



## Evaluation of the Antiretroviral Therapy Program at Wilkins Hospital in Zimbabwe

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### Authors' contributions

This work was carried out in collaboration between all authors. Authors RM, HB, SM and GM, designed and carried out the study. Authors RM, VR, GN and NC participated in data analysis and writing of the final manuscript. All authors read and approved the final manuscript.

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### ABSTRACT

**Aim:** To evaluate the Opportunistic Infection/Anti-Retro-Viral Therapy program at a Referral health facility in Zimbabwe.

**Methods:** This was a descriptive cross sectional study using the logic framework evaluation method from August 2012 to July 2013. Key informant interviews, patient records reviews and checklists were used to collect data.

**Results:** Over 90% of the patients got counseling when they were tested and at least 50% attended more than one counseling session before initiation of ART. The key informant reported two stocks out episodes for 2<sup>nd</sup> line salvage drugs. Patients were initiated on ART in line with 2007 ART guidelines. There was no waiting list. The staff indicated that they had been working for the OI/ART program for periods which ranged from as short as 2 days to as long as 8 years, with the majority 11(57%) having been working there for less than a year. Over 70% of the health care providers have received both protocol training and ART delivery training at the clinic and were

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providing counseling as required. Over 15% did not receive ART delivery training while data was not available for slightly over 10% of the care givers.

**Conclusion:** Wilkins Hospital is offering most services expected of a level 4 facility. Physical space and staff patient ratio fell within expected levels. However, adequate drug stocks must be maintained, a patient follow up mechanism be put in place, there is need for decentralization of stable patients to help address space inadequacy. Repairing vital equipment such as the CD4 count and the viral load machines may compromise reliability and validity of results, therefore with urgency, a continuous assessment for reliability and validity of such equipment is necessary.

*Keywords: Wilkins hospital; ART; program; evaluation.*

## 1. INTRODUCTION

UNAIDS global figures show an increase in numbers of people living with HIV from 28.6 million people recorded in year 2001 to 33.3 million in 2009 [1]. Almost all of those living with HIV (97%) reside in low- and middle-income countries, particularly in sub-Saharan Africa [1,2].

The Ministry of Health and Child Care in 2004 initiated the National Opportunistic Infection (OI) or the Antiretroviral Therapy (ART) program in Zimbabwe. This program was rapidly rolled out to provincial, central and local authority hospitals including mission hospitals and clinics in the country. The Antiretroviral Therapy program in Zimbabwe is modeled along the context of comprehensive HIV and AIDS prevention, treatment, care and support. The Zimbabwe OI/ART Standard Operating Procedure Manual requires that all health facilities should have an OI / ART program which offers different levels of health care according to their capacity and resources [3-5]. These services range from the 'minimum Care package' at primary care facilities to more comprehensive and sophisticated services at district, provincial and central levels. First level service is offered in Clinics (urban and rural) and some private general practitioners. Second level service is offered in District, Mission hospitals and Municipality clinics. Third Level Service is offered in Provincial hospitals, Private hospitals and Specialist Physicians with ART experience [6]. Central Hospitals offer fourth level service and these include all the basic level service.

An assessment of services being offered for ART patients revealed that the RNA viral load was not being done for patients who needed the service at the centre as part of specialized assessment consistent with a level 4 provider. Treatment failure could not be determined immunologically at the centre in those patients who did not respond to treatment due to various factors like

resistance to ART drugs. Patients who required RNA Viral load were referred to private service providers who charged USD 70.00 per test, a cost beyond reach of the urban poor. Patients who were deemed to have failed treatment clinically had their treatments upgraded to second line without the RNA Viral load test results. Failure to immunologically early detect treatment failure may have resulted in HIV disease progression with untoward complications and death. Wilkins hospital being a level 4 service provider was supposed to offer RNA Viral load tests or have an arrangement to have samples tested at the National Microbiology Reference Laboratory in order to detect treatment failure and institute appropriate patient management [7-9]. Against this background, it was important to find out the adequacy of inputs injected into this program and the quality of service being offered as failure to offer RNA viral load tests was an undesirable indicator of program performance. Since the programme was last evaluated in 2009, there was need to now check on progress and effectiveness of the programme in satisfying requirements of a level 4 provider [10-14]. The rationale was to check whether the center was compliant with level 4 ART services and whether it was adequately resourced.

## 2. METHODOLOGY

### 2.1 Study Type

A descriptive cross sectional study was conducted using Logical framework analysis. The Logical framework analysis attempted to link the objective, inputs, processes, outputs and the outcome of the project in a logical way. In this particular Logical framework model the indicators used for evaluation of the ART program were infrastructure, standard operating procedures and guidelines, human resources, laboratory and pharmacy services, equipment as well as supplies.

## 2.2 Study Setting

Wilkins Hospital is located in Harare, the Capital city of Zimbabwe. Wilkins hospital has been offering primary health care, the hospital initiated Opportunistic Infection and Antiretroviral Therapy program (OI/ART) in 2004.

## 2.3 Study Population

A total of 37,792 patients were registered on the ART Program at Wilkins Hospital from inception of the programme to July 2013. A total of 22 health workers (nurses, doctors, primary care counselors, and pharmacy and laboratory staff) and patients at Wilkins Hospital in the adult OI/ART participated in the study.

## 2.4 Data Collection and Tools

We conducted interviews using structured and semi-structured questionnaires with Health workers and OI/ART patients. A checklist with services expected of a level 4 hospital was used to assess the available services. The data collection team observed the physical infrastructure, including the functional status of equipment and availability of essential drugs. A checklist was used to assess staff adequacy. Information on the staffing requirements for the laboratory and Pharmacy department was obtained from the Laboratory scientist and Pharmacist in charge of the departments.

A walk through survey was done to assess the space available for consultation, counseling and support group meetings.

## 2.5 Ethical Considerations

The objectives of the study were explained to the study participants whose written consent were sort and obtained. Participants were identified by study numbers only. Permission to carry out the study was sort and obtained from the Director of Health Services in the City of Harare and from the Hospital superintendent of Wilkins Hospital and the Africa University, Faculty of Health Sciences.

## 2.6 Data Entry and Analysis

Epi info 3.3.5 was used to enter data. The data was then imported into the stata statistical package and analysed. Descriptive statistics were used to analyze the data. Frequencies were

generated for quantitative data. Qualitative data was analyzed according to the thematic content and reported as frequencies.

## 3. RESULTS

### 3.1 Health Care Providers Views on the Wilkins OI/ART Programme

A total of 19 health care providers consented and were interviewed. These comprised of 11(57%) counselors, 6(32%) nurses and 2(11%) doctors (the other doctor is not on the establishment for doctors as she is the head of the ART institution). The staff indicated that they had been working for the OI/ART program for periods which ranged from as short as 2 days to as long as 8 years, with the majority 11(57%) having been working there for less than a year (See Table 1). Over 70% of the health care providers have received both protocol training and ART delivery training at the clinic and were providing counseling as required. Over 15% did not receive ART delivery training while data was not available for slightly over 10% of the care givers.

The Nurses and Doctors were also initiating patients on ART as per National Guidelines (see Tables 1 and 2). However, despite an earlier view from the key informant that the staffing was adequate, the doctors and nurses felt shortage of staff was a major challenge. Further, they indicated that the OI/ART program would benefit from staff training programs.

### 3.2 Patients Views on the Wilkins OI/ART Programme

A total of 172 patients consented to be interviewed and their responses confirmed some of the issues that had been expressed by the health workers (see Table 3). The majority, 114(66%) of they were female and median age was 36years (IQR: 30-43). Patients were tested at a clinic (43%), NEW START (25%), Hospital (22%) and other places (9%). Over 90% of the patients got counseling when they were tested and at least 50% attended more than one counseling session before initiation of ART. The areas covered included Drug adherence, Drug side effects, Safe sexual practice, Nutrition and Other sessions on Acceptance of status and Positive Living. Over 98% of the patients felt that the counseling sessions they attended were adequate.

**Table 1. Health care provision at Wilkins hospital OI/ART program – nurses, doctors and counsellors**

Characteristic (n=19)	n(%)
<b>Service period at the OI /ART clinic</b>	
<1 year	8(42.1%)
1-2 years	8(42.1%)
>2 Years	3(15.8%)
<b>Received protocol/ standard operating procedures training</b>	
Yes	17(89.5%)
No	2(10.5%)
<b>Received training on HIV/AIDS care and ART delivery at clinic</b>	
Yes	14(73.7%)
No	3(15.8%)
NA/ Missing data	2(10.5%)
<b>Received refresher training afterwards</b>	
Yes	12(63.2%)
No	5(26.3%)
NA/Missing data	2(10.5%)
<b>Do counseling of patients</b>	
Yes	19(100%)
<b>Counseling sessions done before commencing ART</b>	
One	3(15.8%)
Two	4(21.1%)
Three	7(36.8%)
As many as needed	4(5.3%)
Missing data	1(5.3%)
<b>Important topics covered in pre ART treatment counselling</b>	
Drug adherence (Yes)	18(94.7%)
Drug side effects (Yes)	15(78.9%)
Safe sexual practice (Yes)	15(78.9%)
Nutrition (Yes)	15(78.9%)

The majority 87% of the patients indicated that they were initiated on treatment within a month after eligibility. Although 23(13%) of the patients indicated that they had missed a scheduled visit, none of the patients indicated that they had been followed up on. Only 4(2%) of the patients indicated that they were part of a treatment support group. Although 65(38%) indicated they had been referred to centres near their places of residence for collection of drugs, only three indicated that they had been asked to come back at a later date. Further 123(72%) indicated that they would like to be referred to a centre near their home for drug collection because Wilkins was too far and they needed money for transport.

**Table 2. Health care provision at Wilkins hospital OI/ART program – nurses and doctors**

Characteristic (n=8)	n(%)
<b>Criterion used to initiate a patient on ART</b>	
CD4 < 200 (Yes)	3(37.8%)
WHO stage 3 & 4 illness (Yes)	8(100%)
<b>Blood tests done before commencing ART</b>	
Full Blood Count (Yes)	7(87.5%)
CD4 count (Yes)	8(100%)
Liver Function tests (Yes)	7(87.5%)
Urea & Electrolytes (Yes)	7(87.5%)
<b>First line drugs used to initiate patients on ART</b>	
D4T,3TC,NVP (Yes)	5(62.5%)
AZT,3TC,NVP (Yes)	2(25.0%)
Other (Yes) TDF/3TC/NVP, TDF/3TC/EFV	6(75.0%)
How often CD4 cell counts were done when monitoring treatment	7(87.5%)
Every 6 months	
Management of patient who misses their drug appointment	7(87.5%)
Phone the contact person or the nearest clinic for follow up	
Referred a patient to collect their medications to a centre near where they stay	7(87.5%)
<b>Challenges faced in this OI/ ART program</b>	
Shortage of staff (Yes)	8(100%)
Lack of capacity to trace defaulters (Yes)	5(62.5%)
Lack of adequate space (Yes)	1(12.5%)
Shortage of drugs (Yes)	2(25.0%)
OI Program improvements needed	
Staff training programs(Yes)	8(100%)
More work space to be made available (Yes)	2(25.0%)
Staff incentives (Yes)	4(50.0%)

### 3.3 Case Notes Reviews on the Patients Attending Wilkins OI/ART Programme

A total of 168 case notes for adults were reviewed and they confirmed what the patients had previously said during the interviews after giving room for recall error. The median age of the patients was 35 years (IQR: 29-43), (see Table 4). The majority of the patients 104(62%) were registered in 2013 although the earliest patient case record was for 2009. The majority of the patients 145(86%) had a baseline CD4 count of  $\leq 350$  cells/ $\mu$ L and were started on ART

the same day they were found eligible. Although none of the patients were in WHO stage 4, the majority 103(63%) were in WHO Stage 3. However, there were 8 patient records that indicated that patients were started on treatment more than 2weeks from the date of eligibility, with the longest being 31 weeks. Other baseline blood tests and Liver Function Tests were not documented for more than 70% of the patients. Counseling sessions and review dates were

documented for over 75% of the patients and none of the patients had failed treatment. However, over 85% of the patients had no documented 6 month or 12 month CD4 test. Although all the other patients were in First Line treatment regimen, only one patient was documented as being in Second Line Treatment regimen. Nearly 40% of the patients were referred for drug collection to a clinic near their place of residence.

**Table 3. Information from patients at Wilkins hospital OI/ART program**

<b>Characteristic (n=172)</b>	<b>n(%)</b>
<b>Gender</b>	
Male	57(33.1%)
Female	114(66.3%)
Missing data	1(0.6%)
<b>Age (Years)</b>	
Mean (SD)	37(10.8)
Median (IQR)	36(30-43)
Range	17-75
<b>Where tested</b>	
New Start centre	43(25.0%)
Hospital	38(22.1%)
Clinic	75(43.6%)
Other (Private doctor, South Africa, Congo)	15(8.7%)
<b>Got counselling when tested</b>	
No	15(8.7%)
Yes	156(90.7%)
Missing data/NA	1(0.6%)
<b>Art counselling sessions before ART initiation</b>	
One	73(42.4%)
Two	31(18.0%)
Three	51(29.6%)
Four	14(8.1%)
None	1(0.6%)
Missing data/NA	2(1.2%)
<b>Think you got adequate counseling</b>	
No	5(2.9%)
Yes	166(96.5%)
Missing data/NA	1(0.6%)
<b>Areas were covered in the counseling sessions.</b>	
Drug adherence (Yes)	169(98.3%)
Drug side effects (Yes)	169(98.3%)
Safe sexual practice (Yes)	169(98.3%)
Nutrition(Yes)	168(97.7%)
Other(Yes) Acceptance of status, Positive Living	24(14.0%)
<b>What delayed starting treatment</b>	
Late appointment	4(2.3%)
Other	48(27.9%)
Missing data/NA	120(69.8%)
<b>Missed any of your scheduled visits</b>	
No	147(85.5%)
Yes	23(13.4%)
Missing data/NA	2(1.2%)
<b>Reason for missing visit</b>	

<b>Characteristic (n=172)</b>	<b>n(%)</b>
No money for transport	1(0.6%)
Was not feeling well to travel	1(0.6%)
Had travelled	8(4.7%)
Other	34(19.8%)
Missing data/NA	128(74.4%)
<b>Followed up when missed the visit</b>	
No	31 (18.0%)
Yes	0(0%)
Missing data/NA	141(82.0%)
<b>Part of a treatment support group</b>	
No	167(97.1%)
Yes	4(2.3%)
Missing data	1(0.6%)
<b>Referred to a centre near home for collection of drugs</b>	
No	104(60.5%)
Yes	65(37.8%)
Missing data/NA	3(1.7%)
<b>Asked to come back here after a certain period</b>	
No	67(38.9%)
Yes	3(1.7%)
Missing data/NA	102(59.3%)
<b>Would like to go to a clinic near home for collection of</b>	
Drugs	46(26.7%)
No	123(71.5%)
Yes	3(1.7%)
<b>Some of the reasons for wanting to be referred</b>	
Wilkins is too far from where I live (Yes)	99(57.6%)
Require transport money to come here(Yes)	53 (30.8%)

Table 4. Information from patient files/notes at Wilkins hospital OI/ART program

<b>Characteristic (n=168)</b>	<b>n(%)</b>
<b>Age (Years)</b>	
Mean (SD)	37(10.8)
Median (IQR)	35(29-43)
Range	17-75
<b>Date registered</b>	
2009-2012	10(5.9%)
2012	52(31.0%)
2013	104(61.9%)
Missing data	2(1.2%)
<b>Period from ART eligibility to start ART (days)</b>	
Mean (SD)	5(20)
Median (IQR)	1(1-1)
Range	1-218
<b>Baseline CD4 level</b>	
≤350 cells/μL	145(86.3%)
>350 cells/μL	7(4.2%)
Missing data	16(9.5%)
Median (IQR)	154(81-255)
Range	1-619

<b>Characteristic (n=168)</b>	<b>n(%)</b>
<b>WHO staging</b>	
Stage 1	10(5.9%)
Stage 2	47(28.0%)
Stage 3	105(62.5%)
Missing data	6(3.6%)
<b>Baseline FBC result documented</b>	
No	130(77.4%)
Yes	36(21.4%)
Missing data	2(1.2%)
<b>Baseline U&amp;E result documented</b>	
No	124(73.8%)
Yes	42(25.0%)
Missing data	2(1.2%)
<b>Baseline LFTs results documented</b>	
No	128(76.2%)
Yes	38(22.6%)
Missing data	2(1.2%)
<b>Clinically WHO staged at initiation</b>	
No	6(3.6%)
Yes	160(95.2%)
Missing data	2(1.2%)
<b>Counseling sessions documented</b>	
No	34(20.2%)
Yes	132(78.6%)
Missing data	2(1.2%)
<b>2 week review documented</b>	
No	13(7.7%)
Yes	153(91.1%)
Missing data	2(1.2%)
<b>Monthly reviews documented</b>	
No	9(5.3%)
Yes	157(93.5%)
Missing data	2(1.2%)
<b>Missed any reviews&amp; No.</b>	
No	155(92.3%)
Yes	10(5.9%)
Missing data	3(1.8%)
<b>Repeat CD4 counts at 6 months</b>	
No	145(92.3%)
Yes	18(10.7%)
Missing data	5(3.0%)
<b>Repeat CD4 count at 12 months</b>	
No	147(87.5%)
Yes	14(8.3%)
Missing data	7(4.2%)
<b>Ever failed treatment</b>	
No	164(97.6%)
Yes	0(0%)
Missing data	4(2.4%)
<b>Treatment regimen</b>	
First line	160(95.2%)
Second line	1(0.6%)
Missing data	7(4.2%)

#### 4. DISCUSSION

Given the patient load at Wilkins OI/ART clinic, it is commendable that the centre is able to provide most of the services as required in the guidelines. It is however important to note that Wilkins Hospital OI/ART clinic should function as a level 4 facility and be able to offer some services which are not routinely offered at other centres such as clinics. Services such as provision of CD4 count testing is an integral part of a level 4 facility. Patients therefore go without monitoring at 6 months and at 12 months as provided for in the guidelines. This imparts negatively on patient management as the clinician tend to rely more on the clinical picture rather than an immunological assessment. The absence of resistance testing is not synonymous with a level 4 facility. This is a centre which should actually offer such a service not only to its patients but extending the service to other lower level service providers. This finding is however in synchrony with findings by Mapunjo S. and Urassa DP [8] and others on the study conducted to assess Quality standards in the provision of facility based HIV care and treatment in Dar Es Salam Tanzania.

Twice, there were some drug stock outs and 2 emergency orders had to be made. This situation is not ideal at all as it puts patients at high risk of missing their treatments with untold consequences.

Wilkins hospital OI /ART centre should ideally decentralise patients who are stable to centres near the patients homes of residence. After all, the greater number of HIV tests were performed at a clinic presumably where they stay making decentralisation ideal.

From this study, 60.5% pointed out that they were not informed on issues of decentralisation by staff. Decentralisation of patients who are stable would greatly reduce the workload at the facility and allows closer patient monitoring.

The results also pointed out that 99% of the patients would prefer decentralisation and be able to collect their drug supplies and undergoing reviews at the clinic nearest where they stay. Failure to decentralise may make it difficult to follow up patients as evidenced by the study results that 13% had missed a visit and no follow-up to them was done.

Results from this study also reveal that a greater percentage (63%) of the patients was in WHO stage 3 when they were commenced on ART. Late presentation can have a negative treatment outcome.

Another observation that came out of this study is poor record keeping. This is evidenced by the fact that 73% of patients did not have U&E s documented and 76% also had no documentation done for LFTs at baseline. Proper documentation of baseline results can never be underestimated as these data form the baseline of patient management.

The continued use of the paper based system in records management helps to increase the strain as a result of high patient numbers against staff establishment.

In this day and age, where computerisation is the way to go, the clinic will drastically reduce patient workload by implementing this system. Retrieving the records is cumbersome and time consuming. The valuable time can be utilised for the direct good of the patient in the execution of other essential activities.

Only 2% of the patients indicated that they are members of a support group. The majority are not. Treatment and support groups are integral to patient management and the lack or non availability of the services hugely increases the risk of non psychotic psychiatric morbidities among patients receiving ART. Better ART outcomes, including higher program retention rates, may be obtained in services that have smaller numbers of patients and, therefore, that population coverage should be achieved with smaller decentralized facilities rather than a few large programs. Large programmes make it impossible to effectively decentralize patients as found out in one study evaluating ART outcomes, including higher program retention rates. The study also showed that better ART outcomes may be obtained in services that have smaller numbers of patients and therefore, that population coverage should be achieved with smaller decentralized facilities rather than a few large programs The study in question embarked on an evaluation of the Antiretroviral therapy program in Makonde district, Mashonaland West, Zimbabwe which data is Unpublished.

#### 5. CONCLUSION

Wilkins Hospital is offering most services expected of a level 4 ART facility. However there



is need to computerise the records section since retrieving and re-filling patient notes present challenges in terms of time and human resources. Equipment like the absolute CD4 count machine must be regularly checked for proper functionality to obtain valid and reliable of results. For a Level 4 ART Center, Viral load machines are inevitable and must be procured in order for proper quality of care and patient management. Strict drug stock management practices must be adhered to prevent stock outs. Patients who miss visits must be followed. Decentralisation of stable patients should be monitored by the program manager and must be implemented as per guidelines. Hospital Staff needs to be offered refresher training. A dedicated pharmacy technician should be assigned to dispense drugs to patients freeing nurses for other duties. Patients' privacy is compromised and violated in hospitals due to lack of proper renovations as result of lack of funds.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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