

OASIS Project / Global Fund to Fight AIDS, Tuberculosis and Malaria

Impact indicators assessment of the Global Fund Program to Fight AIDS in Côte d'Ivoire

STUDY ON THE SURVIVAL OF PATIENTS UNDER ARV AND THE PERCENTAGE OF HIV-NEGATIVE CHILDREN BORN TO HIV-POSITIVE MOTHERS

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ABSTRACT

HIV/AIDS is a health problem in Côte d'Ivoire. With a prevalence rate of 4.7% in the general population aged between 15-49 years old (AIS-CI-2005), the epidemic is generalized.

As part of the second phase of the Global Fund, the measurement of indicators is a priority for the country. Where the conduct of an evaluation survey that will, in comparison with the baseline study (February 2008), assess the impact of the program.

The objectives of the survey are: (i) to Evaluate the survival rate of people living with HIV after 12-18 months of antiretroviral treatment, (ii) to assess the main determinants of survival of patients on ARV and (iii) to determine the percentage of HIV-negative children (18-24 months) born to seropositive mothers.

The results of the study showed that the survival rate of 12 months is estimated at 75% for patients on ARV treatment between July 2007 and April 2008 against 71.7% for patients on ARV treatment between January-December 2006, an Increase of 3.3%. Regarding children born to seropositive mothers, the proportion of children tested between 18-24 months is low (11%). The percentage of HIV-negative children born to HIV-positive mothers is estimated to 61.2%.

KEYWORDS

AIDS	Acquired Immune Deficiency Syndrome
AIS-CI	AIDS Indicator Survey-Côte d'Ivoire
ARV	Anti-Retroviral
BMI	Body Mass Index
CD4	Cluster of Differentiation 4
GCPH	General Census of Population and Housing
HIV	Human Immunodeficiency Virus
IC	Confidence Interval
NIS	National Institute of Statistics
IST	Sexually Transmitted Infection
LASA	Light Action Section of Aboisso
M6	Six months
NGOs	Non-Governmental Organization
PCR	Equipment for the early diagnosis of infants born to HIV-positive
PEC	Taking In Charge
PLHIV	People Living with HIV
PMCT	Prevention of Mother-to-child transmission
UNAIDS	United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session
USAID	United States Agency for International Development
WHO	World Health Organization

1. INTRODUCTION

1.1 Background and justification

In West Africa, Côte d'Ivoire is among the most countries affected by HIV/AIDS. In 1985 the first case of AIDS were diagnosed in Côte d'Ivoire where the epidemic is characterized by the presence of two viruses, HIV-1 and HIV-2. Two (2) cases were officially reported about in 1985. New cases of HIV/AIDS rose to 450,000 in 1997; 770,000 in 2001 and 750,000 PLHIV at the end of 2005 (UNAIDS / WHO, 1998, 2002, 2006).

According to the same reference, the prevalence of HIV/AIDS among adults (over 15 years old) increased from 10.1% in 1997 to 9.7% in 2003. In 2005, UNAIDS estimated HIV prevalence at 7% in Côte d'Ivoire with approximately 750,000 PLHIV including 74,000 children less than 15 years old. During the same year, the AIDS Indicators Survey (AIS CI-2005) revealed meanwhile, a prevalence of 4.7% in the general population aged between 15-49 years old. This prevalence is depending on the components and gender. Indeed, the proportion of women affected by the AIDS virus was 6.9% against 2.9% for men (AIS CI-2005). In addition, the seroprevalence is higher among young women aged between 15-19 years old (0.4%) than young men (0.2%). This confirms the continued feminization of the epidemic in Côte d'Ivoire. According to the same report, about 570,000 people are living with HIV in Côte d'Ivoire with 530,000 adults (15-49 years old) and 40,000 children aged between 0 to 14 years old. For pregnant women, the prevalence, recorded by the AIS CI-2005 amounted, to 4.3%. Two years later, there has-been a small decline of the phenomenon with the updated report of UNAIDS in 2007 which reported that HIV prevalence in the general population is estimated to 4.5%. Now (in 2007), we have at country level, 424,260 PLHIV, 46,600 AIDS deaths and 420,943 orphans due to AIDS.

Faced to this situation, the international community has mobilized funds through several efforts to strengthen the national response. The impact of this action can be measured through national and international indicators regularly update on the basis of reliable data.

The currently data available at national level don't Include those relating to the survival of patients on anti-retroviral drugs for 12 months as well as those related to the percentage of HIV-negative children born to HIV-positive mothers.

As part of the second phase of the Global Fund to fight AIDS, Tuberculosis and Malaria, the response assessment and updating of indicators is a priority for the country. Hence, the conducting of this survey, that will, in comparison with the baseline study (February 2008), assess the impact of the program.

1.2 Objectives

The survey aims to assess the OASIS project's impact on the survival of people living with HIV and receiving ARV treatment, and the proportion of HIV-negative children born to HIV-positive mothers.

The specifics objectives are:

1. Collect data on survival of patients after 12 and 18 months of antiretroviral treatment indicators;
2. Collect data on negative children born to HIV-positive mothers indicators
3. Analyse the survival of patients after 12 and 18 months of antiretroviral treatment, compared with baseline;
4. Evaluate the major determinants of survival for patients on anti-retroviral after 12 months.

2. METHODOLOGY

2.1 Target populations

Target population 1: *patients started ARV from July 2007 to April 2008 (with the end of March 2009 as censoring time) in ARV site supported by the OASIS program.*

a) Inclusion criteria:

- Any patient with a medical record or recorded with information on the date of initiation of treatment, date of last visit, the date of death if deceased ;
- The patient put on ARV treatment is not transferred to another site before 12 months (for survival at 12 months);
- The patient put on ARV treatment is not transferred to another site before 18 months (for survival at 18 months).

b) Exclusion criteria:

- Any patient with no medical records or with incomplete or missing information including the date of initiation of treatment, date of last visit, the date of death if deceased;
- The patient put on ARV treatment is transferred to another site before 12 months (for survival at 12 months);
- The patient put on ARV treatment is transferred to another site before 18 months (for survival at 18 months).

Target population 2: *Children born to HIV-positive mothers detected between 18 and 24 months after birth in Prevention of Mother to Child Transmission (PMCT) program sites supported by OASIS.*

2.2 Survey field

The survey targeted health centres supported by the Global Fund/CARE services providing PEC (Taking In Charge), PMCT and organizations involved in monitoring and community PEC of ARV patients as well as in community-based organizations involved in the HIV/AIDS activities. At the health centres level, the survey involved ARV prescribing doctors and ARV pharmacists providers. At the community level, community counsellors, community and religious leaders, monitoring and evaluation of community organizations leaders, PLHIV on ARV treatment and deceased PLHIV relatives.

a) Criteria for inclusion of ARV sites:

- Providing ARV treatment by the health centre ;
- The health centre has received support from the Global Fund / Care Oasis;
- The health centre has at least 50 new patients on ARV treatment over the period of July 2007 to April 2008.

b) Exclusion Criteria of ARV sites:

- The health centre has not received support from the Global Fund / Care OASIS;
- The health centre has less than 50 new patients on ARV treatment over the period of July 2007 to April 2008.

2.3 Research techniques

Three (3) technical are used in this study:

- The document review of patient records of PLHIV and monitoring slip of children born to HIV-positive mothers ;
- A survey on service capacity, management and monitoring and evaluation of health centres and community organizations;
- Depth individual interviews with prescribing doctors, pharmacists providers, community counsellors, PLHIV on ARV treatment, community and religious leaders.

2.4 Sampling

2.4.1. Survival of patients on ARV

In all sites covered by the survey, 3,552 new patients were put on ARV treatment over the period of July 2007 - April 2008, but 2,081 cases were operated (59% of cases). Taking into account the criteria of inclusion and exclusion, 1,303 records of patients on ARV treatment were analysed for survival at 12 months and 736 cases were analysed for survival at 18 months.

Table 1: Size distribution of the sample of patients on ARV treatment

	NUMBER
Expected number of clinical record	3.552
Number of clinical record observed	2.081
Number of clinical record validated for survival at 12 months	1.303
Number of clinical record validated for the 18-month survival	736
Total records validated	2,039

2.4.2 Prevalence of children born to HIV-positive mothers

The survey covered 207 files of children born to HIV-positive mothers, but after checking, it is 196 files (clinical records) where the child was tested.

Table 2: Size distribution of the sample of children born to HIV-positive mothers detected

	NUMBER
Number of clinical record expected	207
Number of clinical record in which children were tested	196
Number of clinical record in which tests are realized between the 18 and 24 months	21

2.5 Data collect

2.5.1. Instruments of data collect

1. Questionnaire A: survey on capabilities management of health centres;
2. Questionnaire B: survey on community capacity of monitoring of PLHIV ;
3. Questionnaire C: individual data on ARV treatment (PLHIV put on ARV treatment between 1 July 2007 and 31 March 2008);
4. Questionnaire D: individual data on children born to seropositive mothers ;
5. Questionnaire E: individual data on PLHIV;
6. Checklist 1: checklist for individual interviews with PLHIV;
7. Checklist 2: checklist for individual interviews with leaders and families;
8. Checklist 3: checklist for individual interviews with relatives of deceased PLHIV;
9. Checklist 4: checklist for individual interviews with the pharmacist;
10. Checklist 5: checklist for individual interviews with the doctor prescribing;
11. Checklist 6: checklist for individual interviews with Community Advisor;
12. Supervisors and investigators manual.

3. RESULTS

3.1 Survival of people living with HIV on ARV during 12 months of treatment

3.1.1 Socio-demographic characteristics of patients on ARV treatment during 12 months

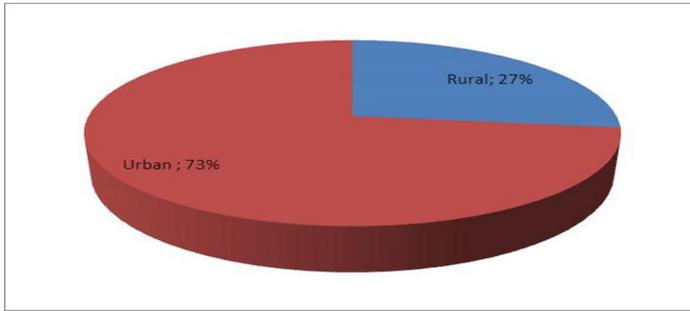
This section focuses on the description of the socio-demographic characteristics of the study population (the usual place of residence, sex, age, marital status, educational level and occupational status). These various features will be used as variables to analyse the survival of patients in the following report.

3.1.1.1 Main results

- The majority of patients (73%) live in urban areas;
- More than two-thirds of patients (64%) are female;
- The patients have an average of 37 years old;
- About four out of ten patients are unmarried;
- Half of the patients is not educated or has a level of primary studies;
- The social and professional status of patients is relatively low: more than two out of three patients are unemployed.

The majority of patients put on ARV treatment live in urban areas (73%). This cannot be explained only by the fact that the prevalence is higher in urban areas, but because all sites are supported in towns.

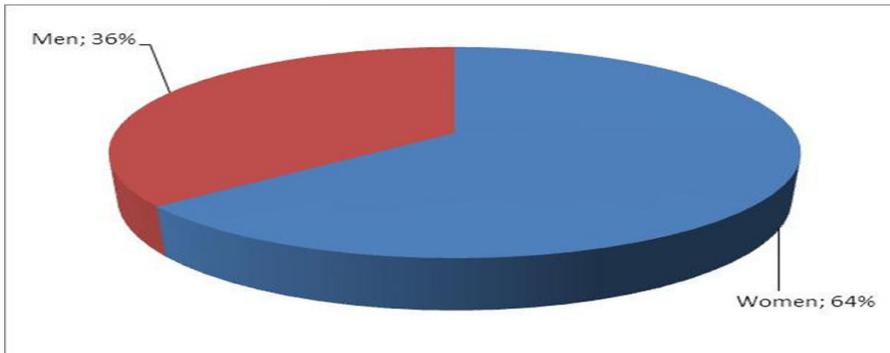
Figure 1: Distribution of patients on ARV treatment by usual place of residence.



3.1.1.2 Gender

The majority of patients on ARV treatment are women (64%), giving a sex ratio of 178 women per 100 men. This ratio is similar to HIV infection. Indeed, the feminization of HIV infection is confirmed by the AIDS Indicator Survey (NIS, AIS-CI, 2005).

Figure 2: Distribution of patients on ARV treatment by sex



3.1.1.3 Age

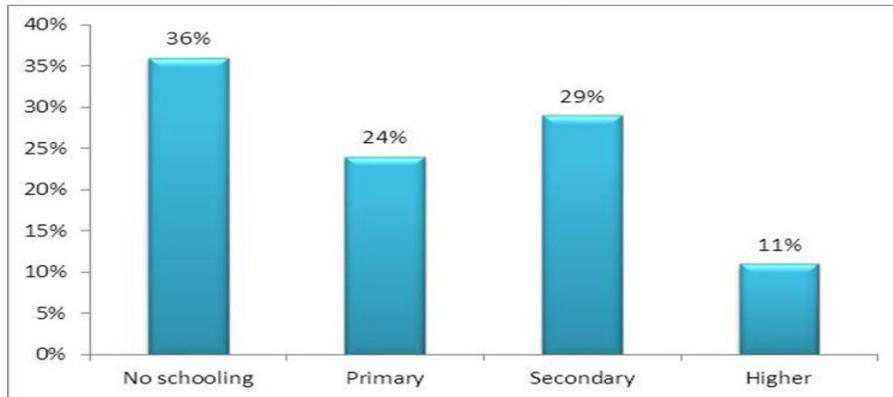
The average age of patients is estimated at 37 years old and more than a third of patients were aged between 30 and 39 years old. This is consistent with the results of the AIS-CI 2005 which showed that the highest HIV prevalence was observed from 30 years old.

Table 3: Distribution of patients on ARV treatment by respondents ages

AGE	PERCENTAGE
Less than 20 years old	5%
20 to 29 years old	15%
30-39 years old	38%
40-49 years old	27%
50 years old, +	14%
Total	100%
Average age: 37 years old	

3.1.1.4 Education level

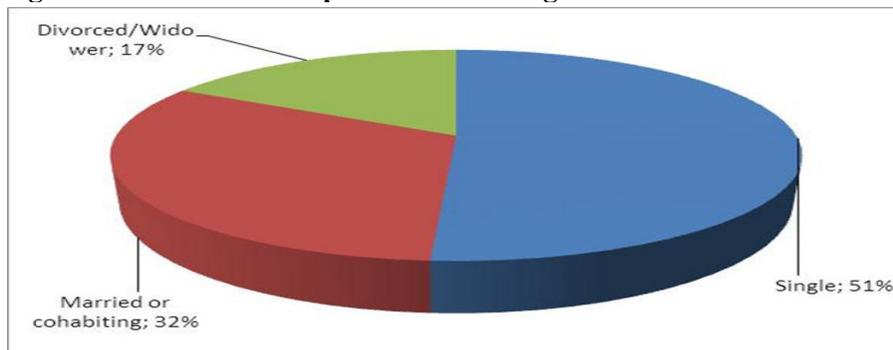
The educational level of patients is relatively low. In fact, 60% of patients are not enrolled nor have primary education level.

Figure 3: Distribution of patients on ARV by education level

3.1.1.5 Marital status

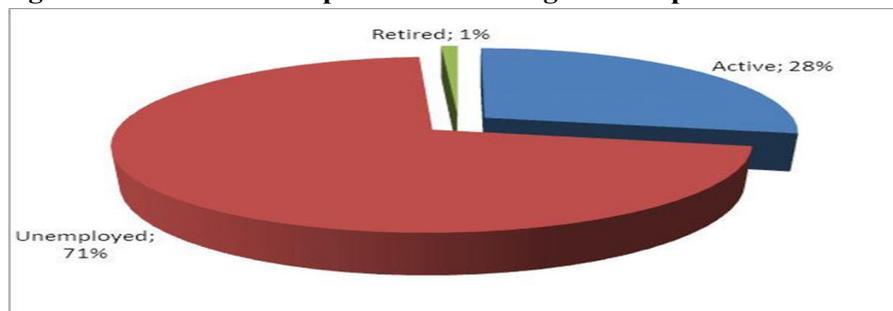
The majority of patients were single (51%) or are married (32%). The widowed or divorced represent 17% of patients. Although the proportion of widowed or divorced is lower compared to other categories, it is three times higher in patients than in the general population. Indeed, the proportion of widowed and divorced was 4.6% in the general population (GCPH-98). The strong representation of widowed and divorced among patients stem from the fact that HIV seroprevalence is markedly elevated in this population (13.4%) according to the AIS-CI 2005.

The married are less than half of the patients.

Figure 4: Distribution of patients according to marital status

3.1.1.6 Socio-professional status

Socio-professional status is relatively weak overall. Nearly $\frac{3}{4}$ of patients are not active.

Figure 5: Distribution of patients according to socio-professional

3.1.2 Bio clinical antecedents at the time of ARV treatment at 12 months

This section focuses on the description of the history bio clinical patients according to the time of ARV (opportunistic infections, anthropometric data, biological data, and prophylactic treatment). These various features will be used as variables to analyse the survival of patients in the following report.

3.1.2.1 Main results

- Weight loss (30%), herpes zoster (29%), diarrhea (29%) and tuberculosis (22%) are the most frequently encountered clinical history in patients under ARV treatment;
- A patient in three is underweight according to body mass index (BMI <18.5 kg/m²);
- More than half of the patients (58%) had a CD4 count below to 183/mm³

3.1.2.2 Opportunistic infections

Weight loss (emaciation), shingles, tuberculosis and diarrhoea are the major opportunistic infections reported by patients before ARV treatment.

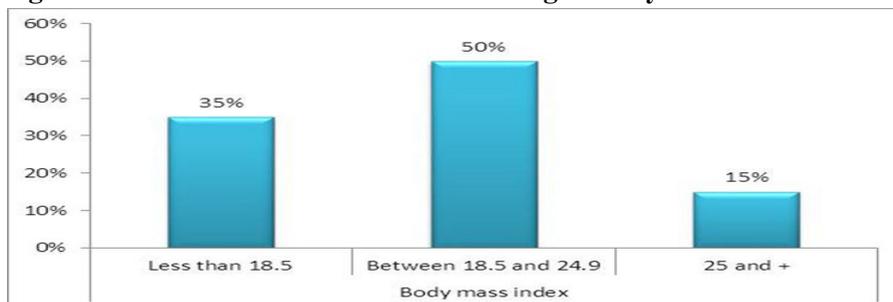
Table 4: Frequency of clinical history

INFECTION	PROPORTION (N = 1303)
Emaciation	30%
Diarrhoea	29%
Shingles	29%
Tuberculosis	22%
STI	17%
Pneumonia	11%
Toxoplasmosis	8%
Meningitis	7%

3.1.2.3 Anthropometric data

The body mass index is the ratio of weight (kg) and the square of height (in meters) and therefore is expressed in kg/m². Indicating chronic energy deficiency is generally used as a threshold value 18.5. In contrast, to indicate an overweight, the threshold is set to 25 or more (James et al., 1988). As shown in figure below, half of the patients were underweight (35%) or overweight (15%).

Figure 6: Distribution of diseases according to body mass index

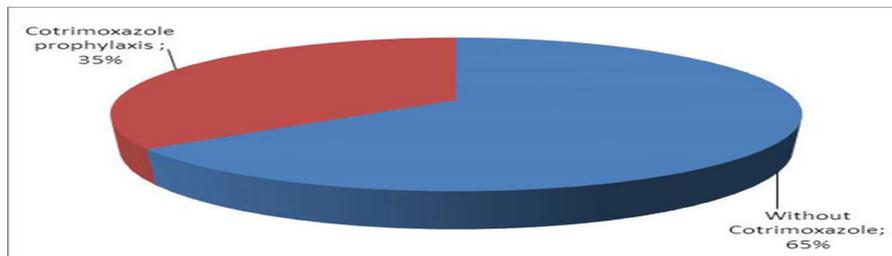


3.1.2.4 Cotrimoxazole prophylaxis before ARV treatment

Cotrimoxazole prophylaxis is usually given to people living with HIV who are not yet eligible for ARV. It is a supportive therapy to limit opportunistic diseases. In the majority of cases the patients did not receive cotrimoxazole prophylaxis before starting ARV. This can be explained by three main reasons:

- People living with HIV do not know their HIV status early due to the low rate of voluntary testing;
- The medical care of persons living with HIV is not available everywhere;
- The use of modern health care is generally low.

Figure 7: Distribution of patients according to whether they received prophylactic treatment before treatment



3.1.3 ARV treatment and monitoring of patients over 12 months

That part is used to describe the unfolding of the care of patients through the initiation of ARV therapeutic regimens, cotrimoxazole prophylaxis, opportunistic infections, side effects, treatment monitoring at the level of the establishment and at Community level and the issue of patients (death, lost sight, survival) over 12 months. These different parameters will be used to analyse the determinants of survival in this report.

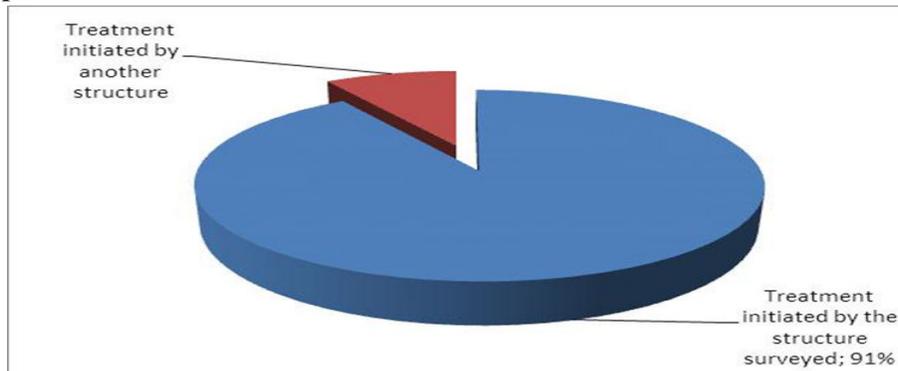
3.1.3.1 Main results

- In almost all cases (91%), ARV treatment was initiated by the surveyed structure;
- 84% of patients were started on ARV regimen in first line;
- 57% of patients received cotrimoxazole prophylaxis during ARV treatment;
- Opportunistic infections notified during ARV treatment were diarrhea (16%), weight loss (13%) and tuberculosis (13%).
- Side effects are generally notified nausea (8%), dizziness (8%), asthenia (8%) and headache (7%);
- One patient in three (34%) was followed by community organizations;
- 4% of cases of deaths have been notified and 23% of patients were lost to follow;
- 75% of patients were reviewed after 12 months of treatment.

3.1.3.2 Initiation of ARV treatment

In nearly all cases (91%), patients are followed at sites where they started ARV treatment.

Figure 8: Distribution according that ARV treatment was initiated by the site that followed the patient or not



3.1.3.3 ARV regime

In the majority of cases (84%), patients are placed under first line regimen.

3.1.3.4 Cotrimoxazole prophylaxis in ARV treatment

34% of patients received prophylactic treatment in addition to ARV. This situation is explained by the fact that most patients have histories of opportunistic infections.

3.1.3.5 Opportunistic infections occurred during ARV treatment

During the first year of treatment, opportunistic infections observed were diarrhoea (16%), tuberculosis (13%) and weight loss (13%). The reported frequency of opportunistic infections is certainly underestimated in terms of inadequacies observed for filling data tools for collecting (registry cohort follow-up, patient file and ARV treatment register).

3.1.3.6 Side effects of ARV treatment

Side effects notified are related to the use of health services by patients on ARV treatment. In most cases the complaints of patients in terms of side effects were nausea (11.4%), headache (6.4%), asthenia (5.9%) and dizziness (4, 3%).

3.1.3.7 Monitoring of ARV treatment

Monitoring of patients on ARV treatment is characterized by:

- Lack of reference and reference cons between community organizations and health facilities;
- Insufficient of filling and data tools management;
- Insufficient of community monitoring
- Poor communication between prescribing doctors and pharmacists providers of ARV.

3.1.3.8 Patients on ARV treatment after 12 months of treatment

The analysis of patients on ARV treatment after 12 months of treatment is done in three ways: death, lost sight of, and survival at 12 months.

Table 5: Distribution of patients on ARV treatment according to their status after 12 months

STATUS	PERCENTAGE
Deceased	4%
Lost sight	21.0%
Reviewed after 12 months of treatment	75.0%
Total	100%

The case of death (deceased)

Over the period of 12 months, the death rate is estimated at 40 %. Although this rate is higher than the crude mortality rate in the general population (in Côte d'Ivoire the crude mortality rate is estimated at 13 %. (GPHC-98), it is certainly underestimated because some lost sight patients could have died without it is notified in the collection tools since the reference system between the Community and health establishments is not very functional.

Lost sight

On the 12-month period, about one patient in five (21%) has not been seen.

The survivors to ARV treatment

In 75% of cases, patients put on ARV treatment were reviewed after 12 months of treatment.

3.1.4 Differential analysis of survival after 12 months of ARV treatment

This part is used to describe the profile of the surviving patients after 12 months of ARV treatment. This description is made according to the socio-economic background bio clinical, implementation and monitoring of ARV treatment.

3.1.4.1 Main results

- The survival rate of patients in activity was significantly higher (82%, CI95%: 78.0% - 86.0%) compared to others (72%, CI95%: 69.1% - 74.9%);
- The survival rate increases with the patients education level but the differences are not statistically significant;
- The survival rate was significantly higher (85%, CI95%: 80.5%-89.5%) when the nutritional status of patients is normal;
- The survival rate was significantly higher (83%, CI95%: 80.3% - 85.7%) for patients put on cotrimoxazole prophylaxis in addition to ARV treatment than others (62.5%, CI95%:58.2%-66.8%).

3.1.4.2 Description of the survival according to sociodemographic characteristics**Table 6: Survival rate at 12 months according to the socio-economic characteristics of the patients**

FEATURES	NUMBER	SURVIVAL RATE (%)	CONFIDENCE INTERVAL AT 95%	
Usual place of residence				
Urban	949	76.9	74.2	79.6
Rural	240	70	64.2	75.8
Sex				

Man	474	74.9	71.0	78.8
Woman	829	75	72.1	77.9
Age group				
Less than 20 years old	62	72.6	61.5	83.7
20 to 29 years old	179	73.7	67.3	80.1
30-39 years old	442	75.8	71.8	79.8
40-49 years old	318	77.7	73.1	82.3
50 years old and over	164	77.4	71.0	83.8
Marital status				
Single	548	76.8	73.3	80.3
Married or cohabiting	346	75.4	70.9	79.9
Divorced	71	83.1	74.4	91.8
Widower	116	73.3	65.2	81.4
Education level				
No schooling	386	70.7	66.2	75.2
Primary	263	76	70.8	81.2
Secondary	311	79.7	75.2	84.2
Higher	118	85.6	79.3	91.9
Occupation				
Active	357	82	78.0	86.0
Unemployed	946	72	69.1	74.9
Together	1,303	75	72.6	77.4

Survival varies by place of residence. Indeed, the survival rate of patients in urban areas (76.9%; CI95% = 74.2% - 79.6%) was significantly higher than those in rural areas (70.0%; IC95%: 64.2% - 75.8%).

The education level is a discriminating variable of survival. Indeed, the survival of patients on ARVs increases with the education level. Survival ranged from 70.7% for non-schooling patient to 85.6% for those who have higher education level.

There is no significant difference in survival between marital status (single, married, divorced and widowed).

The survival of patients on ARV treatment did not vary significantly by age in terms of confidence intervals at 95%. Survival did not vary by sex of patients on ARV treatment. The survival rate was not significantly associated with sex in PLHIV. It is virtually the same whether you are a man (74.9%; CI95% = 71.0 – 78.8%) and female (75%; CI95% = 72.1% - 77.9%).

3.1.4.3 Description of the 12-month survival by history bioclinical of patients at the time of ARV treatment.

The survival rate was significantly lower in patients with previous history of meningitis (68.8%; CI95%: 54.9% - 78.2%) compared to others.

The survival rate is high when the CD4 rate at the time of ARV treatment is between 57 and 114/mm³. It is lowest when the CD4 rate is between 183 / mm³ and 277 / mm³.

The survival rate is higher in patients with a good nutritional status (85.0%; IC95%: 80.5% - 89.5%) according to body mass index.

Table 7: Survival rate at 12 months depending on opportunistic infections before ARV treatment

FEATURES	NUMBER	SURVIVAL RATE (%)	CONFIDENCE	
			INTERVAL	AT 95%
History of opportunistic infections				
Tuberculosis	281	76.9	72.0	81.8
IST	221	75.6	69.9	81.3
Diarrhoea	379	72.3	67.8	76.8
Emaciation	387	77.5	73.3	81.7
Pneumonia	142	71.8	64.4	79.2
Shingles	373	76.7	72.4	81.0
Meningitis	93	68.8	59.4	78.2
Toxoplasmosis	102	70.6	61.8	79.4
Anthropometric data				
BMI <18.5: Underweight	165	75	68.4	81.6
BMI between 18.5 and 25.0: normal	240	85	80.5	89.5
BMI > 25.0: overweight	73	78	68.5	87.5
CD4 biological data				
The lowest (<56)	87	78.2	69.5	86.9
The second (57 to 114)	81	82.7	74.5	90.9
The medium (between 115 and 182)	105	79	71.2	86.8
The fourth (between 183 and 277)	93	71	61.8	80.2
The highest (> 277)	107	80.4	72.9	87.9
Treatment before ARV				
Cotrimoxazole	434	76	72.0	80.0
No cotrimoxazole	796	74.1	71.1	77.1
Together	1,303	75	72.6	77.4

3.1.5 Evolution of survival after 12 months of ARV treatment between the baseline survey and the current survey.

This section allows to measure progress in terms of patient survival after 12 months of ARV treatment between the baseline survey¹ and this survey. This trend analysis is done according to the unfavourable factors for survival after the first study.

¹ Celbany International, Care, Investigation Report on impact indicators in the fight against AIDS in Côte d'Ivoire, Classification of patients according to the determinants of survival, February 2008.

3.1.5.1 Main res results

- The rate of survival at 12 months increased from 71.7% (CI95%: 70.7% - 72.9%) to 75% (CI95%: 72.6% - 77.4%), an increase of 3%. This increase is statistically significant;
- The rate of survival at 12 months for patients living in couple increased from 71.8% (CI95%: 70.0% - 73.6%) to 75.4% (CI95%: 70.9% - 79.9%), an increase of 3.6%. This increase is not statistically significant;
- The rate of survival at 12 months for patients with diarrhea increased from 60.9% (CI95%: 57.9% -63.9%) to 72.3% (CI95%: 67.8% - 76.8%), an increase of 11.4%. This increase is statistically significant;
- The rate of survival at 12 months for patients with tuberculosis increased from 71.7% 5 (CI95%: 69.2% -74.2%) to 76.9% (CI95%: 72.0% - 81.8%), an increase of 5.2%. This increase is not statistically significant;
- The rate of survival at 12 months of patients with herpes zoster increased from 71.0% (CI95%: 68.8% -73.2%) to 76.7% (CI95%: 72.4% - 81.0%), an increase of 6.7%. This increase is not statistically significant;
- The rate of survival at 12 months for patients who were underweight (BMI <18.5 kg/m2) increased from 74.1% (CI95%: 70.6% -77.6%) to 75.0% (ci95%: 68.4% - 81.6%), an increase of 0.9%. This increase is not statistically significant.

3.1.5.2 Changes observed in patients receiving ARV treatment

Table 9: Comparison of indicators after 12 months of ARV treatment between the baseline survey and this survey

STATUS	BASELINE (n = 1389)	CURRENT SURVEY (N = 1303)
Deceased	2.3%	4%
Lost sight	26.0%	21.0%
Reviewed after 12 months of treatment	71.7%	75.0%
Total	100%	100%

3.1.5.3 Evolution of survival rate according to unfavourable factors

Overall, the survival rate of patients on ARV treatment at 12 months had a positive progression for all factors identified as unfavourable survival according to the results of the baseline survey. The current survival rate (75%) is significantly higher than the baseline (71.7%). However, except patients with diarrhoea cases, the differences are not significant. Indeed, the survival rate has a statistically significant increase of 11.4 percentage points compared to the baseline study. This could be explained by the fact that community organizations have increasingly developed palliative care and nutritional support including through the implementation of the community component of the OASIS program.

Table 10: Survival based on the unfavourable characteristics to the survival of patients

ADVERSE FACTORS FOR SURVIVAL	BASELINE STUDY (n = 1389)		CURRENT INVESTIGATION (n GAP = 1303)		
	Survival rate (%)	Confidence interval at 95%	Survival rate	Confidence interval at 95%	
Married or common law	71.8	70.0 to 73.6	75.4	70.9 to 79.9	+ 3,6
Diarrhoea	60.9	57.9 to 63.9	72.3	67.8 to 76.8	11.4
Tuberculosis	71.7	69.2 to 74.2	76.9	72.0 to 81.8	5.2
Shingles	71.0	68.8 to 73.2	76.7	72.4 to 81.0	6.7
Underweight	74.1	70.6 to 77.6	75.0	68.4 to 81.6	0.9

3.1.6 Differential analysis of survival after 18 months of ARV treatment

The profile of surviving patients after 18 months of ARV treatment will also be following to the socio-economic characteristics, the bio clinical antecedents, and the implementation and monitoring of ARV treatment.

3.1.6.1 Main results

- The survival rate increases with the patients education level but the differences are not statistically significant;
- The survival rate was significantly higher for patients put on cotrimoxazole prophylaxis in addition to ARV treatment (67.7%; CI95%: 63.1% - 72.3%) than patients who have not been under cotrimoxazole prophylaxis (49.5%; CI95%:44.1%-54.9%);
- There is no significant difference between the survival rates of patients in activity (66.1%; CI=59.9% -72.3%) and unemployed patients (56.6%; CI= 52.3%-60.9%).

3.1.6.2 Description of the 18-month survival according to sociodemographic characteristics

The 18-month survival also varies by place of residence as it was found for patients placed on ARV for 12 months. The survival rate of patients in urban areas (62.7%; CI95% = 58.5% - 66.9%) was significantly higher than those in rural areas (49.0%; CI95%: 40.9% - 57.1 %).

The education level is significantly associated with survival in patients after 18 months of treatment. On the whole, survival increases with the level of study. From 56.6% (CI95% = 50.1% - 63.1%) for no schooling patients, the survival rate goes to 76.6 % (CI95% = 66.2 – 87.0%).

Contrast to the survival after 12 months, there is a significant difference in the survival rate (after 18 months of treatment) between marital status (single, married, divorced, widowed), evidenced by the confidence intervals.

The survival rate after 18 months of treatment is not differential according to the patient that he belongs to a specific age group.

Gender was not significantly associated with survival of patients after 18 months of treatment even if the survival rate for women was slightly higher (60.0%; CI95% = 55.6% - 64.4%) than the men (58.6%; CI95% = 52.7% - 64.5%).

Table 11: Survival rate at 18 months depending on socio-economic characteristics of the patients

FEATURES	NUMBER	SURVIVAL (%)	RATE	CONFIDENCE INTERVAL AT 95%
Usual place of residence				
Urban	520	62.7	58.5	66.9
Rural	145	49	40.9	57.1
Sex				
Man	266	58.6	52.7	64.5
Woman	470	60	55.6	64.4
Age group				
Less than 20 years old	39	56.4	40.8	72.0
20 to 29 years old	92	62	52.1	71.9
30-39 years old	246	57.7	51.5	63.9
40-49 years old	192	65.6	58.9	72.3
50 years old and over	77	66.2	55.6	76.8
Marital status				
Single	310	62.6	57.2	68.0
Married or cohabiting	197	55.3	48.4	62.2
Divorced	51	76.5	64.9	88.1
Widower	72	56.9	45.5	68.3
Education level				
No schooling	221	56.6	50.1	63.1
Primary	151	62.3	54.6	70.0
Secondary	190	61.1	54.2	68.0
Higher	64	76.6	66.2	87.0
Occupation				
Active	227	66.1	59.9	72.3
Unemployed	509	56.6	52.3	60.9
Together	736	60	56.5	63.5

3.1.6.3 Trends in survival of patients on ARV treatment between 12 and 18 months

Table 12: Comparison of survival of patients on ARV treatment between 12 and 18 months

ADVERSE FACTORS FOR SURVIVAL	PATIENTS OVER 12 MONTHS (N = 1303)		PATIENTS OVER 18 MONTHS (NGAP = 736)	
	Survival rate (%)	Confidence interval at 95%	Survival rate (%)	Confidence interval at 95%

Married or common-law	75.4	70.9 to 79.9	55.3	48.4 to 62.2	-20.1
Diarrhoea	72.3	67.8 to 76.8	49.5	39.9 to 59.1	-22.8
Tuberculosis	76.9	72.0 to 81.8	48.4	38.1 to 58.7	-28.5
Shingles	76.7	72.4 to 81.0	52.4	40.1 to 64.7	-24.3
Underweight	75.0	68.4 to 81.6	54.9	44.1 to 65.7	-20.1

Overall, the survival rate of patients on ARV treatment decreases significantly between 12 and 18 months (-15.0%). This decrease in survival rate over that period of 6 months is more pronounced when the patient has tuberculosis (-28.5%), herpes zoster (-24.3%), diarrhoea (-22, 8%) and underweight (-20.1%).

3.1.7 Analysis of the patients on ARV treatment survival factors at community level

This section allows assessing the effect of community factors such as: (i) the involvement of PLHIV in activities against AIDS, (ii) the inclusion of patients in the community, (iii) the management of the HIV and ARV treatment adherence and (iv) the actions of community organizations on the survival of patients on ARV treatment.

a. Involvement of PLHIV activities against AIDS and the survival

Overall, PLHIV respondents on ARV treatment believe that ARV treatment improve their health. Some patients believe that taking ARV treatment is a sufficient condition for better health. According to one interviewee PLHIV on ARV, interviewed in Divo **"most of the patients go to the hospital when they are in the terminal stage, in this case, ARV treatment cannot do great things."** This message is very important and is consistent with the results of the differential analysis of survival. Indeed, when the CD4 rate is very low, the survival rate is very low too and when patients were underweight (BMI <18.5 kg/m²), the survival rate is low. In addition to medical treatment, PLHIV have expressed needs and financial resources to improve their material condition for survival. Even if the PLHIV followed by NGOs argue that these organizations help them, overall, they recognize that these organizations do not have enough resources. If we take the expression of a PLHIV in Séguéla: **"Here in Séguéla, NGOs help us but they did not have enough money, I hope that one's give them more resources to help people who have nothing."** The involvement of PLHIV in the fight against HIV/AIDS improve their living conditions particular on the community integration, the sensitization of the population against stigmatization, the self-rejection, the community integration, and the judgment of the dead as inevitable. A PLHIV in Aboisso comments **"We operate with Aboisso Light Action Section (LASA [in French]), these activities have a positive impact on our environment and our community; since I participate in the activities of the LASA, and I have no worries about my eventual death of HIV."** These statements can better appreciate the involvement of PLHIV for control activities as a factor conducive to the survival and positive prevention.

b. Integration of PLHIV at community level and the survival

Community integration is an important factor for patient survival according PLHIV respondents. To this end, community and religious leaders should play an important role. In this study, some community leaders were interviewed by the supervisors. It appears that, according to religion, man has no right to reject its next. The comments of a religious leader in Séguéla "We have PLHIV in our community, these people have the same treatment like those who are not infected with HIV/AIDS, we associate them in all activities because there is no discrimination." These comments show that discrimination is a human error which goes against sick people. Some leaders say that PLHIV are not well integrated because they are considered dangerous by some people.

c. Management of HIV status and compliance with treatment on survival on ARV treatment

Despite the efforts made by the Government and partners in the fight against HIV and the adoption of universal access to care and treatment for patients, some patients do not benefit fully from the services for several reasons. The non-acceptance of HIV status as having an impact on patient survival. In this study, with the help of community advisors, our team was able to gather information from relatives of patients on ARV who died during the last 18 months. It appears from the interviews that most deceased PLHIV are those who were not readily accepted their status. The sister of a deceased PLHIV said: "my sister after her test did not accept the HIV-positive result, when she started to be illness we told her that if she does not take ARV treatment she will die, so she went to the hospital. The doctors gave her drugs. She made us believe she was taking her medication until she died". These comments illustrate that the rejection status and non-adherence to ARV treatment are factors limiting the survival of PLHIV.

d. Contribution of community based organizations (CBO) interventions on PLHIV survival

The action of the community organizations for the benefit of PLHIV on ARV treatment is essential to improve the quality of life of PLHIV and improve survival. It is in this perspective that the OASIS program has in addition to public component, a community component in order to have a comprehensive and effective intervention. The contribution of NGO interventions was discussed with several groups (PLHIV, community leaders, families, community counsellors, doctors ...). In most of cases (68%) patients on ARV treatment followed by community-based organizations are satisfied with their contribution.

3.2 Percentage of detected children born to infected mothers

3.2.1 Description of the children population

This section focuses on the presentation of the population of children tested. The description is made according to the demographic characteristics of children, ARV treatment for mothers, breastfeeding mode and test conditions.

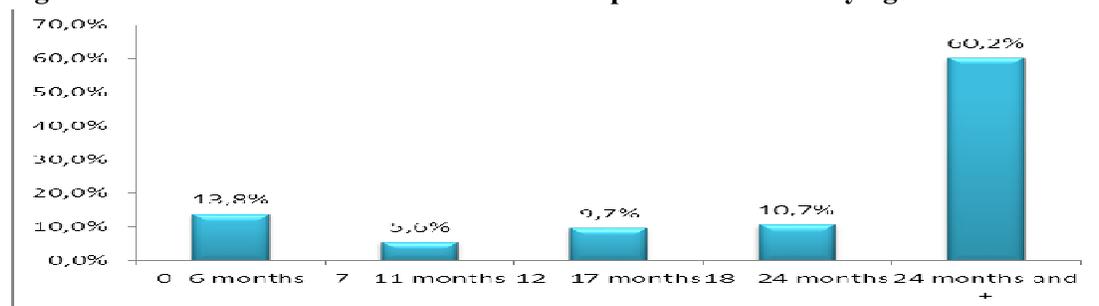
3.2.1.1 Main results

- 196 children born to infected mothers testing constitutes the survey population;
- 25.5% of children have been breastfed artificially until 6 months;
- 10.7% of children were tested between 18 and 24 months;
- Only 7.7% of children received a second test;
- 32.7% of tests were performed to PCR (equipment for the early diagnosis of infants born to HIV-positive mothers) at 6 weeks;
- Slightly more than half of the test is serology (67.3%).

3.2.1.2 Age at first test

The test rate between 18 and 24 months was 10.7%.

Figure 9: Distribution of children born to HIV-positive mothers by age at the time of testing



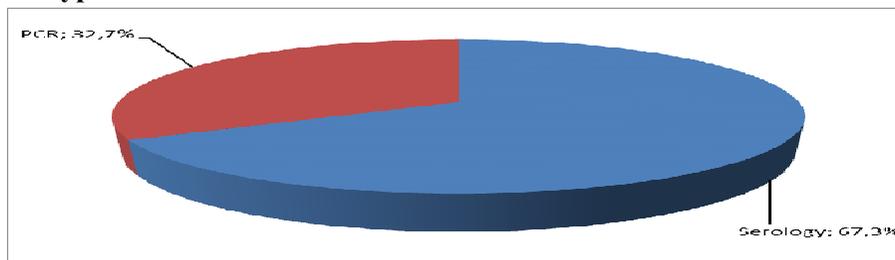
3.2.1.3 Mode of breastfeeding of the children tested

In three quarters of cases (74.5%), exclusive breastfeeding until 6 months is the mode of infant feeding notified by health service providers. This proportion is much higher than that provided by community survey. The proportion of exclusive breastfeeding is high because this information is misinformed by health service providers.

3.2.1.4 The type of test carried

The PCR test (equipment for the early diagnosis of infants born to HIV-positive mothers) at 6 weeks was achieved in 32.7% of cases.

Figure 10: Distribution of children testing negative for HIV born to infected mothers depending on the type of HIV detected test



3.2.2 Description of the proportion of children testing negative for HIV born to infected mothers

This section is used to describe the percentage of children born to infected mothers according to demographic characteristics, the regime of the mother ARV treatment (note: the analysis according to the ARV treatment regime was not included in the main results) and test conditions.

3.2.2.1 Main results

- The percentage of HIV-negative children born to infected mothers is estimated to 61.2% (CI95%: 52.5% - 69.9%);
- The percentage of HIV-negative children does not vary with the method of feeding;
- The percentage of HIV-negative children tested between 18 and 24 months born to infected mothers is estimated to 66.7% (CI= 46.5% -86.9%).

Table 13: The percentage of HIV-negative children according to the characteristics of children and the test conditions

FEATURES	NUMBER	HIV-NEGATIVE CHILDREN (%)	CONFIDENCE INTERVAL AT 95%	
the method of feeding				
Exclusive Breastfeeding	146	61	53.1	68.9
Replacement feeding	50	62	48.5	75.5
Age at test				
0 - 6 months	27	96.3	89.2	100
7 - 11 months	11	90.9	73.9	100
12-17 Months	19	94.7	84.6	100
18 - 24 months	21	66.7	46.5	86.9
25 months & more	118	44.1	35.1	53.1
Together	196	61.2	52.5	69.9

4. CONCLUSION AND RECOMMENDATIONS

The study on the impact indicators of the struggle against AIDS was implemented through 1,303 patients' files put on ARV treatment over 12 months and 736 cases of patients under 18 months of ARV treatment on ARV sites supported by the Global Fund (CARE project/OASIS) and 196 records and report cards of children born to HIV-positive mothers tested. The results show that:

- The survival rate of 12 months is estimated at 75% (CI_{95%}= 72.1% - 77.9%) for patients placed on ARV treatment between July 2007 and April 2008 against 71.7% (CI_{95%}: 70.1 % - 73%) for patients placed on ARV treatment between January 2006 and December 2006, an increase of 3.3%. This difference is statistically significant (X² test). Could one conclude that the situation of patient survival has been improved? In addition to access to antiretroviral treatment and opportunistic infections, interviews with PLHIV, community and religious leaders, families and relatives of deceased PHAs showed that survival depends on their integration into the society, their involvement in community activities, the acceptability of HIV result, adherence to treatment, as well as the contribution of community organizations. Data analysis showed that community discrimination, stigma, low socio-economic level of PLHIV are factors limiting the survival of patients on ARV treatment.
- The survival rate of patients between 12 and 18 months knows a significant decrease (-15%). This negative trend in survival over the period of 6 months is more pronounced when the patient has tuberculosis (-28.5%), herpes zoster (-24.3%), diarrhoea (-22, 8%), underweight (-20.1%). The inadequate of monitoring at health facility levels, the lack of a reference system between community organizations and health facilities providing ARV treatment are the main reasons for the sharp decline in survival when the time of ARV treatment stretches.
- The proportion of children tested between 18 and 24 months is low (11%). For this purpose, the indicator has been calculated with all cases tested regardless of age at test. Also, the test performed has been confirmed in 8% of cases. The percentage of HIV-negative children born to infected mothers is estimated at 61.2% (CI_{95%} =52.5% - 69.9%). This proportion is low compared to the national goals of reducing HIV transmission from mother to child.

At the end of the study we recommend:

1 - Improve the availability and quality of data for the assessment of the impact indicators

- Develop standardized data collection tools for the monitoring of patients on ARV treatment;
- Strengthen the implementation of GIS-HIV software on the sites;
- Popularize the use of individual patient record or file;
- Train and supervise those involved in data collection on the sites;
- Organize quarterly meetings for monitoring HIV/AIDS activities with the participation of all staff involved and community health workers;
- Conducting community surveys on the survival of patients on ARV around sites;
- Establish a system of internal and external audit data in health facilities and community organizations according to the DQA (Data Quality Analysis) approach;
- Establish or strengthen the referral system between community organizations and health facilities;
- Conducting community surveys on the prevalence of HIV among women and children.

2 - Improve the survival of patients on ARV treatment

- Further involve community and religious leaders in the activities of service provision for prevention and treatment of PLHIV;
- Strengthen the implementation of positive prevention;

- Involve families and relatives of patients for monitoring ARV treatment adherence;
- Involve local authorities and others (General Councils, Town Councils, Mutual, and community-based organizations) in the economic empowerment of PLHIV;
- □ Involve PLHIV in sensitization of the population for early detection;
- Regular supply sites in drugs and strategic inputs;
- Strengthen the positive collaboration between prescribers, providers and community counsellors.

3 - Improve the percentage of HIV-negative children born to seropositive mothers

- Strengthen the monitoring of children born to HIV-positive mothers in health facilities;
- Establish an active research system of children born to HIV-positive mothers;
- Organize the monitoring of pregnant women tested HIV-positive in the community;
- Implement strategies to effectively integrate the monitoring of children born to seropositive mothers with the other post-natal health services such as growth monitoring, immunization, mosquito net distribution;
- Regular supply PMCT sites in medicines and strategic inputs;
- Strengthen the partnership between health workers and community health workers;
- Set up support groups around PMCT sites.

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