.

Storing-Reporting: There seems to be some degree of computerization of data, since the NPI provided the auditors with two spread-sheets (Microsoft Excel) with partial 2001 and 2002 data. However, there are no back-up procedures and there was no clear idea of who had what information and had access to it.

National vaccine stock: Vaccines are supplied from the National Strategic Cold Store. The term “Strategic” refers to the strategic location of the stores, close to the International Airport. The provision system was described as “push and pool”: vaccines are “pushed” from the national stores to one of the six Zonal Stores, where there is a Zonal coordinator and a Cold Chain Officer. From there, they are sent to the States and then to the LGAs. LGAs deliver vaccines on demand to the HUs. Vaccines purchases were based on forecasts that take into account target populations. This is a “bottom-up” exercise starting with the submission of target populations by the LGAs. States and “zones” sent quarterly reports of vaccine consumptions to the national level.

The cold chain equipment for the storage of vaccines is extremely good, with 8 chambers of 20,000 litres (refrigerators and freezers), good power supply from the national grid and two stand-by generators. There is a ledger book recording entries and exits of vaccines and bin cards for each antigen. The system is being computerized. Vaccines and receipts could be traced and the ledger book was complete and updated. Expiry dates and batch numbers were also recorded. Recording of syringes was also done.

It was indicated that there was no external supply of vaccines during 2002. However, in the JRF it was indicated that 12,003,192 DPT doses were received. In the debriefing, it was

clarified that those doses were in fact received in 2001 and not used and this was the reason why they were included as 2002 doses.

6. Local Government level - findings

The primary immunization records are usually the child health books used for static activities. However, *ad hoc* tally sheets (made from normal blank paper sheets) and 5HF forms (PHC Developing Agency) are used. Outreach immunization is recorded erratically in *ad hoc* tally sheets, which may be transferred to the child health books. Child health books generally contain TT immunizations too. These books are used to compile the monthly reports at HU level, which are supposed to be sent to the LGA before the 5th of the following month. HUs are expected to keep a copy of the monthly returns.

The agreement (accuracy) indicator for every LGA expresses the absolute difference between recounted and reported DPT3 doses.

Agreement was –

- 42% Ikpoba Okpa LGA,
- 93% Obio/Akpor LGA,
- 53% Yewa South LGA and
- 47% Ibi LGA

respectively.

Table 1 presents DPT3<1 performance figures for Ikpoba Okha, LGA.

Table 1. Reported DPT3<1 2002, according to different sources, for Ikpoba Okha LGA

DPT3<1, 2002	Ikpoba Okha
National tabulation	0
LGA reports found at national level	4,046
LGAs own tabulation	3,906
LGAs reports found at LGA	3,856
HUs eligible for sampling	3,028

The first figure reflects the impossibility for the auditors to retrieve a national tabulation. The national level is not supposed to gather data from the LGAs; however, State reports with LGA data were found at national level. LGA and HU figures are quite close and differences can be explained in some cases by evident addition mistakes or late reporting.

LGAs tabulations were very similar to the DPT3<1 doses retrieved from the HUs reports found at LGA level. Tabulations showed slightly more DPT3<1 doses than those found in the reports in three of the four LGAs. This was due to slight, but evident, addition mistakes in the tabulations, and in relation to the loses of reports: of the 142 HUs reports found at HU level, 6 (4%) were not available at LGA level, corresponding, approximately to 3.2% of doses. The case of Ibi LGA could be explained by late reporting that was not incorporated into the LGA tabulation.

Table 2. DPT3 in under 1s doses according to LGA tabulations and reports at the LGA level (2002)

	LGA tabulation	Reports at LGA	Difference
Obio/Akpor	7,923	7,479	5.6%
Ikpoba Okha	3,906	3,856	1.3%
Yewa South	1,409	1,409	0.0%
Ibi	823	870	-5.7%
Total	**14,061**	**13,614**	**3.2%**

The Quality of System Indexes (QSI) for the four LGAs were:

- Obio/Akpor 45%
- Ikpoba Okha 61%
- Yewa South 50% and
- Ibi 16%

The four components of the LGA level QSI are –

- Recording,
- Storing/Reporting,
- Monitoring/Evaluation, and
- Demographics/Planning.

The figure below presents a “spider graph” of the performance of an average LGA (Yewa South). Figure 5 plots the quality scores for the four categories and the four LGAs.

Figure 4. Scores of quality indicators for Yewa South LGA

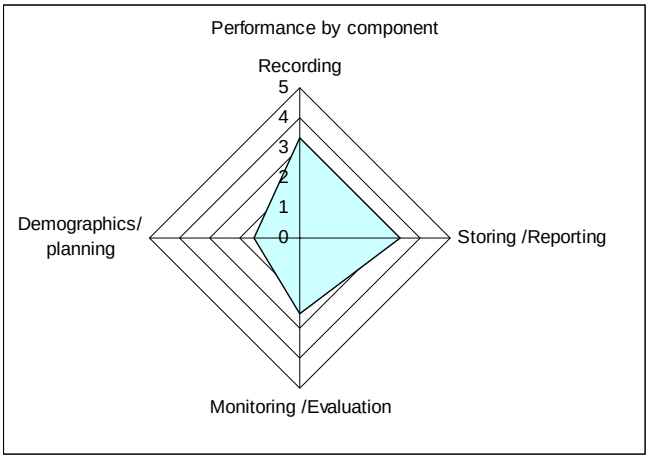
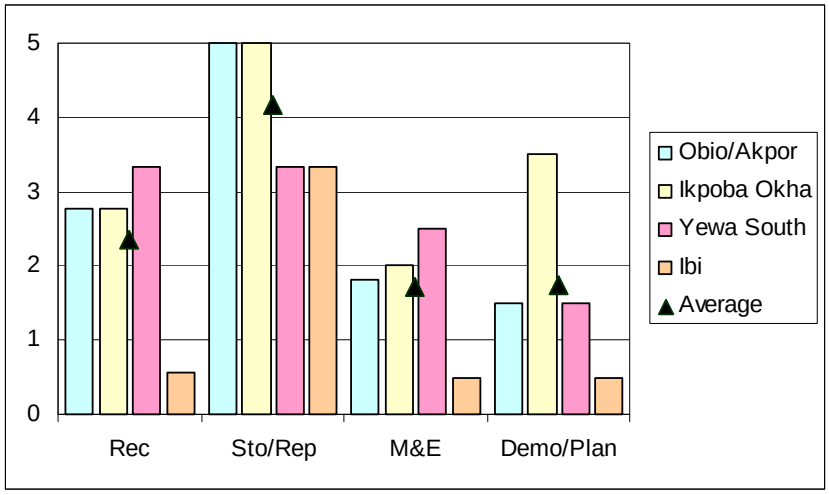

Performance by component
Recording
5
4
3
2
1
0
Demographics/
planning
Storing /Reporting
Monitoring /Evaluation

Figure 5. Scores of quality indicators for the four sampled LGAs



Recording: recording showed a relatively homogeneous score in all LGAs except in Ibi. This was the result of the following:

- All LGAs but Ibi had good recording practices in the vaccine stock management.
- In all LGAs but Ibi the reports from HUs had the same format (and in 2 LGAs the HUs individual reporting forms were of different format for the audit year).

However in all LGAs there were no stock records of syringes, immunization forms were insufficient and none of the LGAs wrote the date when reports from the HUs were received.

Demographics/Planning: this category had one of the lowest scores (average for the 4 LGAs of 1.8 over 5). The only question that had a positive score in the four LGAs was the presence of a LGA map. Three LGAs were able to produce a target number of children for the current year[6] and only two LGAs produced a target number of pregnant women to be vaccinated

Only one LGA was able to produce denominators. Although it was reported that this information was made available by the national level to all LGAs, we could not see this in the field. Denominators in the audit year were different from those of previous years (for infants and for pregnant women). The auditors noted a lack of clear guidelines in the use of denominators and in the reporting of indicators that use them (e.g. vaccine coverage).

In all four LGAs there are static and outreach immunisations strategies, however only one LGA was able to indicate the proportion of children to be reached by each strategy which was based on a theoretical estimation. Finally, only one LGA had a micro-plan for the audit year.

Storing/Reporting: this category is by far the best of the four regarding the quality of the system index, with an average score (4.2); almost twice the following category score (Recording 2.4). However, 5 out of the 8 questions were not applicable because they referred to computerised systems which were not available in any of the LGAs.

In general, recent reports have been compiled and sent (4 out of 4 LGAs), measures are taken for late reporting (3 out of 4) and HU reports are arranged in a logical manner (3 out of

[6] Given that this DQA was conducted in 2004 but auditing 2002, it was considered both acceptable to have a target for 2003 or 2004.

4). National guidelines for late reporting could not be found. However, LGAs send late reports to the next level either separately or by including the figures with the following monthly report. In some cases, disciplinary measures were reported to be taken in case of late reporting.

Monitoring/Evaluation: this is the other weak area of the system (LGAs average score of 1.8 out of 5). Immunisation coverage was only monitored in 1 LGA; the same LGA that produced tables or charts on immunisation for the audit year. Completeness of reporting was monitored in two LGAs and only 1 LGA monitored report timeliness.

Drop-out rates, although they could be easily estimated, were not calculated in any of the LGAs. Vaccine wastage could also be monitored, but again none of the LGAs was doing it. Two LGAs were also able to monitor vaccine stock-outs.

Despite the fact that all four LGAs had regular meetings with health workers concerning immunisation, only two had supervision plans and one provided routine feedback to the HUs.

There is apparently no official system or guideline to report AEFI for routine immunisation.

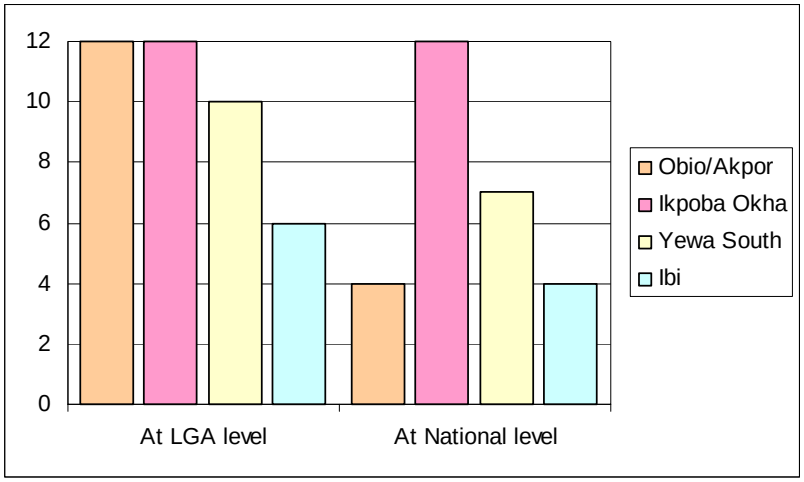
LGAs complained of lack of resources to allow them to carry on their activities, mainly transport (including a motor boat in Ibi state to access HUs near the river in the rainy season).

Notes on different reporting and vaccine supply pathways

In one LGAs it was found that governmental HUs were reporting and receiving vaccines from the LGAs headquarters, while private HUs were collecting vaccines from the Hospital Management Board cold stores and reporting to them (though no reports could be found in the HMB). In the debriefing it was stated that in some places this was an arrangement made due to lack of LGA cold chain facilities; then LGA vaccines were stored in the HMB or other cold stores available in the state. However, this was not the case observed in Obio/Akpor. The NPI manager at LGA level, in fact, complained of this duplicity.

Two LGAs had 100% completeness of LGA reports at LGA level; another one could retrieve 10 of 12 reports, and the fourth one only a half of them. This was most likely due to poor filing of reports at LGA level. In Ibi LGA that was missing half of their reports they had a letter from State level certifying that all reports for 2002 had been sent.

Figure 6. LGA Reports completeness at national and LGA levels.



At national level, however, completeness was lower ranging from 33% to 100%. However at the debriefing it was confirmed that the national level is not supposed to gather LGA data.

Other Core Indicators

DPT3 coverage at national level was not available by LGA but rather by state. Similarly the LGAs did not have the figures of their coverage

Drop out rates for DTP1<1 to DTP3<1 for the four LGAs ranged from 9.5% to 45.1 % in the audit year (2002). The full picture for the audit year and the year preceding is as follows:

Figure 7. Drop-out rates for the four LGAs in 2001 and 2002

LGA	2001	2002
Obio/Akpor	20.4%	9.5%
Ikpoba Okha	29.4%	16.5%
Yewa South	40.2%	20.4%
Ibi	-1.1%	45.1%

However, it should be noted that drop-out rates do not reflect a complete picture due to incomplete reports at the LGA. Drop-out rates for the HUs could only be calculated at thirteen HUs due to lack of reports and ranged from -27.3% to 55.2%. Negative drop-out rates suggest inconsistencies in the recording and reporting of data although in one HU it was argued that at that period children from other LGAs were coming for immunization.

Reports sent: The LGA EPI Coordinators compiled monthly reports, which were sent to the State NPI Coordinator. The report had a list of all HUs reporting in that month and a copy is retained at the HU level. However, there are no written procedures for dealing with late reports and inconsistency between LGAs in late reporting. One LGA mentioned that data is added to the following months' report and another one sent stand alone late reports.

Vaccine stock-outs: All four LGAs experienced vaccine stock outs in 2002, reflecting the national problem. Stock outs lasted about two months for DPT, BCG and measles. In Ibi there were also long-term stock-outs in 2003 and no women were vaccinated for TT in the last seven months.

Supervision: all LGAs reported to have regular supervision of health facilities.

Action plans: all district showed action plans for the year 2002. However, HUs did not have any actions plans.

7. Health Unit Level - Findings

Tally Sheets

Tally sheets were generally missing at HU level. The most common recorded system was the child health book having one column for the child's name (recorded on arrival) and one column for each of the antigens (OPV0, OPV1, and so on). Some books also had a column to record the date of birth or age of the child. Immunizations were either recorded by date or in some cases just by a tick. This recording system had several problems:

1) When the age or date of birth is missing, it is not possible to know whether a given DPT3 dose was given to an under-1 or to an older child. In these cases, HUs and the LGA assume, (incorrectly), that all doses are administered to under-1s;
2) where tick marks are used to register immunizations again it is not possible to accurately calculate DTP3<1
3) outreach immunizations are not systematically recorded and not always transferred to the child health book;

4) Some HUs admitted to throwing away the tally sheets once they had been compiled into the monthly reporting forms.

Compounded with the issues described above, individual recording forms were available in only 14 out of the 24 HUs for the entire audit year. This raises severe concerns about data accuracy.

Reports

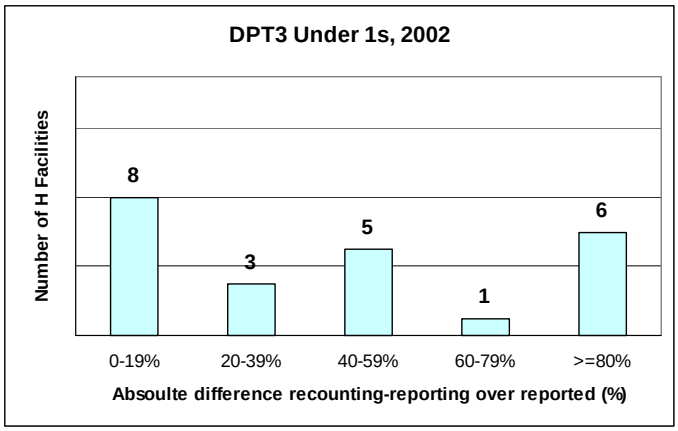
- Over-reporting. Eight HUs had complete monthly reports for the audit year. Five of them had very similar recording and reporting figures (with absolute differences less than 5%). Six other HUs had complete tally sheets or individual recording forms but incomplete reports. However, in four of these HUs reported values were higher than the recounted values. This relative over-reporting may be due to the inaccuracy of the DPT3<1 recounting from child health books, as mentioned above.

DPT3 doses

Looking at the total DPT3 doses recounted and reported at HU level, 75% of reported doses could be traced in the recounting of tally sheets[7]. Interestingly, those reported doses were found in only 142 monthly reports (49% of the 288 reports[8] that should have been found in ideal conditions). This suggests that, if the proportion of HU reports found at HU level had been greater, the proportion of recounted DPT3<1 doses would have been much lower than 75%; i.e., the 75% was achieved due to low completeness of reports and tally sheets.

We have plotted the absolute difference between recounted and reported doses as a percentage of reported DPT3<1 for each HU. See below (only 23 HUs are included because one HU had 0 for both reported and recounted). This Figure shows that half of the HUs had absolute differences equal or greater than 40%, which indicates poor agreement between reported and recounted DPT3 doses. The first column with 8 HUs shows relatively good data accuracy (interestingly, 5 of the 8 HUs that had recounted values higher that reported ones belong to this group).

Figure 8. Distribution of the number of health units according to absolute percentage difference between reported and recounted in relation to reported DPT3<1.

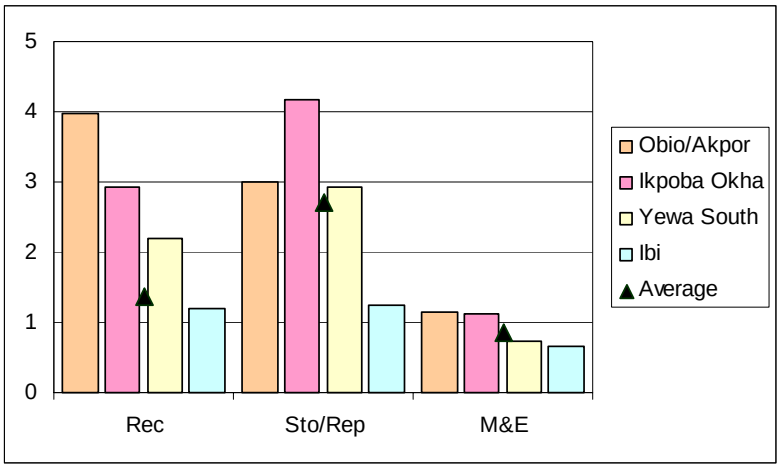


The figure below presents the relative component scores for health facilities visited in each of the four LGAs. Each bar represents the average score for the six health facilities in that LGA

[7] 7,193 recounted out of 9,553 reported DPT3<1 doses.
[8] 24 HU samples times 12 monthly reports.

for each of the QSI component areas. This graph highlights the relatively poor scores for monitoring and evaluation compared to the scores for recording and storing/reporting.

Figure 9. LGA averages of scores of quality indicators for the health units



Recording: Recording of immunizations depends on tally sheets for each antigen, as well as child health cards and registers for infants and pregnant women. HU staff in all the HU visited were aware of this. However, despite efforts from national level to develop an integrated health information system to monitor all aspects of the health system (immunizations, disease surveillance, etc.). The system had not rolled out to all LGAs. The system appeared to be well functioning at the HU level in two of the four LGAs that were visited. In the other two LGAs, HUs designed their own reporting systems to record immunization data. Almost all the HUs did not have tally sheets. Not one HU had vaccine stock records for the audit year (2002). Neither did they have records of syringes.

Vaccines are collected by HUs from LGA headquarters every time an immunization session takes place due to lack of freezers/ refrigerators. Some HUs are located as far as sixty kilometres (2.5 hour drive) from the LGA headquarters. HU staff strive to travel to the LGA to obtain vaccines and syringes. A concern of missed opportunities resulting in low frequency of immunization sessions and the absence of freezers/ refrigerators was raised.

The use of stock cards for vaccines and syringes requires health units to determine their usage and requirements as a means for monitoring these immunization supplies. However, it is important to mention that HUs did not see this as a priority because they do not have refrigerators to keep their own stock and are always supplied with vaccines to carry out a single immunization session. Stock-outs at LGA level determined low immunization activities in many HUs, especially in Ibi LGA.

Storing and Reporting: Storing-reporting had better scores in the two LGAs where the national reporting system was in place and forms were available. The immunization monthly reports were well organized in booklets that retained copies of each monthly report as well as the end of year summary report. However, in the other 2 LGAs where the national reporting system was not used at HU level, reporting forms had been developed to report immunization data from the HU to the LGA and HUs did not retain a copy of the report sent to the LGA.

One HU that did not have the reports readily available (they were locked away) was asked to retrieve them for the following day. There were clear signs that the reports had been produced again for this occasion and a consensus was reached between the NPI manager at LGA level and the national and international auditors that only those monthly reports which looked “used” would be entered.

Monitoring and Evaluation is an area that requires support. Despite that, immunization registers were used for following defaulting children and in some cases HUs had maps on the walls showing their catchments areas. The following areas are suggested for consideration:

- Tracking defaulters. In some HUs, child health books and registers for pregnant women were not used for following up defaulters.
- None of the 24 HUs monitored vaccine wastage.
- HUs did not use locally generated data to monitor performance which was evidenced by the following:
    - No performance monitoring charts or tables could be found on display or filed
    - No targets were set for childhood immunisation
    - Catchment area populations were not available
    - drop-out rates were not monitored

Core indicators

Safety of Injections and Vaccine Safety (AEFI): is best ensured by (1) the use of auto-destructive (AD) syringes, (2) the use of safety boxes for their disposal and (3) the compliance with technical procedures. AD syringes were not available in any of the HUs visited. Safety boxes were generally not available and safety practices were strikingly poor in some HUs. In one HU, staff had left old syringes used in the current Meningitis vaccination campaign on one of the HU beds, with the needles recapped.

Wastage rate: refers to the proportion of doses of vaccines that are in the system but that never will reach a child. Wastage may be due either to unopened vials that get expired, broken or lost (unopened or system wastage) or doses in opened vials remaining after vaccination sessions, which are no longer usable. Global wastage refers to the combination of both and is possible to calculate at the HU level only. To estimate vaccine wastage rate 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, but not held in stock (unopened vials going to secondary stores in the case of unopened wastage and opened vials due for vaccination session, for global wastage).

Global wastage: It was not possible to estimate the global wastage rate at health unit level because ledgers books are not used (nor is the relevant data stored) and HUs had no stocks of vaccines.

Unopened wastage: Wastage occurring within the vaccine stores due to losses of unopened vials can only be estimated if complete data on vaccines stock management exists. This could be estimated for the national vaccine stores and two LGAs. These unopened vials wastage rates should be read as minimums, since other losses will have undoubtedly occurred which are not recorded.

The following table summarises the information available for both types of wastage as could be estimated from the data collected during the DQA:

Figure 10. Vaccine wastage rates by LGA

	Obio/Akpor	Ikpoba Okha	Yewa South	Ibi
LGA WR (unopened)	0%	0%	NA	NA
Average weighed WR for HUs	NA	NA	NA	NA

(opened and unopened)[9]

NA: not available due to the lack of information in the total number of DTP doses administered (only DPT3 doses are reported).

National WR (unopened): 0%

Weighted Mean of the 24 HU wastage rates: NA.

The global wastage rate in the JRF 2002 was 5.5%, but does not reflect the real wastage in Nigeria as data only constitutes records from the central warehouse and not for the entire country.

Completeness of Reporting

Completeness of reporting refers to the availability of monthly reports at each level of the system.

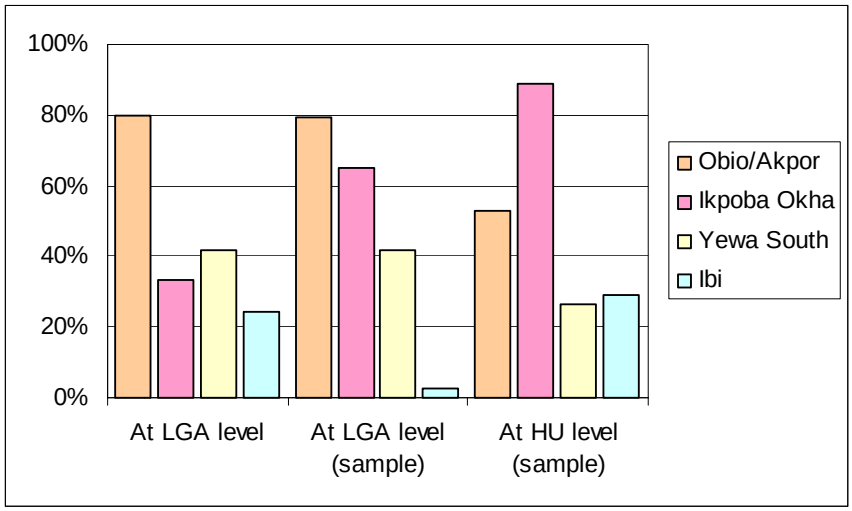
At HU level, 51% of the reports were missing.

Completeness of HU reports at HU level ranged from 26% - 89% (see the third group of four columns in Figure 11). Completeness of HU reports at LGA level (2nd group of 4 columns in Figure 7) was slightly lower with 53% of reports missing. This might be due to reports never being produced at HU level, and thus would explain that they have neither been found at HU nor LGA level. However, examining LGA by LGA there does not seem to be any correlation: 79% completeness at LGA level vs. 53% completeness at HU level in one LGA; 65% vs. 89% in the second one; 42% vs 26% in the third one and 3% vs 29% in the last one.

Completeness of HUs reports at LGA level was higher than completeness of HUs reports at HU level in two LGAs. This suggests that some HU reports were lost at HU level. The contrary (higher completeness at HU level than at LGA level) was found in the other two LGAs. DPT3<1 found in those LGAs tabulations are less than DPT3<1 doses found in the HUs reports at HU level. Therefore, it is hard to know whether those reports at HU level were actually sent to the LGA, whether sent on time, and accounted for at LGA level.

Figure 11. Health Units Reports completeness at LGA and health unit levels

[9] Weighted mean of the 6 HUs in that LGA. Note beginning balance + receipts – ending balance = total use. Total units used (at all 6 HUs)/Total wasted (at all 6 Hus) = weighted mean for LGA


100%
80%
60%
40%
20%
0%
At LGA level
At LGA level (sample)
At HU level (sample)
Obio/Akpor
Ikpoba Okha
Yewa South
Ibi

8. Key Recommendations

8.1 Data Accuracy

Data accuracy is quantified by DQA verification factor. No verification factor was calculated during this DQA due to the lack of LGA data at national level. Instead an agreement (accuracy factor) was calculated for each LGA. In order to meet the principal pre-requisites for a good verification factor, the following should be established:

- Accurate aggregations whereby national HMIS reported values for DPT3<1 reflect the exact number of clients tallied.
- Complete monthly/quarterly HMIS reports available at the HUs, at the LGAs and at National level. The LGA HMIS database should be up-to-date and complete
- Complete tally records for each month of the audit year (2002) available at all HUs. This requires that the records are not only completed, but well organized and easily retrievable as well.

8.2 Recording

- Improve the availability and use of standard forms at HU, LGA and state levels, for both recording and reporting data.
- Strengthen the monitoring of wastage of vaccines at HU level.
- Re-train staff in the use of forms and in the technical aspects of immunisations at HU and LGA level (calendar, contra-indications, AEFI)
- Urgently provide safety-boxes and update safety procedures for injection handling.

8.3 Storing/Reporting

- Review the evidence to support the current reporting system.
- Ensure the availability of standard reporting forms whatever system is in place.
- Ensure consistency of data across the different levels, databases, and reports.
- Provide simple guidelines and training for the organisation and storing of records and forms at the health unit level and at National level.

8.4 Monitoring/Evaluation

- Strengthen the use of immunisation data so that it is analysed and used by NPI and national programmes at all levels (i.e. wall charts and tables)

- Develop and implement guidelines for state and LGA levels regarding the analysis and use of immunization data for monitoring their performance.
- Develop and implement procedures for monitoring vaccine wastage rates.
- Implement the AEFI reporting system.

8.5 Demographics and planning

- Disseminate clear instructions regarding catchment population estimates to use for health planning.
- Provide guidance to district and health units regarding setting targets based on previous performance.
- Build planning capacities at every level of the health system.

8.6 System Design

- Ensure date of receipt is recorded on reports.
- Develop clear access and back-up procedures for the computerisation of data.
- Co-ordinate with other stakeholders, donors, and supporting agencies to ensure consistency, availability, and use of data.

9. ANNEXES

9.1 Key Informants (LGA and National) and Health facilities visited

Health Units by LGAs

Obio/Akpor	Ikpoba Okha	Yewa South	Ibi
SHT DC	Ukbekun	PHC Ilaro	Cottage Hospital Ibi
Obio HC	Ukihiri	HC Owo	Sarkin Kudu D
Rumopirikon	Ologbo	HC Igbogidi	Gishirin Hassan D
Rumokwurushi HC	Ogbeson	Ore Ofe Ilaro	Dampar D
Iriebe HC	Eubuomodu	HC Ajilete	Naye HP
Bori Camp	Anita	HP Olokuta	Kumar HP

Obio/Akpor LGA	**Position**
Dennis Emanike	LGA Chairman
Eider Peter Chiawo	LGA Vice Chairman
Dr. Nduye CT Briggs	PHC Coordinator
Maxwell Olewe	Deputy PHC Coordinator
Victoria N Olobo	NPI Manager
Uche Goldie	Cold Chain Officer
Opurion Omenihu	Cold Chain Officer
Barry Le	M&E Officer
Dappa Paddy	NPI Cold Chain Department HMB
Dorothy Amadi	Disease Surveillance Notification Officer

Ikpoba Okha LGA	
Dr. (Mrs.) B.A. Osemene	Director of PHC
Mrs. J.O. Aikhuele	State NPI Manager
Mrs. I.F. Iyekekpolor	LGA NPI Coordinator
Mrs. R. Ghaghe	M&E Officer
Mrs. Julian E. Jegede	Cold Chain Officer

Yewa South	
Mr. A.I. Sosanya	LGA NPI Coordinator
Mr.. O. Oghagbon	Cold Chain Officer
Mr. J.O. Omuyeruy	Assistant Cold Chain Officer

Ibi LGA	
Sabo M. Amid	Deputy PHC Co-ordinator
Mohammed Kabir Amadu	M&E Officer
SA Dogari	LGA Secretary
Ibrahim Abdulai Yange	Cold Chain Officer

National	
Dr. C.M. Chukwnani	Deputy Country Programme Director – NPI
Mr. Alunyele Alunrinmora	Deputy Director – Finance
Dr. Caroline Adesina	Deputy Director - Programmes
Dr. Susan Oruwariye	Director – M&E

Obio/Akpor LGA	Position
Mr. Akinyele O.	Deputy Director - Accounts
Dr. Andrew Efsano	National Cold Chain Officer NPI
Dr. Abdulai Tinorgah	Chief SECC UNICEF
Dr. Brandao	EPI Team leader UNICEF
Dr. Lecky	NHMIS, Planning, Research and Statistics, FMOH
Debriefing	
Dr. A. Awosika	NPI Chief Executive
Dr. Yosuw Omwanye	NPI Director of
Dr. CM Chukwani	Deputy Country Programme Director – NPI
Dr. Rakinya Booth	NPI…
Dr. AO Asije	Desk Officer, GAVI, NPI
AO Akinyele	Assistant Director of Finances NPI
H Osawe	Assistant Director of Finances NPI
Dr. SA Olumo	Technical NPI

9.2 Core indicators tables

Table 3. Core indicators at National level

	JRF	Reported at time of audit
LGAs with DPT3<1 coverage > 80%	Not Available	NA
LGAs with measles<1 coverage > 90%	Not Available	NA
Drop-out rate	Not reported	19.9%
Type of syringes	AD Syringes	AD Syringes
LGAs with AD syringes	Not reported	NA
Introduction HVB	1999	NA
Introduction Hib	NA	NA
Vaccine wastage DPT[10]	5.5%	0.0%
Wastage rate HVB	Not reported	NA
Wastage rate Hib	NA	NA
Interruption in vaccine supply 2002		NA
Number of LGAs with interruption in vaccine supply 2002	Not reported	NA
% LGA disease surveillance reports received/expected	Not reported	NA
% LGA coverage reports received/expected		NA
% LGA coverage reports received on time		NA
Number of LGA supervised at least once in 2002		NA
Number of LGAs which supervised all HUs in 2002	Not reported	NA
Number of LGAs with microplans including routine immunisation[11]	Not reported	NA

[10] No calculated wastage rate. Based on estimate of estim ate of average regional wastage (WHO Afro).
[11] 3 of 4 LGAs visited had microplans. No HMIS reporting on microplan.

Table 4. Core indicators at LGA level

		Obio/Akpor	Ikpoba Okha	Yewa South	Ibi
LGA DPT3 coverage	At national	NA	NA	NA	NA
	At LGA	70%	33.3%	NA	NA
LGA measles coverage	At national[12]	NA	NA	NA	NA
	At LGA	45%	NA	NA	NA
LGA Drop-out DPT1-3[13]	At national	NA	NA	NA	NA
	At LGA	NA	16.5%	20.4%	NA
Syringes supplied in 2002	At national	NA	NA	NA	NA
	At LGA	19,200 appx	NA	NA	6,000 appx
Number of LGA coverage reports received/sent	At national	4/12	12/12	7/12	8/12
	At LGA	11/12	7/12	12/12	7/12
Number of coverage reports received on time/sent on time	At national	NA	NA	NA	NA
	At LGA	NA	NA	NA	NA
Number of HU coverage reports received/sent	At national				
	At LGA	134/168	109/192	130/312	58/240
Number of HU reports received/sent on time	At national				
	At LGA	NA	NA	NA	NA
LGA vaccine stock out	At national	NA	NA	NA	NA
	At LGA	Yes	Yes	Yes	Yes
Has the LGA been supervised by higher level on 2002	At national	Yes	Yes	Yes	NA
	At LGA	Twice	Yes	Yes	Yes
Has the LGA been able to supervise all HUs in 2002	At national				
	At LGA	No	Yes	Yes	Yes
Did the LGA have a microplan for 2002	At national				
	At LGA	Yes (not seen)	Yes	Yes	Yes

[12] Information not collected at national level.
[13] Unable to estimate due to the fact that the HMIS does not routinely collect DPT1 data.

9.3 Quality Index Analysis Table

Table 5. LGA Quality Indices and LGA average (over 5)

	Recording	Stor/Repo	Monitoring	Demo/Pla
Obio/Akpor	2.8	5.0	1.8	1.5
Ikpoba Okha	2.8	5.0	1.8	??
Yewa South	3.3	3.3	2.5	1.5
Ibi	0.6	3.3	0.5	0.5
LGA Average	2.4	4.2	1.7	1.8

Table 6. HU Quality indices and HU average (over 5)

	Obio/Akpor				Ikpoba Okha		
	Record.	Stor/Rep.	Mon/Eval		Recording	Stor/Repo	Mon/Eval
SHT DC	4.4	0.0	0.6	Ukbeku	4.1	5.0	1.1
Obio HC	4.4	5.0	1.2	Ogbeson	1.8	2.5	1.1
Rumopirikon	1.8	1.2	0.6	Eubuomodu	2.7	3.7	1.1
Rumokwurushi HC	3.1	3.7	0.6	Ukihiri	3.6	5.0	1.7
Iriebe HC	3.9	2.5	2.2	Ologbo	3.1	5.0	1.7
Bori Camp	2.3	2.5	0.6	Anita	1.9	3.7	0.0
HU average	**4.0**	**3.0**	**1.1**	**HU average**	**2.9**	**4.2**	**1.1**

	Yewa South				Ibi		
	Record.	Stor/Rep.	Mon/Eval		Recording	Stor/Repo	Mon/Eval
PHC Ilaro	2.3	5.0	0.0	Gidin Waya	3.3	2.5	1.7
HC Owo	2.3	3.3	1.7	Sarkin Kudu D	0.6	0.0	1.7
HC Igbogidi	2.7	3.7	0.6	Gishirin Hassan D	2.2	0.0	0.0
Ore Ofe Ilaro	2.7	2.5	0.0	Dampar D	0.0	2.5	0.0
HC Ajilete	1.8	1.2	1.1	Naye HP	1.1	2.5	0.0
HP Olokuta	1.4	2.5	1.1	Kumar HP	0.0	0.0	0.6
HU average	**2.2**	**2.9**	**0.7**	**HU average**	**1.2**	**1.3**	**0.6**