Report

DATA QUALITY AUDIT – BURUNDI
22 October – 11 November 2006

Global Alliance for Vaccines and Immunisations

EURO HEALTH GROUP
consultants

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Executive Summary

Objective of DQA

The DQA has been designed to assist 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. It verifies the number of children under 1 year old receiving 3 doses of DPT and the accuracy of the system as regards the EPI.

Method

This is Burundi's second DQA. The first in 2004 obtained a verification factor of 0.72, which is less than the 0.80 level required by GAVI to validate the reporting system. The DQA was undertaken by two international auditors and two national auditors, who worked at national level of HMIS 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, 2004) was applied, which included use of interviews, administration of questionnaires and recounting.

DQA Indicator Dashboard

	2004	**2006**	**Change since 2004**
Verification Factor (>0.8) *(Compares recounted to reported DPT3)*	0.72	0.94	+0.22
Core Indicators:			
DTP3 Coverage	75.7%	82.9%	+7.2%
Drop Out Rates DTP1-3	14.1%	9.6%	-4.5%
Safety of Injections and Vaccine Safety			
Wastage Rate	NA	NA	
Completeness of Reporting	NA	96.3%	
Vaccine Stock-Outs	NA	0%	
Action Plans for Districts	NA	Yes	
QSI at National Level	62.3%	75.5%	+13.2%
Average QSI for Districts	NA	74.6%	
Average QSI for Health Units	NA	77.64%	

Summary of principal findings and prioritised issues:

Reporting

Nurses generate reports each month from standard vaccination registers of children 0-11 months and pregnant women, tick registers and other documents (including the register of the management of vaccines and consumables). Vaccination information is integrated with other health information. Two identical reports are completed, one kept at the health unit and the second is transmitted to the Head of the Health Sector at the District Health Office. The District Health Office, managed by a regional doctor, is subdivided into Sectors. Each Head of Sector is responsible for the health units in the communes.

At the District Health level, compilations are made by sector and transmitted to HMIS for the national compilation. (From 2006, the information will be transmitted electronically). The compiled information is then transmitted to the EPI for the use of the information.

Some weaknesses in registration and reporting include :

- The completion of two monthly reports at each health unit can increase the workload of the nurses, a difference between the district information and the health unit
- There are no tick registers for pregnant women
- The registration of children in the vaccination register does not allow for their vaccination history to be seen

Use of Data

- Information is compiled and utilised at each level (health units, districts). During the audit, some 2005 indicators (audit year) and 2006 were monitored and displayed in the health units and districts. However, at HMIS and EPI level, these indicators were not visible
- Some indicators such as wastage rates, specific and global drop out rates, DTP1 and VAT are not monitored either at health unit or district level
- Health units and districts did not know the number of children vaccinated by vaccination strategy (fixed and catch-up strategies)

Design

- The reporting of information at system level is integrated. However this design is not formalised. There was an absence of official rules or instructions from national level for the development and execution of the different EPI activities. This results in the different weaknesses seen in the field.
- The absence of standard appropriate documents makes the management of vaccines at district and health unit levels almost inexistent, resulting in a high vaccine wastage rate. The health units and districts do not monitor wastage rates because the monthly report does not include this heading

Key Recommendations:

- **The establishment of reports**
  - Establish 2 reports by using carbon paper or counterfoil
  - Use tick registers for pregnant women
  - Register children in a manner to be able to easily trace their vaccination history

- **Use of information**
  - Monitor all indicators at all levels
  - Calculate vaccine wastage rates at all levels
  - Monitor the different vaccination strategies by level

- **Design**
  - Formalise the system by establishing policies for the execution of the different EPI tasks at each level
  - Issue and display these policies at all levels.
  - Develop an appropriate register to manage vaccines and syringes
  - Develop a template for the monthly report that includes the key EPI indicators

1. Introduction

The Data Quality Audit (DQA) is part of the Global Alliance of Vaccines and Immunisation (GAVI) programme. It has been designed to assist 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, the country's 'verification factor', for reported DTP3 vaccinations given to children under one year of age (DTP3<1). In 2006, the DQA is being performed in 9 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 Burundi from 22 October to the 11 November by the following team:

Name	***Position***	***Districts Visited***
Dr Knut Wallevik	*External Auditor*	*Ruygi, Gitéga*
Dr Claude Konan	*External Auditor*	*Kirundo, Muyinga*
Chimène Giswaswa	*National Auditor*	*Kirundo, Muyinga*
Simbizi Léonard	*National Auditor*	*Ruygi, Gitéga*

The team worked at national level in HMIS and EPI before going to district and health unit levels. The four districts (Ruygi, Gitéga Kirundo and Muyinga) were visited based on a random selection carried out in advance. Six Health Units (HU) were selected randomly in each district. Three districts were not eligible for this selection process as they are considered in phase 4 security according to the UN system. In the Gitéga district, 9 of the 32 health units were not eligible due to security concerns or because certain structures managed by the NGO were closed and the information not available. In Ruyigi, 9 health units were not eligible due to security concerns.

In total 24 health centres were visited by the auditors. No security or logistical problem was encountered. In the Gitéga district, the team were forced to visit a reserve health unit after heavy rain, as the bridge to the selected unit was washed away.

A debriefing meeting was held on Thursday 9 November 2006 at the Ministry of Health. The meeting was presided over by the Director General for Health, with the participation of the WHO representative and members of the ICC; the Health Minister being absent from the country. During the meeting, the participants congratulated the consultants for the quality of their work.

2. Background

2.1 Geographic Situation

Burundi is a landlocked country in the Centre-East of Africa, covering 27,834 km^2. It is bordered in the North by Rwanda, in the south and east by Tanzania and in the west by the Democratic Republic of Congo.

2.2 Demographic Situation

In 2006 the population is estimated at 7,607,089 inhabitants with a growth rate of 2.9%. A principal characteristic of this population is that it is rural (93%) and very young (46.1% less than 15 years old). With a population density of 273 inhabitants per km^2, Burundi is classed as one of Africa's most densely populated countries.

2.3 Social, Political and Economic Situation

Burundi is a Republic with decentralised administration with 17 districts, 130 communes that are subdivided into 300 zones and 2727 census areas. Each census area is administrated by a Head of Census, assisted by 10 family chiefs. The EPI leans on this administrative structure to undertake social communication actions.

Politically, Burundi has known armed conflict for over a decade, paralysing the operation of all national sectors. A socio-economic analysis shows a dramatic fall in the quality of life of its population after more than a decade of war. This has led to a breaking up of the social structure, territorial abandonment by part of the population (refugees and displaced), promiscuity and a resurgence of endemic epidemics including HIV/AIDS, malaria, tuberculosis, malnutrition and a fall in most development indicators. This has led to Burundi being classed 169th according to the lasting human development index (World Report on Human Development 2005, UNDP).

The current socio-economic and political situation is dominated by a progressive return to normality. We note that armed confrontations have noticeably decreased and that negotiations with the latest armed movement have just resulted in a cease-fire agreement.

2.4 Health Situation

Organisation of the Health System
Burundi's health systems works on 3 levels:

National level – responsible for the definition of the health policy and the development of intervention strategies, planning, administration and coordination of the health sector, the definition of quality standards, their update and evaluation. It is represented by the Ministry Cabinet, the Inspectorate General of Public Health, the Director-General of Public Health and the Director-General of Resources, as well as their departments and management controls of the several health programmes and services.

Intermediary level – composed of 17 District Health Offices. The Health Districts are subdivided into Health Sectors. The District Health Centres are responsible for the co-ordination of health activities at district level, support to the health units, as well as continuous training of health personnel under their care.

Peripheral level – composed of all the health units and sector hospitals throughout the country. The administrative function is assured by the heads of health units that have the responsibility to plan, organise and manage all these structures' activities. The government is currently promoting a policy of community participation in the management of health units, but it lacks a legal and comparative framework.

2.5 Analysis of the Internal Environment of the EPI

The principal interventions of the EPI fall into two categories: the five operations (service provision, logistics, supply of quality vaccines, communication and defence, supervision of patients) and the three support services (management of the programme, finance and the strengthening of resources).

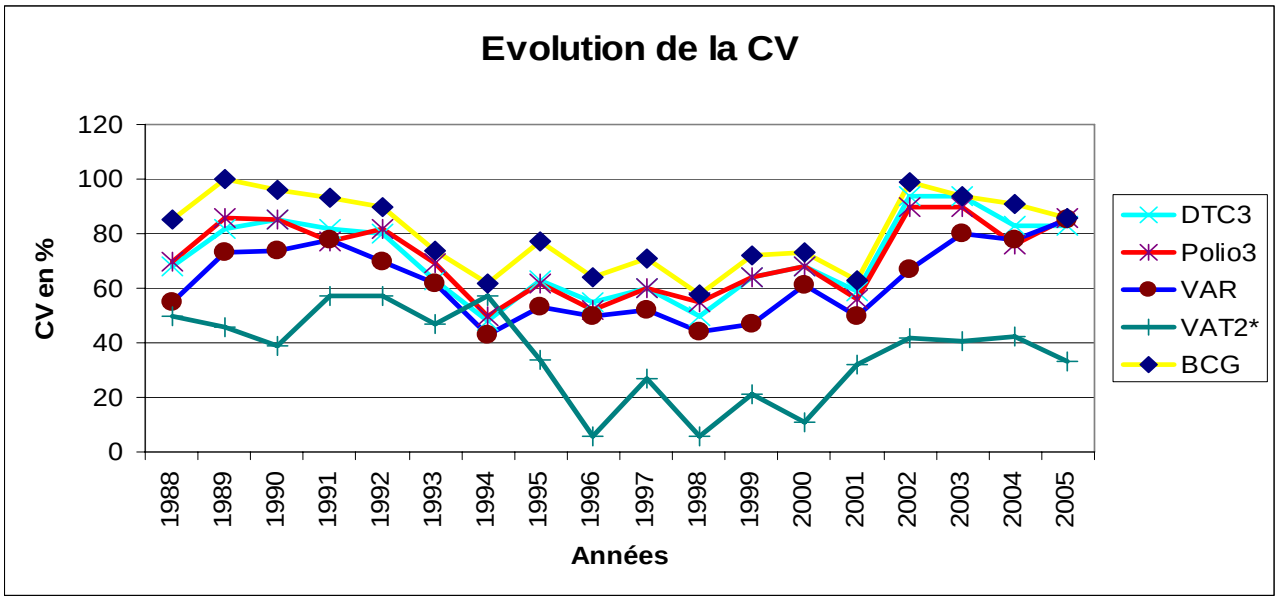
The aim of the EPI in Burundi is to contribute towards the reduction of the morbidity and the mortality due to illnesses avoidable by vaccination. These include: tuberculosis, diphtheria, poliomyelitis, tetanus, whooping cough, measles, hepatitis B and paediatric meningitis of haemophilic influenza type B. The vaccination calendar undertaken in Burundi is shown in

the table below. The pentavalent (DTP3/Hep/Hib) was introduced between July and August 2005.

Table 1. Vaccination calendar in operation at EPI and the antigens used

Antigens	***Vaccination period***
BCG	At birth
VPO	Birth, 6, 10, 14 weeks
DTP3 - HepB-Hib	6, 10, 14 weeks
VAR	9 months
Vit A	9 months and then every 6 months until 5 years old
VAT pregnant women	VAT1 at first contact VAT2 after 1 month VAT3 after 6 months VAT4 after 1 year VAT5 after 1 to 3 years
VAT non pregnant women	VAT1 at first contact VAT2 after 1 month VAT3 after 6 months VAT4 after 1 year VAT5 after 1 to 3 years

Graph 1. Evolution of the vaccination coverage between 1988 and 2005



Source: Annual EPI report 2005

Table 2. Evolution of the EPI budget by finance source (in thousands USD)

Source	2002	2003	2004	2005	2006
Budget total country	172 158	184 172	244 925	326 195	414 751
Budget MSP	4 342	4 001	4 822	5 055	16 986
Budget EPI /Government	20	27	31	33	2 409
Budget EPI/donations	2 509	3 162	6 089	5 379	5 511
Budget total EPI	2 529	3 189	6 122	5 412	7 919
% external EPI support	96,3%	99%	99,5%	99,4%	69,6%
Government Contribution to EPI (%)	3,7%	1%	0,5%	0,6%	31,4%
Proportion of the EPI budget (Government) against the MSP budget	0.46%	0,7%	0,7%	0,7%	14,2%
Proportion of the EPI budget (Government) against the total national budget	0,011%	0,015%	0,013%	0,010%	0,581%

Source: Ministry of Finance and Ministry of Planning

3. Key findings

3.1 Data Accuracy

The verification factor is the ratio between the DTP3<1 recounted from tally sheets or register during the DQA and the figures reported in the monthly (or quarterly) summary reports: recounted/reported. **The verification factor found for Burundi was 0.946** with a confidence level between 0.79 and 1.07. This confidence level is tight as all health units are practically at the same performance level.

This is Burundi's second DQA. The first took place in March 2004 looking at 2002 data and gave a score of 0.721 or 72.1%. The main problems highlighted by the audit team in 2004 were taken into account by the EPI team and the recommendations were applied.

Coherence of information at health unit level
The good score is due to the utilisation of tick registers for children 0-11 months in all health units visited, the good upkeep of standard vaccination records and improvements in archiving. The different documents (tick registers and standard vaccination registers for the audit year) were found and the information collected. The tick registers are completed on the day except in two health units that compiled at the end of each day from the standard vaccination record. Differences in reported and recounted doses are most often due to errors in writing up the information.

Even if tally sheets are used in the different health units, their completion caused problems in some units visited. Some deletions and some extras were observed in these sheets with consequential errors in recounting and in the transcription in the monthly reports. Too many errors were found in the transcription of information from these tally sheets. This was seen in 7 health units found in the 4 selected districts where the DTP3<1 doses recounted during the audit were superior to the doses reported.

Cases of over-reporting were also noted – DTP3 Hib-Hep recounted vastly inferior to the DTP3 Hib-Hep reported in 6 visited health units. In these health units in 2005, before the

introduction of the pentavalent, the nurses counted each DTP3 Hib and Hep dose as separate doses.

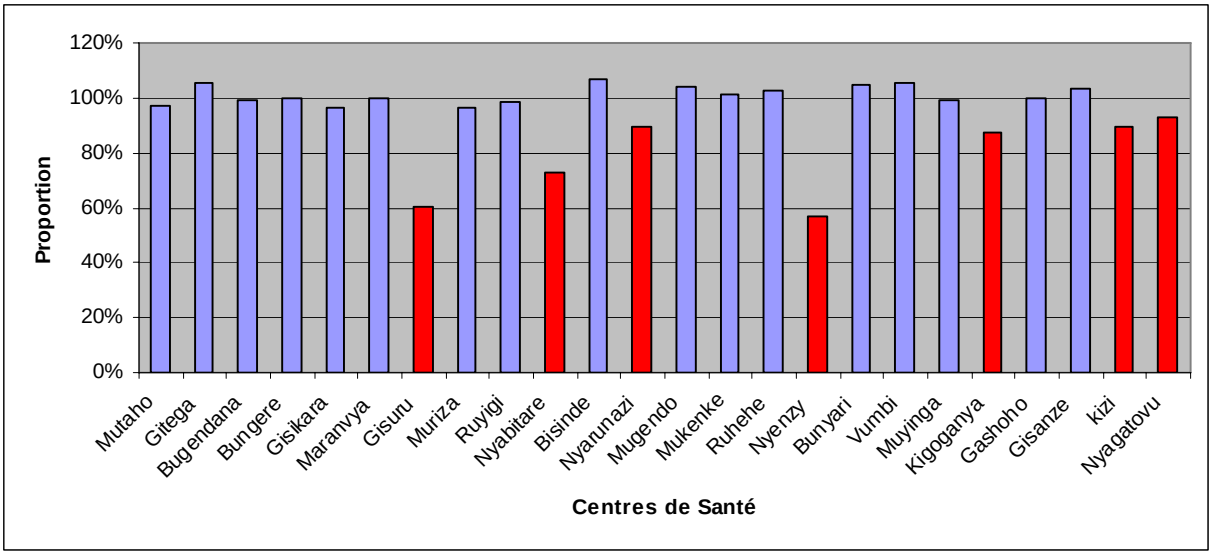
These explanations also cover the differences seen in the DTP1<1 level and measles. As regards the VAT level, the difference in the recounted doses during the audit and the reported doses were due to the tally sheets not being used for pregnant women.

In some health units, no explanation was given for over-reporting and/or recounting.

In the majority of the health units visited, we observed differences between the reports compiled monthly at the units and those transmitted to the districts. At the end of each month, the nurse filled in two identical documents (monthly reports). The observed differences came from the transcription of information from the first report during the writing of the second report destined for the district.

The following graph shows the percentage DTP3 recounted and reported:

Graph 2. DTP3<1 doses recounted/reported in the different health units



Coherence of information at district level

Following the example of the health units, differences were seen between the district reports and the reports found. This is explained by errors in the compilation of information. Notably, the majority of reports found at national level were not coherent with reports found at district level. The differences between the district compilations and the compilation of reports found in the districts were due to errors during the monthly compilations by the district teams.

Coherence of information at national level

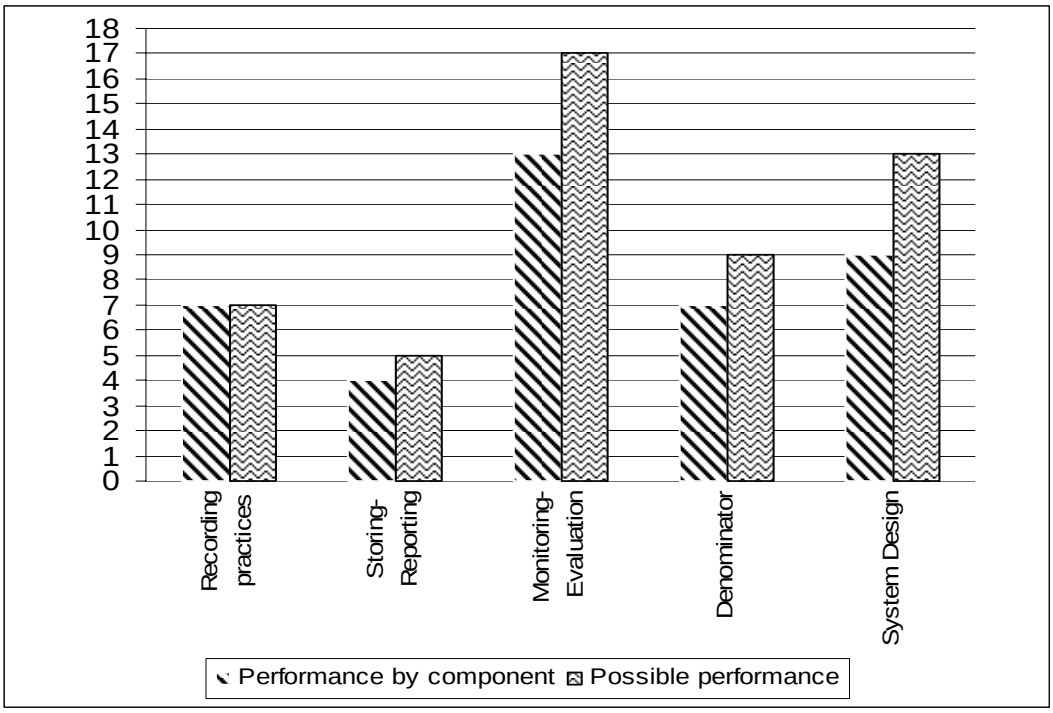
There is a big difference between the JRF information (265,605) and the information used in the selection of districts (256,439) and the national compilations (246,439). This difference is explained by the practice of over-counting.

In the case of a fall in the vaccination cover or a risk of an epidemic, extra catch-up sessions were organised by the central level in the districts. The information from these extra sessions is immediately transmitted to national level for the national compilation. The health units and districts do not have this information and don't include it in their reports.

3.2 Key Issues at National Level

The quality index for national level is **75.5%** against **62.3%** for the 2004 audit. Between the 2004 audit and the 2006, efforts have been made by the EPI team to improve the quality of the system.

Graph 3. Quality index for the system at national level



System Design
The monthly reporting system is integrated and takes into account the preventative information from other programmes and the curative information. However the recommendations from the 2004 audit for the improvement of the system design have not been implemented. The system still lacks a framework. There are no official regulations at all levels (national, district and health unit) for the carrying out of the different activities and vaccination tasks. No instructions or policies written up and displayed for the filling in of the standard vaccination registers, tick registers, monthly reports, forms for managing the vaccines and consumables, for the monitoring of the indicators, handling of reports (on time or late), or the saving of information when it is computerised.

The new monthly reports introduced in August 2006 are incomplete as there is no heading for the calculation for the global cover index that existed in the former monthly report and the wastage rate for the different antigens. No health unit or district calculates the vaccine wastage rate. In addition the report does not include the registration and the monitoring of the different vaccination strategies (fixed, predetermined or catch-up).

The vaccine management forms are inappropriate and do not allow for the efficient management of the antigens and consumables. The current forms used in the districts and the health centres are medication management forms. The two identical documents are filled in at the end of each month for the monthly reports from the health units and districts are a source of error between the two reports (health unit and district).

Denominators
We have observed differences between the denominators at national level and those of the districts visited. The explanation is that the districts declare themselves closer to reality and

often use the denominators collected by the health units at the different health structures whereas those used at national level are obtained from projections.

Recording Practices

- The register of movements of vaccines and consumables is computerised. But there is no policy for the saving of information. Storage is only undertaken by the logistic person on USB memory sticks
- The register of vaccines is complete for the audit year (2005) and is up to date for the different antigens
- The register of information for children and pregnant women is not made by vaccination strategy (fixed and predetermined) making the monitoring of each type of strategy impossible

Monitoring and Evaluation

- At national level, the monitoring of the different 2006 indicators is not displayed either at EPI or HMIS. In addition there is no monitoring of the vaccine wastage rates, drop-out rates and vaccine stock-outs at district levels
- The different vaccination strategies (fixed and predetermined) are also not monitored

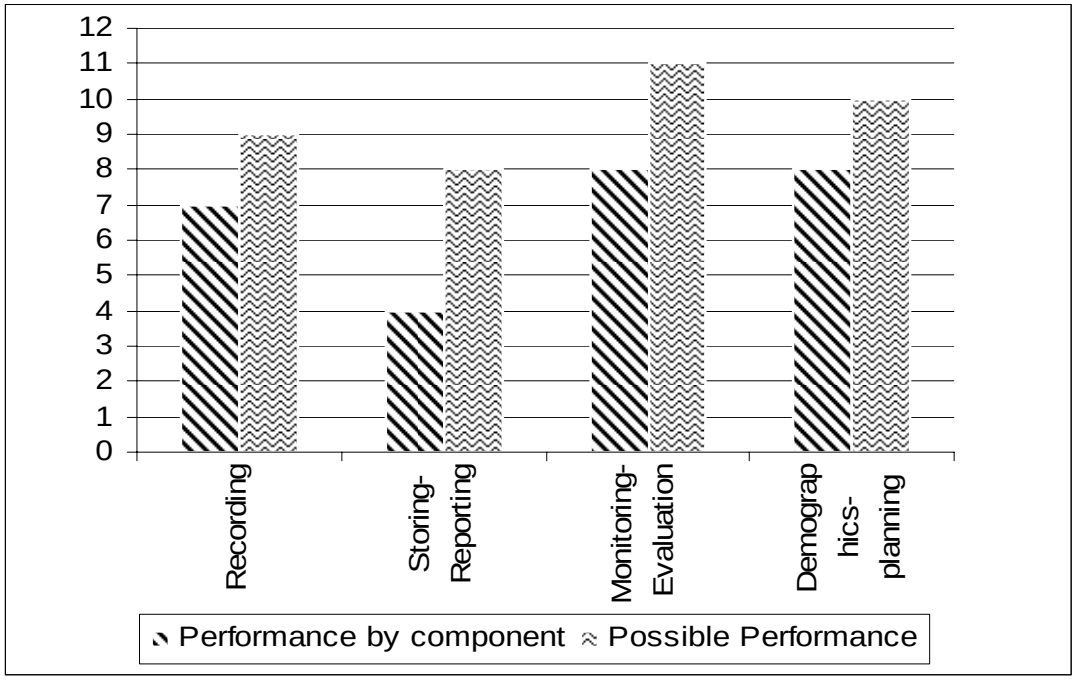
Storing and Reporting

- Some of the monthly reports in the districts visited were not found at HMIS level. The system is computerised and information stored on USB memory sticks. There is no network of computers linking the computers of the EPI and the HMIS. There is no policy for the storage of information. Antivirus software is not undated regularly leading to infections and the loss of information
- Reports are compiled as and when they arrive. Late reports are automatically compiled in the district of origin. There is no policy for their treatment
- In the case of a fall in the vaccination cover or a risk of an epidemic, extra catch-up sessions were organised by the national level in the districts. The information from these extra sessions is immediately transmitted to national level for the national compilation. The health units and districts do not have this information and don't include it in their reports

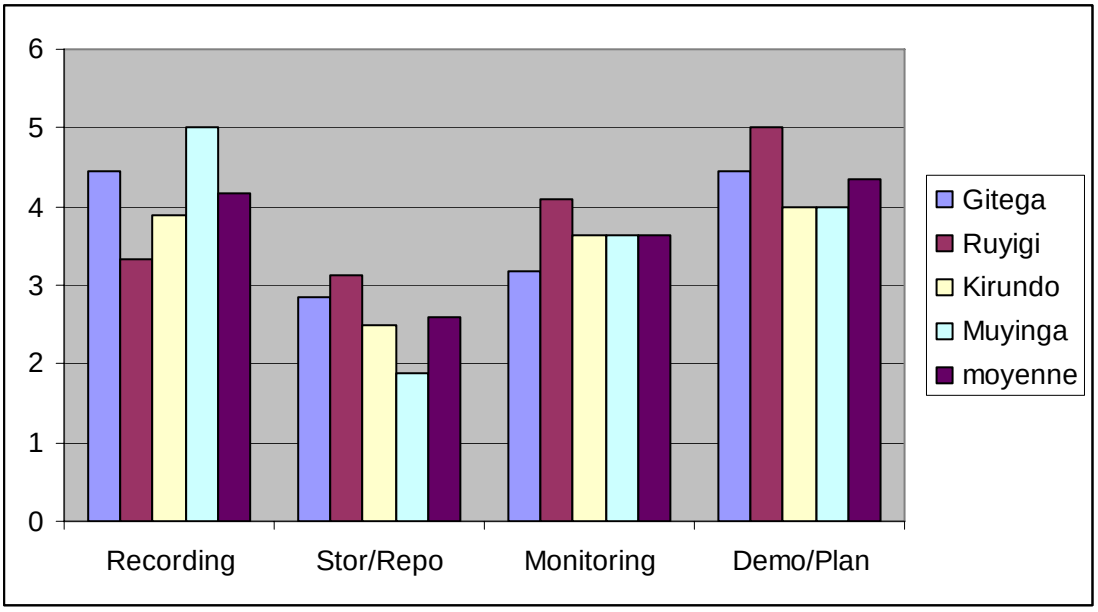
3.3 Key Issues at District Level

The average quality index for the districts is 74.6% (Ruyigi 78.9%, Gitéga 75.0%, Kirundo 71.1% and Muyinga 73.7%)

Graph 4. Quality index for the health district of Kirundo



Graph 5. Quality index for the 4 health districts



Recording Practices

- The registration of vaccines is made on medication management forms. These forms are not appropriate and do not include batch numbers or expiry dates.
- The predetermined strategy is not registered at district level as well as the information from the catch-up vaccination sessions
- The districts state on their monthly reports the delivery dates

Monitoring and Evaluation

- At district level the monitoring of indicators is carried out, up to date and displayed. But the calculation and the monitoring of the wastage rate, drop out rate and vaccine stock-out is not undertaken. The districts are unable to give their wastage rate for the different antigens

- The predetermined strategy is not monitored
- The passing back of information to the nurses about the vaccination activities is not always systematic
- The districts supervise the health units but lack of material resource constitutes a curb to good supervision. The districts are supervised by national level. However there is no systematic passing back of information in either case

Denominators and Planning
- The target objectives are known and the denominators determined at district level are different to those at national level
- The districts have action plans and activity reports at the end of the year

Storing and Reporting
- Information is well stored except for the Kirundo district where the vaccine stock management forms are not well stored
- In the two districts that have a computerised system, there is no policy for the storing of information or the treatment of reports that arrive on time or late
- Stock-outs or non-supply of the AEFI notification forms was noted in several health units
- Tables and graphs generated are not dated

3.4 Key Issues at Health Unit Level

The health units visited all have a standard vaccination register and tally sheets. However three quarters of the health units visited did not complete the standard vaccination registers correctly as registration does not allow the viewing of the vaccination history of children. These are registered several times and the dates of the received antigens are not indicated. The nurses attribute these practices to policies emanating from either national level or district level or the NGO. Pregnant women are registered in the pre-birth consultation forms (PBC). But again this registration does not allow the viewing of their vaccination history. The predetermined vaccination strategy sessions are not registered separately making it impossible to monitor them or the catch-up sessions. The health units do not have the information on the catch-up sessions undertaken in their health units.

Tally sheet used for children 0-11 in all centres often create problems. In some centres these sheets are not up to date and are often covered in errors during the compilation of information. There are no tally sheets for pregnant women.

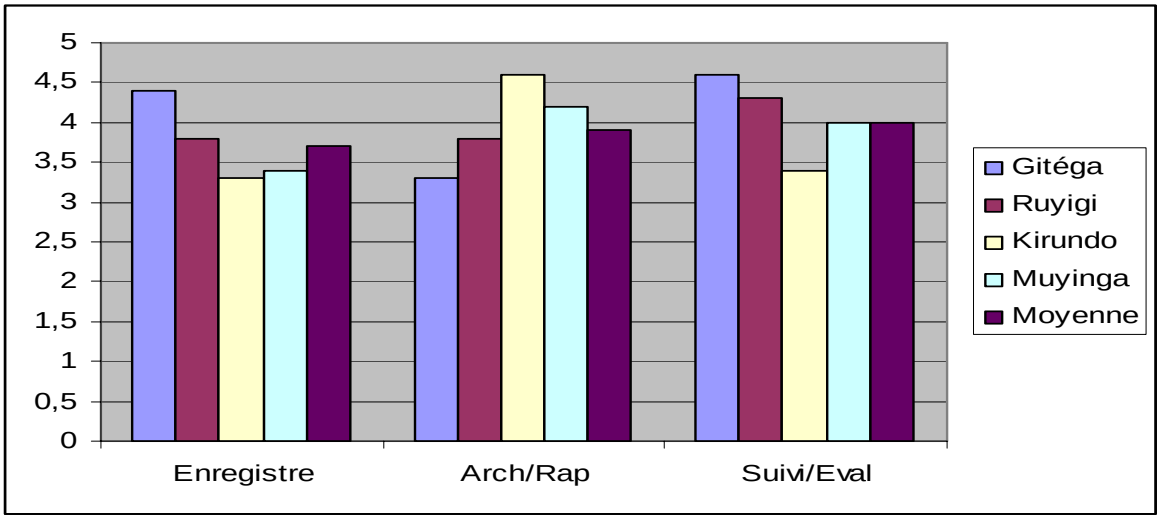
Documents for the registration of vaccines and syringes are not suitable and standardised. In some units registration is made on medication management forms that are not appropriate and in others in notebooks. Batch numbers and vaccine expiry dates as well as remaining stocks are not often recorded. In 4 health units, these forms are not up to date.

Monitoring and Evaluation
- The monitoring of indicators is carried out and displayed in the different health units. However some key indicators are not monitored. In no health units was the vaccine wastage rate calculated or monitored. Drop-out rates, of DTP1 and VAT2+, although calculated in some health units, are not monitored
- Some nurses confused the objectives and the monitoring of the VAT2+ with that of the PBC3 and did not know the calculation formula for the wastage rate
- Monitoring of the predetermined strategy sessions is not carried out
- The denominators are known and the target objectives fixed. The calculation of the denominator is made by national policy. But often the nurses determine the denominators by census in the field due to important population movements

Storing and Reporting

- In general the documents are well stored but in certain units the 2004 and 2005 documents were not found. The vaccine stock management forms were not found in 2 health units
- The monthly reports are completed in all units but some nurses do not fill in all the headings
- Some units do not have any notification forms or reports for AEFI

Graph 6: Quality index of the Health Units



3.5 Core indicators

Vaccine Safety

The country uses AD syringes. During our audit we noted that in all the visited structures they were regularly supplied with AD syringes. Registration of syringe movements was made on stock forms or in notebooks.

There is a form developed at national level for notification of AEFI cases. These forms are not available in all of the health units visited, above all in the Muyinga district. These cause a stock-out.

The nurses know the notification procedure and the management of AEFI cases.

Wastage

Table 3: DQA Vaccine Wastage Rates (Weighted Means)

	Ruyigi	Gitéga	Kirundo	Muyinga
District WR (unopened)	0%	0%	0%	0%
Average WR for HUs(opened and unopened) [1]	NA	NA	NA	NA

National WR (unopened): 0%

Weighted Mean of the 24 HU wastage rates: This was not able to be calculated as the antigen information in more than half the health units is incomplete or unusable.

[1] 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

At national level, the management of the movements of vaccines is computerised and up to date. All information for the audited year 2005 was available. The wastage rate reported is zero.

At district level, the registration of the movements of vaccines is made on stock management forms. These forms are not appropriate as they are medication management forms. The batch number and expiry date is not always mentioned. Wastage of unopened doses is zero.

At health unit level, vaccines are also registered on inappropriate stock management forms. Batch numbers, expiry dates and remaining stocks are often not indicated. These forms are badly kept and no health unit calculates the vaccine wastage rate as there is no heading on the monthly report that covers this. The vaccine wastage rate were able to be calculated by the auditors in only 10 health units out of the 24. Wastage rates are wide with an average of 16% and a range of 0.2% to 48.8%.

These wastage rates can in part be explained by bad management of the stock management forms with unusable information and the bad manipulation during the pulling of the antigen from the flask.

Completeness of Reporting
The completeness of reports at national level is **96.3%.**

Every month from standard vaccination registers for children 0-11 months and pregnant women, tick forms and other documents (stock management forms of vaccines and consumables) the nurses write the monthly activity reports. Two identical reports are completed, one kept for the health units archive and the second sent to the Head of the Health Sector at District Health Office level.

The District Health Offices with at their head a district doctor are subdivided into sectors. Each sector includes the communes with at their top a Head of the Health Sector who is responsible for the health units in the communes.

At this level, the compilations are made by sector and sent to the HMIS offices for the national compilation. The compiled information is then sent to the EPI for the utilisation of the information. Currently, after the compilation at sector level, the information is sent to HMIS electronically.

Completion of two monthly reports can consequently result in an increase in the nurses' workload, a difference in the district office information and the health unit.

HU (monthly report) ⇨ Head of District Health Sector (sector compilation) (district compilation) ⇨ HMIS level (national compilation) (district compilation) ⇨ EPI level (use of information)

This system allows the heads of health sectors to be directly responsible for a number of health units. This supervision can be targeted in order to improve the knowledge of the nurses. For this the sector heads should be trained in the new policies and management of the vaccination material and have the necessary resources.

Completeness of health unit reporting

Gitéga	Ruyigi	Kirundo	Muyinga
92%	100%	96%	100%

Other Core Indicators

The national levels of vaccination coverage for DTP3<1 and drop-out rates (DTP1<1 to DTP3<1) are 82.9% and 9.6% respectively, and the variation in the DTP3 number noted (2004-2005) is 26,924. The percentage of districts with a DTP3<1 proportion greater than 80% has gone from 41.2% to 47.1% and the percentage of districts have a drop-out rate DTP1<1 to DTP3<1 less than 10% is 5239% instead of 29.4% in 2004. These figures show the performance of EPI vaccination activities in Burundi. The low drop-out rates is due to the coupling of the vaccination activities and the distribution of food of the PAM called "PAM Lives."

The following table shows these indicators in 2005 for the visited districts:

District	Coverage rate	Drop-out rate	Variation 2004-2005
Gitéga	87,2%	6,3%	3202
Ruyigi	96,3%	16,8%	10503
Kirundo	80,2%	22,8%	1764
Muyinga	91,3%	15,3%	5791

3.6 Changes Since last DQA

Following the 2004 DQA, recommendations were made by the auditors. During our audit we noted that some recommendations have been applied and put into practice. These recommendations include standard vaccination registers, tally sheets, targeted populations, the idea of fixing coherent and realisable objectives.

4. Recommendations

4.1 Priority recommendations

- Develop new appropriate documents for the collection of information and the elaboration of the monthly report : a register for the management of vaccines and syringes, a monthly report that takes into account the key EPI indicators
- Develop policies for the undertaking of the different tasks involved in the vaccination activity : the registration of children and pregnant women, monitoring of the indicators, use of the vaccine stock management registers, information reporting, the monthly activity reports, the use of reports, the use of tally sheets and the storage of information
- Calculate and undertake the monitoring of vaccine wastage and the drop-out rates at all levels

4.2 Other recommendations

Recording

- Register children 0-11 months and pregnant women in order to be able to easily trace their vaccination history : register them once and note antigen administration dates
- Use tally sheets for pregnant women
- Record batch numbers, vaccine expiry dates and remaining stocks on the vaccine stock management forms
- Separately register the predetermined and fixed strategies as well as catch-up sessions
- Complete the tally sheets as the antigens are administered
- Improve the filling in of the tally sheets (too many additions and mistakes)

- Have available the AEFI notification forms at health units

Storing/Reporting

- Improve the storing of documents
- Improve the development of the monthly activity reports and the information reporting
- Separately report the predetermined and fixed strategy information at all levels
- Report the catch-up vaccination sessions at all levels
- Complete all the headings of the monthly report
- Develop policies for the storage of computerised information and display these policies at all levels
- Report on the different key EPI indicators at all levels (coverage rate for the different antigens, antigen wastage rates, drop-out rates)
- Supply the EPI information management services with the resource for the treatment and the storage of the information (computer network, memory sticks ..)

Monitoring/Evaluation

- Monitor the vaccine wastage rates at all levels
- Monitor the specific and global drop-out rates
- Monitor the vaccination cover in VAT+
- Display the different indicators at all levels
- Train the personnel in an efficient management of the antigens

Demographics and planning

- Harmonise the denominators at all levels
- Train the personnel in fixing coherent and realisable objectives

System Design

- Develop policies for the use of documents and the execution of vaccination tasks (information registration, use of documents, monitoring of the indicators, reporting, planning, vaccine management, storing of information)
- Complete a single monthly activity report using carbon paper for the second copy to be sent to the district office. This would reduce the errors between the two reports and the workload of the nurse
- Use fully the standard vaccination registers. Don’t change until the one in use is full
- Standardise the different documents
- Develop appropriate registers for the management of vaccines and consumables

Annexes

I. **Key Informants** - names and functions of those seen/visited and place and time of each visit to a facility : includes central and district staff, those attending the debriefing, and a list of the facilities visited*, but not* the names of each HU staff.

II. **Quality Index Analysis Table**

III. **Core Indicator Tables** (national and 4 Districts)

a. 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.

ANNEX I

KEY INFORMANTS (DISTRICT AND NATIONAL) AND HEALTH UNITS VISITED

Health Units by District

District 1	District 2	District 3	District 4
Maramvuya	Gisuru	Mugendo	Muyinga
Gisikara	Nyabitare	Mukenke	Kigoganya
Bungere	Nyarunazi	Ruhehe	Gashoho
Gitega	Ruyigi	Nyenzy	Gisanze
Mutaho	Besinde	Bunyari	Kizi
Bugendana	Muriza	Vumbi	Nyagatovu

District 1, Gitega

Name	Position
Ndihokurwayo, Georgette	District Doctor
Vyizioiro, Pamphile	Head of Gitega Sector
Ndayizeye Esperance	SIS. Gitega
Bamporubuia, Pasteur	Head of Kibuye Sector
Mudende Febronie	Pharmacy Administrator

District 2, Ruyigi

Name	Position
Ntirampeba, Léonard	District Doctor
Muhutu, Théodomir	Head of Ruyigi Health Sector
Nijiobere, Jean Baptistr	District Health Office Administrator
Nbnyiragje, Emanuél	Administrator
Bazelutwatro, Gabriel	Head of Kinyinya Health Sector

District 3, Kirundo

Name	Position
Dr Rubéya Claudel	District Doctor
Kabahizi Evarist	Health Information System Administrator
Mimubona Léonce	Health Information System Administrator
Banyihishako Charles	Head of Kirundo Health Sector
Nahindavyi Odile	Head of Mukenke Health Sector
Béatrice Miyonsaba	Pharmacy Administrator
Mzohabonayo Emmanuel	District Health Promotion Coordinator

District 4, Muyinga

Name	Position
Dr Ntakarutimana Sabine	District Doctor
Gatihoro méthode	Head of Health Sector
Nahimana Gamaliel	Head of Health Sector
Kabanga Juliette	Health Information System Administrator
Mbonimpaye Adrienne	Pharmacy Stock Administrator
Cimpaye Adrienne	Pharmacy Stock Administrator

National Level	
Name	**Position**
Dr SINDAYIKENGERA Hilaire	EPI Director
Giswaswa Chimène	Supervisor
Simbizi Léonard	Supervisor
Nanrabawta Jean-Claude	Supervisor
Dr Sheye Emmanuel	HMIS Director
UNICEF	
CHERIF Benadouda	Programme Coordinator
Dr Norolala RABARIJOHN	Administrator of the Health-Nutrition Programme
Dr Marie-Thérèse	EPI/UNICEF
Debriefing	
Name	**Position**
BATUNGWANAYO Charles	Director- General of Health
Dr MANZILA T. C	WHO Representative
Dr Hilaire NDHOCVBWAYO	CTP of EPI
GISWASWA Chimène	Supervisor
SIMBIZI Léonard	Supervisor
NANRABAWTA Jean-Claude	Supervisor
DR SHEYE Emmanuel	HMIS Director
NIYUNGEKO Jacqueline	DSPS Counsellor
Dr Rose Marie NDUWIMANA	EPI/WHO
Dr HAPERIMANA Pascaline	EPI Vice-Director
Dr FAORP Ferraris	Cordaid
Médiatrice KIBURENTE	UNICEF
Dr BEKUNGRAMYO	DGSP/MSP
Dr Marie-Thérèse	UNICEF
BIZIMANA Idelphonse	
Dr SINDAYIKENGERA Hilaire	EPI Director
Dr SIBOMANA	Counsellor
RUNAMGARI	EPI Administrator
Dr NDAYIKUNDA	DSPS/MSP
DR BAZA Dumas	IMTC Director

ANNEX II

CORE INDICATORS TABLES

Core indicators at National level

	JRF	Reported at time of audit
Districts with DPT3<1 coverage > 80%	88%	88%
Districts with measles<1 coverage > 90%	47%	47%
Drop-out rate		9.6%
Type of syringes	AB	AB
Districts with AD syringes	100%	100%
Introduction HVB	Yes	Yes
Introduction Hib	Yes	Yes
Vaccine wastage DPT	NA	NA
Wastage rate HVB	NA	NA
Wastage rate Hib	NA	NA
Interruption in vaccine supply 2004		
Number of Districts with interruption in vaccine supply 2004	0	0
% District disease surveillance reports received/expected	100%	100%
% District coverage reports received/expected		96%
% District coverage reports received on time		85%
Number of District supervised at least once in 2004		100%
Number of Districts which supervised all HUs in 2004	5	NA
Number of Districts with microplans including routine immunisation	NA	100%

Core indicators at District level

		D1	D2	D3	D4
District DPT3 coverage	At national	84.1%	104.4%	76.8%	95.3%
	At District	87.2	96.3	80.2	91.3
District measles coverage	At national[2]	82.6	116.0	80.1	87.6
	At District	73.5	93.1		
District Drop-out DPT1-3[3]	At national	6.6	16.8	16.2	11.7
	At District	6.3	16.0	22.8	15.3
Syringes supplied in 2003	At national	296,200	119,600	512,600	196,400
	At District	163,490	NA	NA	NA
Number of District coverage reports received/sent	At national	12/12	11/12	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	12/12	11/12	8/12	10/12
	At District	NA	NA	NA	NA
Number of HU coverage reports received/sent	At national				
	At District	12/12	12/12	12/12	12/12
Number of HU reports received/sent on time	At national				
	At District	8.6/12	5/12	12/12	12/12
District vaccine stock out	At national	No	No	No	No
	At District	No	No	No	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				
	At District	Yes	Yes	Yes	Yes
Did the District have a microplan for 2003	At national				
	At District	Yes	Yes	Yes	Yes

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

ANNEX III

QUALITY INDEX ANALYSIS TABLE

District Quality Indices and District average (over 5)

	Recording	Stor/Repo	Monitoring	Demo/Pla
D1 Gitega	4.4	2.9	3.2	4.4
D2 Ruyigi	3.3	3.1	4.1	5.0
D3 Kirundo	3.9	2.5	3.6	4.0
D4 Muyinga	5.0	1.9	3.6	4.0
District Average	4.2	2.6	3.6	4.4

HU Quality indices and HU average (over 5)

	D1 Gitega				D2 Ruyigi		
	Record.	Stor/Rep.	Mon/Eval		Recording	Stor/Repo	Mon/Eval
Maranvya	5,0	3,8	5,0	Gisuru	4,3	3,8	3,9
Mutaho	4.0	1.3	4.4	Muriza	4.3	3.8	4.4
Gitega	4.7	3.8	4.4	Ruyigi	3.3	3.8	4.4
Bugendana	3.7	3.7	4.3	Nyabitare	4.3	3.7	3.9
Bungere	4.7	3.8	5.0	Bisinde	4.0	3.8	4.4
Gisikara	4.6	3.7	5.0	Nyarunazi	2.7	3.7	4.4
HU average	**4.4**	**3.3**	**4.6**	**HU average**	**3.8**	**3.8**	**4.3**

	D3 Kirundo				D4 Muyinga		
	Record.	Stor/Rep.	Mon/Eval		Recording	Stor/Repo	Mon/Eval
Mugendo	2.7	5.0	3.3	Muyinga	3.0	5.0	4.4
Mukenke	4.3	3.8	3.3	Kigoganya	4.0	5.0	3.9
Ruhehe	3.0	3.7	3.9	Gashoho	3.3	3.8	4.4
Nyenzy	3.0	5.0	3.3	Gisanze	3.3	3.7	4.4
Bunyari	3.3	5.0	3.3	Kizi	3.7	3.8	2.8
Vumbi	3.7	5.0	3.3	Nyagato	3.0	3.8	3.9
HU average	**3.3**	**4.6**	**3.4**	**HU average**	**3.4**	**4.2**	**4.0**