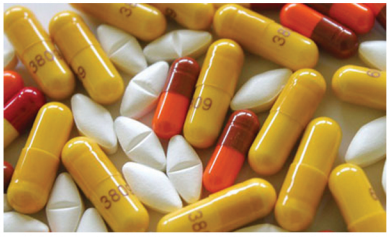

# Survey of Adherence to Antiretroviral Medicine in Ethiopia.

**A collaborative Activity with the Ethiopian Drug Administration and Control Authority (DACA); Federal HIV/AIDS Prevention and Control Office (FHAPCO), and the Rational Pharmaceutical Management plus Program (RPM Plus)**

**June 15-22, 2007**

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MSH

SPS Strengthening Pharmaceutical Systems

Management Sciences for Health

CPM | Center for Pharmaceutical Management

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## Acknowledgement

The Authority and Federal HIV/AIDS Prevention and Control Office (FHAPCO) would like to acknowledge MSH/RPM plus for its technical and financial support.

We would also like to thank all the contributors (Annex.1) for their involvement on planning, data collection and analysis, writing a report and monitoring the courses of this survey.

It is also our pleasure to express our deep felt gratitude towards Mr.Gabriel Daniel for his unreserved contribution.

Last but not least, many thanks go to regional health bureaus and health facilities those were voluntary in allowing the conduction of this survey in their respective regions and facilities.


## Recommended Citation

Survey of adherence to Antiretroviral Medicine in Ethiopia, June 15th–22nd, 2007.


## Key Words

Adherence, Antiretroviral, Indicators, HIV/AIDS, Ethiopia

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# ACRONYMS

| | |
|---|---|
| **ART** | antiretroviral therapy |
| **ARV** | antiretroviral |
| **DACA** | Drug Administration and Control Authority |
| **DH** | district hospital |
| **INRUD** | International Network for Rational Use of Drugs |
| **MSH** | Management Sciences for Health |
| **RHB** | Regional Health Bureau |
| **RPM Plus** | Rational Pharmaceutical Management Plus |
| **Sida** | Swedish International Development Cooperation Agency |
| **USAID** | United States Agency for International Development |
| **WHO** | World Health Organization |

# BACKGROUND

# BACKGROUND

In collaboration with national AIDS control programs and other relevant programs, groups from the International Network for Rational Use of Drugs (INRUD) conducted a survey in five East African countries— Ethiopia, Kenya, Rwanda, Tanzania, and Uganda—. The aim of the survey was to appraise some aspects of the current practices in antiretroviral therapy (ART) programs. Specifically, for patients receiving antiretroviral (ARV) medicines they looked at which definitions and which parameters were being used for measuring adherence and defaulting and how they were being calculated. In addition they reviewed what data are routinely recorded and where. Definitions of both adherence and defaulters or dropouts were shown to vary considerably.. Fourteen different definitions of defaulting were found to be in use. Measurement of both adherence and defaulting at individual or facility level was haphazard, using various data sources and various methods of calculation. Nevertheless, much information is recorded at both the clinic and pharmacy location.

A regional meeting was held at Entebbe, Uganda, April 27–29, 2006, with 38 participants from Management Sciences for Health (MSH), the national AIDS control programs, and local INRUD groups who had coordinated the survey. Candidate indicators were suggested for the following: self-report from patient interviews or clinical records; non adherence, based on missed days from pharmacy records; and defaulting, based on information from attendance registers. Other system indicators were also suggested as was a national sampling strategy. The feasibility and reliability of collecting these suggested candidate indicators were then tested in two national surveys of 20 facilities each in both Kenya and Rwanda towards the end of 2006.

The next step was to find out the determinants of good and bad adherence by performing qualitative research in six facilities in Uganda and Ethiopia. These six facilities included two with good adherence and defaulting records, two with records of medium quality, and two with poor records. To identify these facilities in Uganda, a national survey was conducted at the end of March 2007; a similar exercise was undertaken in June 2007 in Ethiopia. This latter survey is the subject of this report.

There are efforts to scale up and decentralize ART services in Ethiopia, there are an increasing number of health facilities providing ART and patients getting ART services.

With the large number of health facilities and patients on antiretroviral therapy in Ethiopia the issue of adherence is critical to both the control of the disease and the effective use of the resources being devoted to AIDS treatment. Yet surprisingly, adherence is not well addressed as a central component at health facilities and patient levels. If adherence is low, treatment failure will occur and the likelihood of development of resistant virus is high. The global interest in improving access has ensured a lot of funds for ARV programs, but no one is taking the lead in the issue of adherence.

The Ethiopia survey is a collaborative effort between the Drug Administration and Control Authority (DACA), INRUD Ethiopia and RPM Plus. The objective of this survey was to identify the approaches for adherence monitoring being used by major HIV/AIDS systems of care that provide or support the provision of ART services and estimate achieved rates. All local expenses and logistics support has been provided by RPM Plus Ethiopia. The survey exercise was planned to be conducted by professionals who are directly involved in ART programs and in such a way that it will also contribute to the transfer of survey skills, promote better awareness about adherence and use the observations and recommendations to strengthen and institutionalize adherence interventions in the facilities.

# PROCEDURES

# PROCEDURES

## Facility Sampling

A list of all facilities that treated patients with ARVs in Ethiopia was obtained through the RPM Plus Ethiopia Program. Only those facilities treating at least 100 patients with ART in November 2006 were chosen. The facilities were divided regionally into Addis Ababa, Oromiya, Amhara, Tigray and the Southern region. They were then chosen to be practical when traveling trying to incorporate different levels of hospital from District to Zonal to Regional referral and Central referral. Six were chosen from Addis Ababa, four from Oromiya, five from Amhara, three from the South and two from Tigray. All hospitals were run by the government. No Health Centers were included because none had enough patients in November. This situation though is rapidly changing.

*Table 1. Facilities Sampled*

| Name | Type of Facility | Facility Management |
|---|---|---|
| Yekatit 12 | Regional Referral Hospital | Government |
| Tikur Anbesa | Teaching/Federal Referral Hospital | Government |
| Alert | Specialized Referral Hospital | Government |
| Police. | Federal / Referral Hospital | Government |
| Zewditu | Regional Referral Hospital | Government |
| St.Paul | Regional Referral Hospital | Government |
| Gondar University | Teaching Hospital | Government |
| Felegehiwot | Regional Referral Hospital | Government |
| Finoteselam | Zonal Hospital | Government |
| Debremarkos | Zonal Hospital | Government |
| Dessie | Regional Referral Hospital | Government |
| Bishoftu | Zonal Hospital | Government |
| Assela | Zonal Hospital | Government |
| Adama | Regional Referral Hospital | Government |
| Wonji | Factory Hospital | Public-private |
| Dilla | District Hospital | Government |
| Yirgalem | Zonal Hospital | Government |
| Shashemene | Zonal Hospital | Government |
| Mekelle Army Hospital | Regional Referral Hospital | Government |
| Mekelle Hospital | Zonal Hospital | Government |

## Training

The survey coordinator introduced the teams to the data collection instruments and the concepts of sampling for two days (June 9th and 10th). For the next three days the survey coordinator and the team leaders held training for the pharmacists from the hospitals we were to visit. During this training sampling methods were discussed and each data collection form was gone over carefully. For the exit interviews participants role played being both interviewer and interviewee. A field trip was arranged on the third day to visit two facilities to pilot the sampling methods and data collection

The forms were based on those used in Uganda, with only one retrospective sample to be taken. However the dispensing details were to be recorded on a separate form where all the dates of visits and numbers of days of medicines dispensed were recorded so that the data collector did not have to make any calculations. Personal details were recorded including TB status, and WHO disease stage, and CD4 count at initiation of treatment; but the number of children and the patient's religion were dropped. In addition, instead of the new quality of record-keeping form developed for Uganda, a separate form was developed for clinical and pharmaceutical records.

## Data Collectors

The teams were compiled of Pharmacists from the Regional Health Bureaus, representatives from the Drug Administration and Control Authority; Regional Pharmacist Associates paid by the Rational Pharmaceutical Plus program to monitor ART clinic pharmacies; and pharmacists from the hospitals we had sampled. This means that the people doing the survey were going to be responsible in the future for monitoring the quality of clinic performance

## Logistics

## Permissions

The Drug Administration and Control Authority provided support for the survey by participating in the review of the proposed activities and writing official letters of cooperation to the participating regions and hospitals.

## Communication

All team leaders were given air time for their cell phones. Any problem with process or interpretation was discussed with the research coordinator (John Chalker), allowing any lesson to be passed on to the other groups. Each evening, all team leaders communicated with the research coordinator.

RPM Plus availed its conference facilities, laptop computers and photocopying services as well as its vehicles for the first phase of the survey.

## Materials

Each group had the following materials—

- A collection of forms (enough for each group member to do each task and a set of forms to give to the facility director if requested)

    - Fifteen facility forms, 10 exit interview procedures, 36 exit interview data forms, 10 retrospective procedures, 50 retrospective data forms and 50 retrospective dispensing data forms 30 patient identifier forms, 36 pharmacy record keeping quality data forms and 36 clinical record keeping quality data forms

- A copy of the introductory letter from the Drug Administration and Control Authority was carried for each facility

- A clipboard for each member for writing on and notebooks, pens, and pencils

- A large envelope (one for each facility) to keep all forms for each facility

- A laptop computer with data entry forms for each facility

## Data Entry

Each team carried a laptop computer. Each evening, the day's data were entered on the computer. After the data collection each group met to finalize their data entry and carry out a final check (sheet by sheet) of the data entry.

# FACILITY SURVEY

# FACILITY SURVEY

## Data Collection Instruments

Data collection instruments included—

- A Patient Exit Interview similar to that used in the other 3 surveys
- A Facility Interview form similar to that used in Uganda
- A Retrospective Data Form in two parts; the first part was similar to that used in Uganda, the second was a new form to record dispensing data (Appendix 1)
- Two Quality of Record-Keeping forms; one for pharmacy records and one for clinical records (Appendix 2).

## Facility Interviews

The Facility Interview forms as for the other surveys included questions on the days and hours the clinic is open and whether it is open at convenient times, such as evenings or weekends. The workload per clinician and per support staff was also calculated. The availability of private space for counseling and laboratory services for CD4 and viral load were noted. A standard list of necessary ARVs for adults (Table 2), ARVs for children (Table 3) and key medicines for opportunistic infections (Table 4) was drawn up on the basis of national standard treatment guidelines and previous survey data on frequency of opportunistic infections. The list of ARVs included standard first- line treatments for adults and children.

Additional questions were added on whether there were guidelines on ART use and storage present, the criteria for starting patients on ART, ordering CD4 tests and viral loads and the cost of these procedures; and the usual number of days of therapy given.

*Table 2. First Line ARVs for Adults in Ethiopia*

| | |
|---|---|
| 1 | Lamivudine 150mg tablet |
| 2 | Stavudine 40 mg capsule |
| 3 | Stavudine 30 mg capsule |
| 4 | Nevirapine 200mg tablet |
| 5 | Efavirenz 200mg tablet |
| 6 | Efavirenz 600mg tablet |
| 7 | Zidovudine + Lamivudine 450mgs tablet |

*Table 3. First Line ARVs for Children in Ethiopia*

| | |
|---|---|
| 1 | Efavirenz 50mgs or 100mgs tablets |
| 2 | Efavirenz syrup |
| 3 | Nevirapine syrup 10mg/ml |
| 4 | Lamivudine syrup 10mg/ml |
| 5 | Zidovudine 100mg tablet |
| 6 | Zidovudine syrup 10mg/ml |
| 7 | Stavudine 15mgs capsule |
| 8 | Stavudine 20mgs capsule |
| 9 | Stavudine Syrup |

*Table 4. Key Medicines for opportunistic infections in Ethiopia*

| | |
|---|---|
| 1 | Cotrimoxazole tablets 480 or 960mg |
| 2 | Cotrimoxazole suspension 240mg/5ml |
| 3 | Fluconazole tablets 150 or 200mg |
| 4 | Miconazole Gel |
| 5 | Erythromycin tablets 250 or 500mg |
| 6 | Nystatin oral drops 10,000 IU/ml |
| 7 | Acyclovir 200 mgs tablets or capsules |
| 8 | Acyclovir Cream |
| 9 | Folic Acid 5mgs tablets |

## Main Problems

The following problems came up—

- All dates were recorded in the Ethiopian Calendar in the written pharmacy and clinical records. These had to be recorded as written and then converted into the Gregorian calendar later. No methods existed for doing this in excel, so had to be developed.

- All dates in the computerized dispensing tool were in Gregorian dates. This meant that the data clerk in the hospital had to translate each date into Gregorian.

- There were many different patient identification numbers in use: Normally patients on ART were given a "Unique" ART numbers but these were sometimes different in the pharmacy and clinic notes. In addition occasionally patients were still using Hospital Out-Patient Card number, a pharmacy number, and an HIV pre ART number. Frequently different parts of the clinic and pharmacy used different numbers which made it extremely difficult to follow a single patient through the different records

## Results

The median weekly patient load of 205 (Tables 5 and 6) was more than the 120 of Uganda and 150 of Rwanda, but less than the 230 of Kenya. But the spread was quite large (750 to 40). The median workload was similar to the other three countries of 2 patients per clinician per hour (range 4.4–0.4) which is similar to Uganda (2), Kenya (2.2) and Rwanda (1.9). There were a median of 30 patients per week per support staff (with a range from 88 to 3 patients). Seven facilities were open all weekend. Because not many patients actually come at the weekend the workload was also calculated excluding weekends. It only raised the median to 2.1 patients per hour per clinician.

Eighteen of the 20 facilities visited had access to laboratories for CD4 counts (none for viral load) (Table 5 and 7); and only 14 had private space for adherence counseling. None gave food supplements, but 13 provided child care and 12 linked patients to other patients. Only 19% of staff had received recent training on ART.

The routine number of day's treatment given to maintenance phase patients was longer than in the other countries (Table 6), with one facility giving 90-120 days; 1 giving 90; 5 giving 60-90; 9 giving 60 days and only 4 routinely giving 30 days. In the other countries, 30 days was the most common. Six facilities initiated patients on 30 days of treatment, 4 on 15-30 days and half on 15 days. In the other countries nearly all facilities initiated patients with 14 days of treatment.

The availability of the adult and child list of ARVs at the facilities was excellent with a median of 100% in stock now and over the last 90 days. Two facilities had no children's stock as they didn't treat children and one had no efavirenz or stavudine (Tables 5, 6 and 7).

The availability of medicines for opportunistic infections was much worse however with a median of 44% available now (100-22) and 43% of days in stock in the last 90, (90-18).

*Table 5. Key Results of Facility Questionnaire*

| Indicator | Median | *Maximum* | *Minimum* |
|---|---|---|---|
| Patient load/week | **205** | 750 | 40 |
| Number hours/week | **39.5** | 56 | 24 |
| Patients/hour/clinician | **2.0** | 4.4 | 0.4 |
| Patients/hour/clinician excluding week ends | **2.1** | | |
| Patients/week/support staff | **30** | 38 | 3 |
| Access to lab services (%) | **90** | — | — |
| Private adherence rooms (%) | **70** | — | — |
| % ARVS in stock (adult %) | **100** | 100 | 86 |
| % days (in previous 90) ARVS (adult %) in stock | **100** | 100 | 96 |
| ARVS in stock (children %) (for those treating children) | **100** | 100 | 55.6 |
| % days (in previous 90) ARVS (children %) in stock | **100** | 100 | 55.6 |
| % OI key medicines in stock | **44** | 100 | 22 |
| % days (in previous 90) key medicines in stock | **43** | 90 | 18 |
| Convenient operating time (open weekends or evenings) | **Seven facilities** | | |

*Table 6. Ethiopia Facility Indicators-A*

| | % ARVs Now in Stock (Adult List) | % ARVs Now in Stock (Child List) | % OI Key Medicines Now in Stock | Average % Days ARVs in Stock (Adult List) | Average % Days ARVs in Stock (Child List) | Average % Days OI Key Medicines in Stock | Weekly Number of Patients | Number of Hours per Week | Pts/ Hour/ Clinician | Pts/ Week/ Support staff | Usual # days supply of ARVs given to new patients | Usual # days supply of ARVs given to ongoing patients |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility 1 | 100.0 | 100.0 | 44.4 | 100 | 100 | 33.3 | 300 | 39 | 3.8 | 33.3 | 15/30 | 60/90 |
| Facility 2 | 100.0 | 100.0 | 44.4 | 100 | 90.7 | 46.7 | 400 | 39 | 2.1 | 30.8 | 15/30 | 60/90 |
| Facility 3 | 100.0 | 88.9 | 44.4 | 100 | 99.1 | 40.0 | 600 | 39 | 2.6 | 42.9 | 30 | 60 |
| Facility 4 | 100.0 | 88.9 | 44.4 | 100 | 88.9 | 48.3 | 150 | 39 | 1.9 | 13.6 | 15/30 | 60/90 |
| Facility 5 | 100.0 | 100.0 | 22.2 | 100 | 100 | 26.7 | 750 | 39 | 3.8 | 50.0 | 15/30 | 60/90 |
| Facility 6 | 100.0 | 0.0 | 33.3 | 100 | 0 | 30.0 | 150 | 39 | 1.0 | 11.5 | 30 | 90-120 |
| Facility 7 | 100.0 | 100.0 | 44.4 | 100 | 100 | 40.0 | 200 | 56 | 0.9 | 25.0 | 15 | 60 |
| Facility 8 | 100.0 | 100.0 | 77.8 | 100 | 100 | 67.2 | 492 | 56 | 2.2 | 61.5 | 30 | 60 |
| Facility 9 | 100.0 | 100.0 | 44.4 | 100 | 96.3 | 48.3 | 66 | 56 | 0.6 | 66.0 | 15 | 60 |
| Facility 10 | 100.0 | 100.0 | 55.6 | 100 | 100 | 53.3 | 175 | 56 | 1.6 | 87.5 | 15 | 30 |
| Facility 11 | 100.0 | 100.0 | 22.2 | 100 | 100 | 28.4 | 601 | 56 | 2.7 | 66.8 | 30 | 60 |
| Facility 12 | 100.0 | 100.0 | 33.3 | 100 | 100 | 45.0 | 350 | 40 | 4.4 | 29.2 | 14 | 60 |
| Facility 13 | 100.0 | 100.0 | 22.2 | 100 | 100 | 20.0 | 210 | 40 | 1.8 | 11.1 | 30 | 60 |

| | % ARVs Now in Stock (Adult List) | % ARVs Now in Stock (Child List) | % OI Key Medicines Now in Stock | Average % Days ARVs in Stock (Adult List) | Average % Days ARVs in Stock (Child List) | Average % Days OI Key Medicines in Stock | Weekly Number of Patients | Number of Hours per Week | Pts/ Hour/ Clinician | Pts/ Week/ Support staff | Usual # days supply of ARVs given to new patients | Usual # days supply of ARVs given to ongoing patients |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility 14 | 100.0 | 100.0 | 22.2 | 100 | 100 | 17.8 | 600 | 48 | 3.1 | 85.7 | 15 | 90 |
| Facility 15 | 100.0 | 55.6 | 33.3 | 100 | 55.6 | 30.0 | 40 | 24 | 0.8 | 3.1 | 2 weeks | 60 |
| Facility 16 | 100.0 | 100.0 | 44.4 | 100 | 100 | 46.7 | 112 | 32.5 | 0.6 | 28.0 | 15 | 30 |
| Facility 17 | 100.0 | 100.0 | 33.3 | 100 | 100 | 45.0 | 180 | 30 | 3.0 | 20.0 | 30 | 30 |
| Facility 18 | 100.0 | 100.0 | 33.3 | 100 | 100 | 32.5 | 154 | 40 | 1.0 | 6.4 | 15 | 30 |
| Facility 19 | 85.7 | 0.0 | 100.0 | 100 | 0 | 90.0 | 75 | 39 | 0.4 | 12.5 | 15 | 60 |
| Facility 20 | 100.0 | 100.0 | 100.0 | 100 | 100 | 45.3 | 438 | 42 | 2.6 | 33.7 | 30 | 60 -90 |
| Average or % | 99.3 | 96.3 | 60.0 | 100 | 96.1 | 41.6 | 302 | 42.5 | 2.0 | 35.9 | 21.9 | 53.6 |
| Maximum | 100.0 | 100.0 | 100.0 | 100 | 100 | 90.0 | 750 | 56.0 | 4.4 | 88 | 30.0 | 90.0 |
| Median | 100.0 | 100.0 | 44.4 | 100 | 100 | 42.5 | 205 | 39.5 | 2.0 | 30 | 15.0 | 60.0 |
| Minimum | 85.7 | 55.6 | 22.2 | 100 | 55.6 | 17.8 | 40 | 24.0 | 0.4 | 3 | 14.0 | 30.0 |

*Table 7. Ethiopia Facility Indicators-B*

| | Access to Lab for CD4 or Viral Load | Private space for Adherence Counseling | Child Care | Food for Patients | Link Patients with Other Persons Living with HIV | Have Connection with the Local Community | % Support Training on HIV in Last Six Months | National ART Treatment Guidelines | Donor ART Treatment Guidelines | ART Storage Guidelines |
|---|---|---|---|---|---|---|---|---|---|---|
| Facility 1 | Y | Y | Y | S | N | N | 33.3 | Y | N | N |
| Facility 2 | Y | Y | Y | N | Y | Y | 53.8 | Y | N | N |
| Facility 3 | Y | Y | Y | N | Y | Y | 21.4 | Y | Y | N |
| Facility 4 | Y | Y | Y | N | N | N | 9.1 | Y | N | N |
| Facility 5 | Y | Y | Y | N | Y | Y | 0.0 | Y | Y | N |
| Facility 6 | Y | N | N | N | S | N | 7.7 | Y | Y | N |
| Facility 7 | Y | Y | N | N | Y | Y | 25.0 | Y | N | Y |
| Facility 8 | Y | Y | N | N | N | N | 62.5 | Y | N | Y |
| Facility 9 | Y | N | N | N | N | N | 0.0 | Y | N | Y |
| Facility 10 | Y | N | Y | N | Y | N | 0.0 | Y | N | Y |
| Facility 11 | Y | N | Y | N | S | Y | 22.2 | Y | N | N |
| Facility 12 | N | Y | Y | N | N | Y | 16.7 | Y | N | N |

| | Access to Lab for CD4 or Viral Load | Private space for Adherence Counseling | Child Care | Food for Patients | Link Patients with Other Persons Living with HIV | Have Connection with the Local Community | % Support Training on HIV in Last Six Months | National ART Treatment Guidelines | Donor ART Treatment Guidelines | ART Storage Guidelines |
|---|---|---|---|---|---|---|---|---|---|---|
| Facility 13 | Y | Y | Y | N | Y | Y | 5.3 | Y | N | N |
| Facility 14 | Y | Y | Y | N | Y | Y | 28.6 | Y | N | N |
| Facility 15 | N | Y | Y | N | Y | Y | 0.0 | Y | N | N |
| Facility 16 | Y | Y | N | N | Y | Y | 0.0 | Y | N | N |
| Facility 17 | Y | Y | N | N | Y | N | 33.3 | Y | N | N |
| Facility 18 | Y | Y | Y | N | Y | N | 20.8 | Y | N | N |
| Facility 19 | Y | N | N | N | N | N | 0.0 | Y | N | N |
| Facility 20 | Y | N | Y | N | Y | N | 30.8 | Y | N | N |
| Average or % | 90.0 | 70.0 | 63.2 | 0.0 | 60.0 | 47.4 | 18.5 | 100.0 | 15.0 | 20.0 |
| Maximum | — | — | — | — | — | — | 62.5 | — | — | — |
| Median | — | — | — | — | — | — | 18.8 | — | — | — |
| Minimum | — | — | — | — | — | — | 0.0 | — | — | — |

## Exit Interviews

The exit interview instructions and format were the same as for the other three countries except we no longer asked about adverse drug reactions as the results of this seemed unreliable and we asked about the cost of traveling the clinic. As before the intention was to do 30 exit interviews per facility, with the main indicator being a self-report on adherence in recent days. At the same time, team members were to collect information on other factors affecting adherence, such as the time spent getting to clinic, time spent in clinic, whether medicines are accurately labeled, and whether the patient knows how to take the medicine correctly. All questions were practiced in the various languages from the different regions. As before, the definition of "properly labeled" included each medicine being in separate container or envelope with the medicine name, dose per time, and number of times per day written on it. In Ethiopia labels such as I-II or 1bd were not accepted as meaning one pill twice a day as it was felt that these short hand phrases were for professional to professional, but not for professional to patient.

To manage the exit interviews with the patients on ARV, when the patient went to collect their medication before leaving, the pharmacist or dispenser asked them to attend an interview, provided they had not started on that exact day.

## Results

A total of 565 patients were interviewed at an average of 28 per facility. This is many more than the other three countries (Uganda - 408 interviews; Rwanda – 285 and Kenya - 373). A full 30 interviews were managed in 18 of the 20 facilities and 27 in another. It was only in one facility that there were virtually no patients on the day of the visit, where only one interview was managed. In some facilities the patients were interviewed over more than one day to make up the numbers. The interviewees had a median age of 33, and 60 percent were female (Table 10). In Uganda, Rwanda and Kenya the median ages were 36, 36 and 37 and the percent female were 63, 67 and 59 respectively. Eighty six percent of them were fit enough to do normal activities (Facility range: 100-53). This was the same as Kenya (Table 9), but more than Rwanda (77%) and Uganda (67%).

*Table 8. Selected Results of the Exit Interviews in Ethiopia*

| **Indicator** | **Median** | **Maximum** | **Minimum** |
|---|---|---|---|
| **Self report: Full adherence** | **96.60%** | 100 | 90 |
| **Average Adherence** | **99.60%** | 100 | 96.3 |
| Able to do normal activity (%) | **86** | 100 | 53 |
| Avg. travel time to clinic (minutes) | **64** | 169 | 15 |
| Avg. time in clinic (minutes) | **99** | 284 | 35 |
| Know ARV dosage (%) | **100** | 100 | 90 |
| ARV Medicine properly labeled (%) | **5** | 97 | 0 |
| Non ARV Medicine properly labeled (%) | **0** | 50 | 0 |
| All ARVs dispensed (%) | **100** | 100 | 93 |
| All non-ARVs dispensed (%) | **92** | 100 | 9 |

The self-reported adherence was high—96.6 percent claimed full adherence (Tables 8 and 10). This compared similarly to Uganda 96.7; Rwanda 91 and Kenya 95 (Table 9).

Travel time averaged an hour which is less than the other three countries, showing that services are somewhat closer to the patients. The median cost of travel was 4 Birr (19-0). There are almost 9 Birr to the dollar, so that the median travel cost was 44US Cents but the maximum was $4.75, which is a considerable burden (Table 10).

Nearly all ARVs were dispensed. The few that were not were to health people working in the clinic. Most non-ARVs were dispensed and nearly all patients knew their doses. The dispensing probably related to availability as shown in Tables 6 and 7.

Medicine labeling was poor. This was partly because patients took out the packaging and threw it away before leaving the clinic to avoid stigma so that no one would see they were carrying medicine for HIV/AIDs. This may be an area for intervention.

*Table 9. Comparable Selected Results of the Median values of the Exit Interviews in Ethiopia, Uganda, Rwanda and Kenya*

| **Indicator** | **Ethiopia** | **Uganda** | **Rwanda** | **Kenya** |
|---|---|---|---|---|
| **Self report: Full adherence** | **99.6%** | **96.70%** | **100%** | **96.6%** |
| **Average Adherence** | **99.6%** | **99.40%** | **100%** | **99.2%** |
| Able to do normal activity (%) | **86** | **67** | **77** | **86** |
| Avg. travel time to clinic (minutes) | **64** | **89** | **120** | **202** |
| Avg. time in clinic (minutes) | **99** | **182** | **69** | **80** |
| Know ARV dosage (%) | **100** | **100** | **100** | **100** |
| Medicine properly labeled (%) | **5** | **100** | **2** | **80** |
| All ARVs dispensed (%) | **100** | **100** | **100** | **100** |
| All non-ARVs dispensed (%) | **92** | **90** | **88** | **87** |

*Table 10. Composite Results of the Exit Interviews*

| Facility | # Inter-views | Average Age | Average % Female | % Can Do Normal Activity | Average Months on Trea-tment | Average Time in Clinic | Average Travel Time | Average cost to travel | % Do Not Know Dosage | % ARV Meds Well Labeled | % non ARV Meds Well Labeled | % ARVs dispensed | % Non-ARVs dispensed | % self report full adherence | Self report average adherence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | 32.5 | 70.0 | 66.7 | 13.1 | 48.8 | 145.3 | 1.7 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 2 | 30 | 25.3 | 66.7 | 83.3 | 16.1 | 33.2 | 160.5 | 1.8 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 3 | 30 | 33.5 | 66.7 | 93.3 | 14.6 | 44.8 | 167.2 | 1.9 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 96.7 | 97.9 |
| 4 | 27 | 36.7 | 33.3 | 85.2 | 20.1 | 70.7 | 91.1 | 0.0 | 0.0 | 7.4 | 10.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 5 | 30 | 32.7 | 60.0 | 93.3 | 18.3 | 42.7 | 89.9 | 2.9 | 3.3 | 3.3 | 4.0 | 100.0 | 100.0 | 96.6 | 99.5 |
| 6 | 27 | 32.7 | 74.1 | 96.3 | 14.8 | 44.3 | 87.1 | 1.9 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 96.3 | 99.3 |
| 7 | 30 | 29.8 | 60.0 | 76.7 | 7.2 | 50.0 | 109.5 | 3.9 | 3.3 | 26.7 | 25.9 | 100.0 | 89.7 | 90.0 | 97.4 |
| 8 | 30 | 34.0 | 56.7 | 100.0 | 11.6 | 76.5 | 96.8 | 6.4 | 3.3 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 9 | 1 | 65.0 | 0.0 | 100.0 | 16.0 | 15.0 | 60.0 | 1.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 10 | 30 | 33.8 | 60.0 | 93.3 | 10.5 | 76.3 | 175.7 | 5.8 | 3.3 | 76.7 | 0.0 | 100.0 | 100.0 | 96.7 | 99.8 |
| 11 | 30 | 36.8 | 56.7 | 76.7 | 10.6 | 60.8 | 283.5 | 8.5 | 0.0 | 3.7 | 16.7 | 100.0 | 8.7 | 93.3 | 99.0 |
| 12 | 30 | 32.8 | 66.7 | 86.7 | 8.8 | 68.0 | 83.5 | 4.0 | 0.0 | 96.6 | 42.9 | 100.0 | 80.8 | 90.0 | 96.3 |
| 13 | 30 | 31.6 | 46.7 | 73.3 | 14.3 | 110.7 | 91.0 | 6.4 | 0.0 | 6.7 | 0.0 | 93.3 | 84.6 | 100.0 | 100.0 |

| Facility | # Inter-views | Average Age | Average % Female | % Can Do Normal Activity | Average Months on Trea-tment | Average Time in Clinic | Average Travel Time | Average cost to travel | % Do Not Know Dosage | % ARV Meds Well Labeled | % non ARV Meds Well Labeled | % ARVs dispensed | % Non-ARVs dispensed | % self report full adherence | Self report average adherence |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 30 | 32.4 | 53.3 | 90.0 | 10.1 | 60.3 | 142.8 | 4.9 | 10.0 | 3.3 | 0.0 | 96.7 | 68.0 | 100.0 | 100.0 |
| 15 | 30 | 36.6 | 80.0 | 93.3 | 16.6 | 50.5 | 115.7 | 1.1 | 0.0 | 53.3 | 50.0 | 100.0 | 84.6 | 93.3 | 99.0 |
| 16 | 30 | 33.4 | 43.3 | 80.0 | 9.3 | 100.8 | 79.6 | 8.8 | 3.3 | 20.0 | 0.0 | 100.0 | 78.6 | 93.3 | 99.0 |
| 17 | 30 | 33.0 | 63.3 | 83.3 | 16.0 | 169.3 | 101.5 | 18.9 | 0.0 | 3.3 | 0.0 | 100.0 | 76.5 | 96.7 | 99.4 |
| 18 | 30 | 35.0 | 70.0 | 53.3 | 9.9 | 73.3 | 83.2 | 5.5 | 6.7 | 63.3 | 0.0 | 100.0 | 95.0 | 93.3 | 98.1 |
| 19 | 30 | 33.2 | 10.0 | 90.0 | 9.2 | 169.2 | 35.3 | 12.6 | 0.0 | 10.0 | 0.0 | 100.0 | 36.7 | 100.0 | 100.0 |
| 20 | 30 | 35.4 | 66.7 | 70.0 | 12.7 | 91.2 | 100.8 | 6.0 | 0.0 | 10.0 | 11.1 | 100.0 | 65.5 | 96.7 | 99.6 |
| Average | 28.3 | 33.3 | 58.1 | 83.4 | 12.8 | 76 | 118 | 5.2 | 1.8 | 19.2 | 5.5 | 99.5 | 83.4 | 96.6 | 99.2 |
| Maximum | 30 | 65.0 | 80.0 | 100.0 | 20.1 | 169 | 284 | 19 | 0.0 | 96.6 | 50.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Median | 30 | 33.3 | 60.0 | 85.9 | 12.9 | 64 | 99 | 4 | 0.0 | 5.2 | 0.0 | 100.0 | 92.3 | 96.7 | 99.6 |
| Minimum | 1 | 25.3 | 0.0 | 53.3 | 7.2 | 15 | 35 | 0 | 10.0 | 0.0 | 0.0 | 93.3 | 8.7 | 90.0 | 96.3 |

## Retrospective Survey

The main purposes of the integrated retrospective are to—

- Follow dispensing over six months (183 days), starting in November 2006
- See if there are any gaps in treatment of more than 30 days; and to see if the patient is still in treatment at the end of the period
- Look at an appointment three months after November 2006 and see if the patient attends the next appointment; and, if not, whether they attend in the next 3 or 30 days
- Adherence through self-report, pill count, or both was followed (if recorded).

In previous surveys the number of days of medicine dispensed in the last 183 days was calculated by the data collectors and entered on the form. In order to simplify the work a new dispensing form was designed (Appendix 1), where each date of dispensing and the corresponding number of days of medicine dispensed was entered and all the calculations were done automatically. The problems we faced though were that most (but not all) dates were written in the Ethiopian calendar. Dates were entered as written and formulae were developed to convert all dates to Gregorian ones.

Other aspects of the patient and clinical care were noted, including age, gender, months on treatment, WHO stage, and CD4 count at initiation of treatment and CD4 count in the last six months. From this data were calculated the CD4 testing rate (percentage of patients with documented CD4 test results in last six months); the percentage of patients achieving CD4 count >300 cells per μl on most recent lab test; the percentage of patients with a documented viral load test in last six months; and the percentage of patients achieving viral load counts <400 copies per ml on the most recent lab test in the last three months. We also attempted to gather data on documented drug or alcohol problems, and treatment for tuberculosis (TB). There was some doubt expressed by team members as to whether in Ethiopia the CD4 count was as relevant an indicator for clinical outcomes as in other countries as there is some evidence that baseline CD4 counts for most patients in Ethiopia are lower than global standards. If this is the case then this is in need of further investigation;

Patient records were sampled in order to identify 120 patients on ART at random who had visited the facility in November 2006. In nearly all cases the sampling was done by the hospital pharmacist who had attended the training and was done the day before the team visited. This made the day task much easier.

Sampling was done easily if there was an attendance register which differentiated who was on ART and who wasn't, and if the identification number used in the attendance register was the same one used for ordering pharmacy and clinical records. Frequently, however, no attendance register was available or the numbers differed. As a last resort all patients who had started ART up to the end of November 2006 were identified from an initiation of ART register, sampled at random from the clinic or pharmacy notes and then the other notes (clinic or pharmacy were located.

## Results of Integrated Retrospective

In the 20 facilities 1,989 records were examined (1982 for dispensing), which is 99 per facility (Table 13), (compared to 89 in Uganda, 80 in Rwanda and 63 in Kenya). Of these, 62 percent had been on treatment for more than three months. Their average age was 33 years (38-31) and 55 percent were female (70-14). At initiation, 94 percent had had their CD4 count done before starting treatment; of which 23 percent (38-10) had a count of more than 200 cells per μl. In the last six months, 64 percent (88-20) of patients had had a follow up CD4 count performed (of which 43 percent were more than 300 cells per μl). At initiation, 3 percent had a WHO stage 1 diagnosis; 14 percent, stage 2; 62 percent, stage 3; and 21 percent, stage 4.

The percentage of days covered by medicine dispensed (if still on treatment) (Table 11 and 14) showed a median of 95% (99-89), comparable to Uganda, Rwanda and Kenya of 91, 97 and 95%. The % of patients with greater than 95% coverage showed 78% (96-67) in Ethiopia, compared to 58, 80 and 63% in Uganda, Rwanda and Kenya (Table 12).

The percentage of patients with a gap of 30 days or more was 7% in Ethiopia (15-0) (Table 11 and 14). This is less than Uganda and Kenya (14 and 11%), but more than Rwanda (2%)

The percentage of patients who attended their next appointment on or before the day given was 72% (99-58). This is slightly less than Uganda, Rwanda and Kenya who showed 79, 81, and 84% respectively. Because of the new recording methods we were able to calculate the percentage of all appointment attended after medicine ran out (Table 11 and 14). This is a telling figure and shows one in five appointments were attended late (from 36% to 6%).

There were no pill counts recorded at all in Ethiopia. The method of recording self report was to put a "G" for more than 95% adherence (good), an "F" (fair) and a P (poor) for less than that. 83% of records had a self report measure of which 96% were recorded as good. (Table 11 and 14).

*Table 11. Selected Results of the Retrospective data from Ethiopia*

| | Median | Maximum | Minimum |
|---|---|---|---|
| **DISPENSING** | | | |
| % Days Covered by Medicine Dispensed (if still on tx) | 95 | 99 | 89 |
| % >95% Days Covered by Medicine Dispensed (if still on tx) | 78 | 96 | 67 |
| Gap in Meds of >30 Days (if still on tx) | 7 | 15 | 0 |
| Dispensing Covers Last 30 Days | 99 | 100 | 84 |
| **ATTENDANCE** | | | |
| % Attended Next Appointment | 72 | 99 | 58 |
| % attended within 3 days of next appointment | 87 | 99 | 72 |
| % attended within 30 days of next appointment | 99 | 100 | 87 |
| **% of all Appointment attended after medicine ran out** | 20 | 36 | 6 |
| **SELF REPORT: (1643/1,989 pts) (83%)** | | | |
| % labeled 'G'; meaning >95% | 96 | 100 | 36 |
| **PILL COUNT: No patients had a record** | | | |

*Table 12. Comparable Selected Results of the Median values of the Retrospective data from Ethiopia, Uganda, Rwanda and Kenya*

| | Ethiopia | Uganda | Rwanda | Kenya |
|---|---|---|---|---|
| **DISPENSING** | | | | |
| % Days Covered by Medicine Dispensed (if still on tx) | 95 | 91 | 97 | 95 |
| % >95% Days Covered by Medicine Dispensed (if still on tx) | 78 | 58 | 80 | 63 |
| Gap in Meds of >30 Days (if still on tx) | 7 | 14 | 2 | 11 |
| Dispensing Covers Last 30 Days | 99 | 90 | 96 | 93 |
| **ATTENDANCE** | | | | |
| % Attended Next Appointment | 72 | 79 | 91 | 84 |
| % attended within 3 days of next appointment | 87 | 80 | 96 | |
| % attended within 30 days of next appointment (Kenya 60 days) | 99 | 95 | 99 | 98 |
| **SELF REPORT:** | | | | |
| % records with a measure | | 33 | 10 | 48 |
| Full Adherence | | 73 | 100 | 97 |
| Average Adherence | | 97 | 100 | 99 |
| **PILL COUNT:** | | | | |
| % records with a measure | NA | 9 | 68 | 12 |
| Full Adherence | NA | 58 | 69 | 79 |
| Average Adherence | NA | 92 | 97 | 94 |

*Table 13. General Retrospective Results*

| Facility # | # Pts | Average Months on Treatment | Average Age | % Female | % Documented Drug or Alcohol Abuse | % TB Diagnosed or on Treatment | WHO Stage 1 at Start ARV | WHO Stage 2 at Start ARV | WHO Stage 3 at Start ARV | WHO Stage 4 at Start ARV | % pre CD4 test | % pre CD4 >200 Cells per µl | % CD4 test in last six months | % CD4 > 300 Cells per µl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 100 | 5.6 | 35.4 | 54.5 | 18.4 | 26.3 | 5.1 | 20.4 | 44.9 | 29.6 | 81.0 | 29.3 | 66.7 | 43.4 |
| 2 | 100 | 7.3 | 32.4 | 53.1 | 18.2 | 33.3 | 1.0 | 16.2 | 57.6 | 25.3 | 97.0 | 19.4 | 49.0 | 52.1 |
| 3 | 100 | 5.5 | 35.2 | 70.0 | 0.0 | 19.0 | 10.0 | 29.0 | 47.0 | 14.0 | 100.0 | 24.0 | 67.0 | 53.0 |
| 4 | 100 | 7.2 | 37.5 | 38.4 | 31.3 | 32.0 | 10.2 | 8.2 | 33.7 | 48.0 | 97.0 | 16.7 | 75.8 | 43.4 |
| 5 | 100 | 3.3 | 35.6 | 58.0 | 18.0 | 24.0 | 1.0 | 9.0 | 67.0 | 23.0 | 100.0 | 15.0 | 87.0 | 25.3 |
| 6 | 100 | 6.9 | 37.1 | 55.0 | 13.0 | 19.0 | 3.0 | 10.1 | 73.7 | 13.1 | 100.0 | 23.0 | 75.0 | 31.6 |
| 7 | 100 | 5.4 | 32.9 | 59.0 | 6.2 | 16.0 | 3.0 | 9.0 | 70.0 | 18.0 | 88.0 | 18.2 | 46.0 | 39.1 |
| 8 | 100 | 7.1 | 32.4 | 51.0 | 9.0 | 15.0 | 2.0 | 8.0 | 69.0 | 21.0 | 78.0 | 23.1 | 20.0 | 15.0 |
| 9 | 100 | 6.1 | 34.6 | 59.0 | 7.0 | 11.0 | 0.0 | 2.2 | 76.3 | 21.5 | 50.0 | 24.5 | 24.0 | 50.0 |
| 10 | 100 | 7.1 | 32.9 | 52.0 | 5.0 | 29.0 | 0.0 | 13.0 | 72.0 | 15.0 | 100.0 | 10.0 | 48.0 | 43.8 |
| 11 | 100 | 5.9 | 31.5 | 62.0 | 3.0 | 34.0 | 2.1 | 17.0 | 57.4 | 23.4 | 90.0 | 14.4 | 22.0 | 31.8 |
| 12 | 100 | 3.8 | 31.7 | 67.0 | 13.0 | 17.0 | 6.1 | 23.5 | 58.2 | 12.2 | 100.0 | 12.1 | 52.0 | 36.5 |
| 13 | 100 | 6.8 | 32.1 | 63.0 | 32.0 | 34.3 | 8.0 | 19.0 | 62.0 | 11.0 | 96.0 | 13.4 | 72.0 | 38.4 |

| Facility # | # Pts | Average Months on Treatment | Average Age | % Female | % Documented Drug or Alcohol Abuse | % TB Diagnosed or on Treatment | WHO Stage 1 at Start ARV | WHO Stage 2 at Start ARV | WHO Stage 3 at Start ARV | WHO Stage 4 at Start ARV | % pre CD4 test | % pre CD4 >200 Cells per µl | % CD4 test in last six months | % CD4 > 300 Cells per µl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 100 | 2.1 | 31.0 | 47.0 | 4.0 | 43.4 | 3.0 | 11.0 | 74.0 | 12.0 | 80.0 | 38.0 | 46.0 | 50.0 |
| 15 | 89 | 7.3 | 32.7 | 43.8 | 3.4 | 21.3 | 5.7 | 14.8 | 76.1 | 3.4 | 95.5 | 22.9 | 32.6 | 51.9 |
| 16 | 100 | 6.2 | 32.4 | 55.6 | 12.0 | 68.0 | 1.0 | 14.0 | 64.0 | 21.0 | 78.0 | 32.9 | 69.7 | 54.8 |
| 17 | 100 | 6.2 | 31.3 | 47.0 | 3.0 | 22.0 | 1.1 | 15.8 | 40.0 | 43.2 | 93.0 | 27.7 | 88.0 | 68.2 |
| 18 | 100 | 4.0 | 35.8 | 54.0 | 39.0 | 59.0 | 7.2 | 22.7 | 53.6 | 16.5 | 98.0 | 26.5 | 62.0 | 37.1 |
| 19 | 100 | 5.8 | 32.1 | 14.0 | 17.0 | 27.0 | 0.0 | 7.1 | 35.4 | 57.6 | 78.0 | 28.2 | 86.0 | 42.4 |
| 20 | 100 | 7.6 | 31.6 | 59.0 | 2.0 | 22.0 | 0.0 | 4.0 | 61.0 | 35.0 | 74.0 | 35.1 | 74.0 | 40.5 |
| **Average** | **99.5** | **5.9** | | **53.1** | **11.7** | **28.9** | **2.7** | **12.5** | **59.6** | **23.2** | **88.7** | **22.7** | **58.3** | **44.0** |
| Maximum | **100** | **7.6** | **37.5** | **70** | **39.0** | **68.0** | **10.2** | **29.0** | **76.3** | **57.6** | **100.0** | **38.0** | **88.0** | **68.2** |
| Median | **100** | **6.2** | **32.6** | **55** | **10.5** | **25.1** | **2.6** | **13.5** | **61.5** | **21.0** | **94.3** | **23.0** | **64.3** | **42.9** |
| Minimum | **89** | **2.1** | **31.0** | **14** | **0.0** | **11.0** | **0.0** | **2.2** | **33.7** | **3.4** | **50.0** | **10.0** | **20.0** | **15.0** |

*Table 14. Retrospective adherence measures*

| Facility # | % Days Covered by Medicines if Still in Treatment | % >95% Days covered if Still in Treatment | % with Gap in Medicines >30 Days if Still in Treatment | % last Dispensing Covered Any of Last 30 Days | % all appointments attended AFTER medicines consumed | % Attend Next Appt after Visit 3 Months Ago | % If Missed, Attended in next 3 days after Missed Visit | % If Missed, Did Not Attend in Next 30 Days after Missed Visit | % Self-Report in Notes | % Self- Report classified as "G" (>95%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 94.0 | 78.0 | 12.2 | 91.1 | 27.3 | 62.1 | 44.1 | 27.8 | 88.0 | 87 |
| 2 | 92.8 | 71.1 | 14.5 | 83.5 | 34.4 | 58.0 | 33.3 | 45.2 | 100.0 | 100 |
| 3 | 93.0 | 69.7 | 9.1 | 99.0 | 19.1 | 86.0 | 42.9 | 7.1 | 100.0 | 100 |
| 4 | 92.2 | 71.0 | 8.0 | 100.0 | 20.8 | 72.7 | 51.9 | 14.8 | 96.0 | 96 |
| 5 | 90.2 | 68.1 | 12.8 | 95.9 | 35.9 | 63.6 | 79.4 | 13.9 | 96.0 | 96 |
| 6 | 95.1 | 83.0 | 8.0 | 100.0 | 16.7 | 69.0 | 46.9 | 3.2 | 99.0 | 99 |
| 7 | 98.3 | 92.6 | 2.1 | 95.0 | 8.0 | 72.0 | 75.0 | 7.1 | 100.0 | 99 |
| 8 | 89.0 | 87.9 | 4.0 | 99.0 | 11.9 | 64.0 | 69.4 | 2.8 | 37.0 | 36 |
| 9 | 95.8 | 83.7 | 7.6 | 93.9 | 24.3 | 72.0 | 50.0 | 39.3 | 0.0 | |
| 10 | 95.3 | 77.7 | 5.3 | 94.0 | 8.9 | 79.0 | 71.4 | 23.8 | 98.0 | 98 |
| 11 | 98.2 | 95.6 | 2.2 | 91.0 | 30.4 | 66.0 | 52.9 | 38.2 | 89.0 | 89 |
| 12 | 92.8 | 69.0 | 13.0 | 100.0 | 22.9 | 59.0 | 48.8 | 51.2 | 97.0 | 97 |

| Facility # | % Days Covered by Medicines if Still in Treatment | % >95% Days covered if Still in Treatment | % with Gap in Medicines >30 Days if Still in Treatment | % last Dispensing Covered Any of Last 30 Days | % all appointments attended AFTER medicines consumed | % Attend Next Appt after Visit 3 Months Ago | % If Missed, Attended in next 3 days after Missed Visit | % If Missed, Did Not Attend in Next 30 Days after Missed Visit | % Self-Report in Notes | % Self- Report classified as "G" (>95%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 98.9 | 94.0 | 0.0 | 100.0 | 6.4 | 74.0 | 84.6 | 0.0 | 92.0 | 92 |
| 14 | 94.3 | 77.3 | 6.2 | 99.0 | 31.9 | 80.0 | 35.0 | 15.0 | 87.0 | 86 |
| 15 | 93.2 | 66.7 | 12.6 | 98.9 | 17.4 | 74.2 | 26.1 | 30.4 | 89.9 | 79 |
| 16 | 95.2 | 80.0 | 3.0 | 100.0 | 25.2 | 90.0 | 63.6 | 0.0 | 100.0 | 99 |
| 17 | 93.4 | 69.0 | 9.0 | 100.0 | 31.8 | 99.0 | 0.0 | 0.0 | 100.0 | 100 |
| 18 | 97.2 | 81.8 | 1.0 | 99.0 | 9.9 | 99.0 | 0.0 | 100.0 | 0.0 | |
| 19 | 97.2 | 81.0 | 3.0 | 100.0 | 8.5 | 61.0 | 61.5 | 0.0 | 84.0 | 83 |
| 20 | 95.7 | 74.0 | 5.0 | 100.0 | 13.6 | 69.0 | 51.6 | 9.7 | 100.0 | 96 |
| **Average** | **94.6** | **78.6** | **6.9** | **97.0** | **20.3** | **73.5** | **99.6** | **20.4** | **82.6** | **90.7** |
| Maximum | **98.9** | **95.6** | **14.5** | **100.0** | **35.9** | **99.0** | **84.6** | **100.0** | **100.0** | **100.0** |
| Median | **94.7** | **77.9** | **6.9** | **99.0** | **19.9** | **72.0** | **50.8** | **14.4** | **96.0** | **96.0** |
| Minimum | **89.0** | **66.7** | **0.0** | **83.5** | **6.4** | **58.0** | **0.0** | **0.0** | **0.0** | **36.0** |

## Record Quality Form

In Uganda it was the first time a record-keeping form had been used. The method was modified here in Ethiopia whereby two different forms were used, one for clinical records and one for pharmacy records. For the first 30 clinical and pharmacy records in each facility, it was noted whether the record contained date of visit, date of next appointment, the name and number of pills dispensed, a CD4 count in the last 6 months, a weight measurement, and a pill count or self-report.

As is shown in Tables 15 and 16, the date of the appointment, the date of the next appointment and the weight was quite often missing in the clinical notes, but were usually there in the pharmacy notes. A pill count was not done anywhere, and a sort of self report was included in the clinical records, but not the pharmacy records. Both contained the names of the drugs dispensed, but the clinical records did not usually include the number of pills dispensed.

*Table 15. Clinical Record Quality*

| | Date of visit written % | Date of next appointment % | Weight measurement % | Name of drug dispensed % | Number of pills dispensed % | Self reported adherence measure % | Pill Count recorded % | CD4 Count value in last 6 months % |
|---|---|---|---|---|---|---|---|---|
| **Maximum** | **100** | **100** | **100** | **100** | **100** | **100** | **0** | **100** |
| **75th** | 100 | 100 | 100 | 100 | 4 | 100 | 0 | 100 |
| **Median** | **100** | **100** | **100** | **100** | **0** | **97** | **0** | **78** |
| **25th** | 100 | 100 | 99 | 100 | 0 | 69 | 0 | 43 |
| **Minimum** | **43** | **13** | **37** | **30** | **0** | **0** | **0** | **17** |

*%—The percentage of clinical records (out of 30) which contained the information for the last visit in the clinical notes*

*Table 16. Pharmacy Record Quality*

| | Date of visit written % | Date of next appointment % | Weight measurement % | Name of drug dispensed % | Number of pills dispensed % | Self reported adherence measure % | Pill Count recorded % | CD4 Count value in last 6 months % |
|---|---|---|---|---|---|---|---|---|
| **Maximum** | **100** | **100** | **100** | **100** | **100** | **0** | **0** | **17** |
| **75th** | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 0 |
| **Median** | **100** | **100** | **100** | **100** | **100** | **0** | **0** | **0** |
| **25th** | 100 | 100 | 98 | 100 | 100 | 0 | 0 | 0 |
| **Minimum** | **97** | **97** | **73** | **97** | **97** | **0** | **0** | **0** |

*%—The percentage of pharmacy records (out of 30) which contained the information for the last visit in the pharmacy notes*

## Afterword

The data shows that record keeping varies enormously in quality over the different facilities. The pharmacy records are generally better kept than the clinical records, although some clinical records are kept very well.

As for the other countries it has been shown that it is almost always possible to find for a random selection of patients through their records the following—

- The number of days of medicine dispensed over the last 6 months (183 days), if there have been gaps in treatment of more than 30 days, and are the patients still in treatment

- Whether patients attended their next appointment after a certain date, and if not, whether they attended in the next 3 or 30 days

In addition, provided patients are attending the day of the visit, it is always possible to ask a convenience sample whether they have missed any medication in the previous three days.

The greatest problem encountered was the variety of patient identification numbers being used. In one facility the pharmacy attendance register used one identification number (the pharmacy number) and the pharmacy records were ordered through a different number (the ART number). Often there were differences between the pharmacy and clinical records. This made it extremely difficult to follow a patient through the two halves of their treatment and for clinicians and pharmacists to communicate about particular patients.

# RANKING OF FACILITIES

## RANKING OF FACILITIES

The next step was to use this data to rank the facilities into those with good, medium, or poor adherence rates in order to carry out the phase 2 determinants study.

The method used for ranking was to take each series of measures in turn and rank them 1–3 (with one being good adherence and three being poor), according to their level. Decisions as to where the cut off points should be were made according to the span of the data presented.

A) For the days covered by dispensed drugs over a 183-day period, the data was arranged according to the percentage of patients with more than 95 percent of days covered. The other analysis included was the percentage of days covered by dispensed drugs (Table 17). In order to rank the facilities:

For the % of patients with more than 95% of days covered Table 17

- "1" was given to those with more than 90%
- "2" between 80 and 90% and
- "3" for less than 80%

For the overall % days covered by drugs if still in treatment

- "1" was given to those with more than 95%
- "2" between 90 and 95% and
- "3" for less than 90%

*Table 17 Ranking of the Percentage of Days Covered by Drugs in the Last 183 Days and the Percentage of Patients with More than 95 Percent Coverage (provided the patients are still in treatment)*

| % days covered by drugs if still in treatment | RANK | % days > 95% if still in treatment | RANK |
|---|---|---|---|
| 98.2% | 1 | 95.6% | 1 |
| 98.9% | 1 | 94.0% | 1 |
| 98.3% | 1 | 92.6% | 1 |
| 89.0% | 3 | 87.9% | 2 |
| 95.8% | 1 | 83.7% | 2 |
| 95.1% | 1 | 83.0% | 2 |
| 97.2% | 1 | 81.8% | 2 |
| 97.2% | 1 | 81.0% | 2 |
| 95.2% | 1 | 80.0% | 2 |
| 94.0% | 2 | 78.0% | 3 |
| 95.3% | 1 | 77.7% | 3 |
| 94.3% | 2 | 77.3% | 3 |
| 95.7% | 1 | 74.0% | 3 |
| 92.8% | 2 | 71.1% | 3 |
| 92.2% | 2 | 71.0% | 3 |
| 93.0% | 2 | 69.7% | 3 |
| 93.4% | 2 | 69.0% | 3 |
| 92.8% | 2 | 69.0% | 3 |
| 90.2% | 2 | 68.1% | 3 |
| 93.2% | 2 | 66.7% | 3 |

B) For the percentage of patients with a gap in treatment of more than 30 days the facilities were arranged in order (Table 18) and ranked:

- "1" was given to those with 5% or less
- "2" between 5 and 10% and
- "3" for more than 10%.

*Table 18. Ranking by % with a gap in treatment of more than 30 days*

| % with Gap in drugs > 30 days if still in treatment | Rank |
|---|---|
| 0.0% | 1 |
| 1.0% | 1 |
| 2.1% | 1 |
| 2.2% | 1 |
| 3.0% | 1 |
| 3.0% | 1 |
| 4.0% | 1 |
| 5.0% | 1 |
| 5.3% | 2 |
| 6.2% | 2 |
| 7.6% | 2 |
| 8.0% | 2 |
| 8.0% | 2 |
| 9.0% | 2 |
| 9.1% | 2 |
| 12.2% | 3 |
| 12.6% | 3 |
| 12.8% | 3 |
| 13.0% | 3 |

C) For the percentage of patients who attended their next appointment after their appointment 3 months ago. They were arranged in order (Table 19) and ranked:

- "1" was given to those above 85%
- "2" between 70 and 85% and
- "3" for less than 85%.

*Table 19. Ranking by the percentage of patients who attended their next appointment after their appointment 3 months ago*

| % Attend next appt after visit 3 months ago | Rank |
|---|---|
| 99.0% | **1** |
| 99.0% | **1** |
| 90.0% | **1** |
| 86.0% | **1** |
| 80.0% | **2** |
| 79.0% | **2** |
| 74.2% | **2** |
| 74.0% | **2** |
| 72.7% | **2** |
| 72.0% | **2** |
| 72.0% | **2** |
| 69.0% | **3** |
| 69.0% | **3** |
| 66.0% | **3** |
| 64.0% | **3** |
| 63.6% | **3** |
| 62.1% | **3** |
| 61.0% | **3** |
| 59.0% | **3** |
| 58.0% | **3** |

D) For the new measure of the ranking of facilities by % of all appointments attended after drugs consumed; they were arranged in order (Table 20) and ranked:

- "1" was given to those less than 10%
- "2" between 10 and 20% and
- "3" for more than 20%.

*Table 20. Ranking of Facilities by % of all appointments attended after drugs consumed*

| % All Appointments attended after drugs consumed | Rank |
|---|---|
| 6.4% | 1 |
| 8.0% | 1 |
| 8.5% | 1 |
| 8.9% | 1 |
| 9.9% | 1 |
| 11.9% | 2 |
| 13.6% | 2 |
| 16.7% | 2 |
| 17.4% | 2 |
| 19.1% | 2 |
| 20.8% | 3 |
| 22.9% | 3 |
| 24.3% | 3 |
| 25.2% | 3 |
| 27.3% | 3 |
| 30.4% | 3 |
| 31.8% | 3 |
| 31.9% | 3 |
| 34.4% | 3 |
| 35.9% | 3 |

E) For exit interview self report, the two main measures were taken of the percentage of patients reporting full adherence and the average percentage adherence, and ordered by the former (Table 21).

For both the percentage who reported full adherence and the average percentage adherence these were ranked:

- "1" was given to those with a 100%
- "2" between 95% and 100% and
- "3" for less than 95%.

*Table 21. Ranking of Self Report from Exit Interviews*

| % self report full adherence | RANK | Average % Adherence by self report | RANK |
|---|---|---|---|
| 100.0% | 1 | 100.0% | 1 |
| 100.0% | 1 | 100.0% | 1 |
| 100.0% | 1 | 100.0% | 1 |
| 100.0% | 1 | 100.0% | 1 |
| 100.0% | 1 | 100.0% | 1 |
| 100.0% | 1 | 100.0% | 1 |
| 100.0% | 1 | 100.0% | 1 |
| 100.0% | 1 | 100.0% | 1 |
| 96.7% | 2 | 99.8% | 2 |
| 96.7% | 2 | 99.6% | 2 |
| 96.7% | 2 | 99.4% | 2 |
| 96.7% | 2 | 97.9% | 2 |
| 96.6% | 2 | 99.5% | 2 |
| 96.3% | 2 | 99.3% | 2 |
| 93.3% | 3 | 99.0% | 2 |
| 93.3% | 3 | 99.0% | 2 |
| 93.3% | 3 | 99.0% | 2 |
| 93.3% | 3 | 98.1% | 2 |
| 90.0% | 3 | 97.4% | 2 |
| 90.0% | 3 | 96.3% | 2 |

## Overall ranking

It is worth reiterating that all these decisions on grading are arguable and need some process of validation. The cut off points were designed to spread the facilities between the grades 1-3 evenly. The majority of these scores were then added up over each facility. The key measures used were the following five ranking measures:

- % patients with more than 95 Percent Coverage (provided the patients are still in treatment)

- % patients with Gap in drugs > 30 days if still in treatment

- % patients who attended their next appointment after visit 3 months ago
- % of all appointments attended after drugs had been consumed
- average % adherence by self report

The resulting overall scores were as shown in Table 22. The tables were discussed and six facilities were chosen for the phase 2 determinants study: two which performed better than average, two that performed averagely and two less well. One of the better ones actually after reanalysis turned out to be average, so phase 2 will now be composed of one which performed better than average, three that performed averagely and two less well. These were facilities: 13, 10, 3, 14, 5 and 12.

*Table 22. Overall Rankings of the 20 Facilities*

| Facility # | *Rank* | Overall score of key adherence and defaulting measures |
|---|---|---|
| **13** | *1* | **6** |
| **18** | *2* | **7** |
| **7** | *2* | **7** |
| **19** | *4* | **8** |
| **8** | *5* | **9** |
| **16** | *5* | **9** |
| **9** | *7* | **10** |
| **10** | *7* | **10** |
| **11** | *7* | **10** |
| **3** | *7* | **10** |
| **14** | *11* | **11** |
| **4** | *11* | **11** |
| **20** | *11* | **11** |
| **17** | *11* | **11** |
| **6** | *11* | **11** |
| **15** | *16* | **12** |
| **1** | *17* | **13** |
| **2** | *17* | **13** |
| **5** | *19* | **14** |
| **12** | *19* | **14** |

# CONCLUSION

# CONCLUSION

This survey although similar to the previous three performed in Kenya, Tanzania and Rwanda had several important differences.

The first is that it was carried out by people who are responsible for implementing and monitoring ARV drugs management and use in the HIV/AIDs clinics. The exercise was therefore useful for highlighting key issues and introducing some potential methods.

The second is that pharmacists from the hospitals took part. They did two main activities: They carried out the sampling the day before the day of the survey which reduced the pressure enormously in completing the task within a day. They also carried out the majority of the exit interviews. This had the advantage of letting the pharmacist see first hand any problems. However it may also have increased the claimed percentage self report as the patients may have been more unwilling to admit not taking pills in the last three days. However there is no evidence for this as the percentages recorded are very similar to those found in the other three countries (Tables 8 and 9).

The third is that dispensing data was recorded date by date rather than calculated. This made the training much easier and the recordings probably correspondingly more accurate. This also allowed a calculation of the percentage of all attendances that took place before or after the medicine ran out. This is a new and potentially useful indicator.

However the issue of Ethiopian dates had not been predicted. Most of the dates in the notes were written in Ethiopian dates and therefore needed to be transcribed as written to avoid errors. This meant that methods had to be worked out on the run for translating some 18,000 dates from Ethiopian into Gregorian dates. This was accomplished. However another issue of dates came up with a number of columns being formatted in a mm:dd:yy format and were entered in a dd:mm;yy order. This meant that the majority of dates had to be rewritten in a very short space of time. Both the rewriting of the miss-entered dates

and the translating of one date system into another could be a source of errors.

As for the previous three national surveys, we have shown that in spite of very varied record keeping systems in the different facilities, it has been possible to make a random sample of patient records and extract data on adherence and defaulting, namely: the number of days of medicine dispensed over the last 6 months (183 days); gaps in treatment of more than 30 days and whether they are still in treatment: Whether patients attended their next appointment after a certain date, and if not whether they attended in the next 3 or 30 days.

This following of a sample of patient pharmacy and clinical records would have been much easier if uniform patient identification numbers had been used in the facilities. The multiple use of identification numbers including: pharmacy, out patient. HIV pre ART numbers, as well as several 'unique' ART numbers, meant that pharmacy and clinical departments would have great difficulty in communicating about individual patients.

As for Uganda we have added a number of items in this version to help with the determinants work which should follow. Because of the difficulties in Uganda we stopped looking for religion and number of children; but we continued to look for whether the patient had documented alcohol or drug abuse, whether the patient was diagnosed with TB at ART initiation, the WHO disease stage, and the initial CD4 count. In the facility interview we kept the detail on policies and cost of ordering various tests and initiating treatment which may turn out to be useful. We included a list of adult ARVs and a separate list of children's ARVs to make interpreting the availability data more simply

The formal record quality review of both pharmacy and clinical records proved simple to do and gives added data with which to interpret results. With poor adherence scores, there are always two interpretations possible. One is that adherence and defaulting are truly poor. The other is that the record keeping is poor. The record quality review helps differentiate between the two.
For the ranking exercise we chose five 'key' indicators and ranked the facilities according to each.

- % patients with more than 95 percent coverage (provided the patients are still in treatment)
- % patients with a gap in drugs of more than 30 days if still in treatment
- % patients who attended their next appointment after a visit 3 months ago
- % of all appointments attended after drugs had been consumed
- average % adherence by self report

The facility median scores for each of these were given a score of 1, 2 or 3 for each indicator and the five scores were summed. This time the results did not seem as intuitively correct as in Uganda. Again we need to simplify and validate this process by picking a few key indicators and standardizing the grade score cutoff points.

The next steps are—

- To carry out the determinant survey in the facilities identified here in Ethiopia to go with the study in Uganda. Dr. Obua, who played a key role in the Uganda determinant study, will spend a couple of days with Ethiopia group to share the Uganda experience.

- To validate the indicators through a validation exercise which is now taking place in Kenya, Uganda, Rwanda and here in Ethiopia

- To carry out statistical tests on the findings from the four surveys performed so far to narrow the choice of indicators used for ranking and to standardize the ranking grade cutoffs.

# APPENDIX 1. Dispensing data collection form

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ***Retrospective Dispensing Data*** | | | | | | | FACILITY # | | | | | | | | | |
| | | Record dates and details for all clinic or pharmacy visits from the month 7 months ago. | | | | | | | | | | | | | | | | |
| Date of Entry: | | | | FACILITY NAME | | | | | Name Data Collecto | | | | | | | | | |
| A | B | C | E | F | H | I | L | M | P | Q | T | U | X | Y | AB | AC | AF | AG |
| | | Initiation of ARVs | Index Visit Dispensing | | Visit 2 Dispensing | | Visit 3 Dispensing | | Visit 4 Dispensing | | Visit 5 Dispensing | | Visit 6 Dispensing | | Visit 7 Dispensing | | Visit 8 Dispensing | |
| Seq. No. | Patient identifier | Date initiation ARVs (From other retro form) | Index visit Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day | Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day | Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day | Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day | Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day | Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day | Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day | Date any ARV drugs dispensed (dd/mm/yy) | # days of ART dispensed on that day |
| 1 | | | | | | | | | | | | | | | | | | |
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| 24 | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | |

## *Retrospective Dispensing Data*

**Record dates and details for all clinic or pharmacy visits from the month 7 months ago.**

**Date of Entry:**

| A | B | AF | AG | AJ | AK | AN | AO | AR | AS | AV | AW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Visit 8 Dispensing** | | **Visit 9 Dispensing** | | **Visit 10 Dispensing** | | **Visit 11 Dispensing** | | **Visit 12 Dispensing** | |
| Seq. No. | Patient identifier | Date any ARV drugs dispensed **(dd/mm/yy)** | # days of ART dispensed on that day | Date any ARV drugs dispensed **(dd/mm/yy)** | # days of ART dispensed on that day | Date any ARV drugs dispensed **(dd/mm/yy)** | # days of ART dispensed on that day | Date any ARV drugs dispensed **(dd/mm/yy)** | # days of ART dispensed on that day | Date any ARV drugs dispensed **(dd/mm/yy)** | # days of ART dispensed on that day |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
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| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |

# APPENDIX 2. Record Keeping Assessment

| Clinical RECORD KEEPING Assessment Form | | | | | | Facility # | | Date | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Facility Name | | | | | Data Collector | | | |
| Looking at the Index visit six months ago does the record contain | | | | | | | | | | Since visit is there? | |
| Patient | Date of visit (Y/N) | Date of next appointment (Y/N) | A weight measurement (Y/N) | Name of drug dispensed (Y/N) | The number of pills dispensed (Y/N) | A self reported adherence measure (Y/N) | A pill count measure measure (Y/N) | Mention of an OI or no OI (Y/N) | Mention of an ADR or no ADR (Y/N) | a CD4 Count value (Y/N) | A viral load (Y/N) |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
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| 18 | | | | | | | | | | | |
| 19 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |

| Pharmacy RECORD KEEPING Assessment Form | | | | | | Facility # | | Date | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Facility Name | | | | | Data Collector | | | |
| Looking at the Index visit six months ago does the record contain | | | | | | | | | | Since visit is there? | |
| Patient | Date of visit (Y/N) | Date of next appointment (Y/N) | A weight measurement (Y/N) | Name of drug dispensed (Y/N) | The number of pills dispensed (Y/N) | A self reported adherence measure (Y/N) | A pill count measure measure (Y/N) | Mention of an OI or no OI (Y/N) | Mention of an ADR or no ADR (Y/N) | a CD4 Count value (Y/N) | A viral load (Y/N) |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
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| 18 | | | | | | | | | | | |
| 19 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |

**Annex.1**

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Viread
DUVIRAL
LAMIVUDINE
ZIDOVUDINE
Didanosine
chewable/
dispersible
tablets