

# HIV/AIDS Screening in the African Birthplace (Hospital in Kayes, Mali)

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## Abstract

**Purpose:** The purpose of this study was to determine HIV prevalence among participants admitted to the delivery room and recent birth attendants. **Materials and Methods:** This was a descriptive, cross-sectional, analytical study, with a prospective collection from February 1, 2018 to January 31, 2019 at fousseyni Daou Hospital in Kayes, Mali. **Results:** During our study period, we recorded 4269 deliveries. HIV-positive patients known before labour accounted for 0.21%. Four hundred and six participants received counselling/testing in the delivery room; of which 36 refused the test: 8.87% and 370 accepted or 91.13%. Thirteen patients tested positive or 3.51%. The 20 - 35 age group was the most represented at 76.92%. Positive patients tested received ARV treatment in the delivery room in 92.31% of cases; and 1 patient or 7.69% did not receive treatment for refusal. Vaginal delivery was the most common at 77%, with caesarean section 23%. Newborns had a good prognosis in their first weeks of life in 85%; fetal lethality was observed in 15% of newborns including 1 case of fresh stillbirth and 1 case of pediatric deaths for neonatal suffering. **Conclusion:** Counselling and voluntary HIV/AIDS testing during labour and immediate postpartum can detect many pregnant women who escape screening during antenatal consultations.

## Keywords

Screening, HIV/AIDS, Parturients, Delivery Room

## 1. Introduction

AIDS is a state of viro-induced immune deficiency [1]. In 2014, 36.9 million

people were living with HIV, 70% of whom were infected (WHO 2015 estimate) living in sub-Saharan Africa [2]. In 2010, 3.4 million infected people were children and more than 90% were infected vertically during pregnancy or breastfeeding. Mother-to-child transmission is one of the main modes of contamination [2]. This can be achieved in utero, per-partum, post partum and maternal breastfeeding [3]. Therefore, the means of preventing vertical transmission of HIV must be addressed in these three stages. For several years, there have been several methods of preventing mother-to-child transmission of HIV. Their evolution is linked not only to a better understanding of the risk factors for vertical HIV transmission, but also to the implementation of numerous clinical trials and protocols focusing on the use of antiretrovirals.

Although Africa has only 10% of the world's population, this is where 90% of HIV-infected "babies" are born, due to a combination of high prevalence of infection, high birth rates, lack of screening and adequate care for mothers. Mother-to-child transmission of HIV/AIDS is in the range of 30% - 50% [4].

In Mali, HIV testing is an integral part of prenatal consultation. All pregnant women received in NPC must be counselled on HIV/AIDS; but screening is done after informed consent [5]. In Mali, the HIV/AIDS pandemic remains an extremely serious public health and development problem, with women and children being the most vulnerable targets. In Mali, few studies have been devoted to HIV testing among parturients admitted to the delivery room, hence the initiation and interest of our study.

## 2. Goals

**Purpose:** The goal was to determine the prevalence of HIV/AIDS in the birthing room at Fousseini DAOU Hospital in Kayes, Mali.

## 3. Materials and Methods

This was a descriptive prospective, cross-sectional analytical study from February 1, 2018 to January 31, 2019, a 12-month period at Fousseyni Daou Hospital in Kayes.

**Inclusion:** Included in our study: parturients, recent births not screened for HIV during NPCs or who have been tested for more than 3 months and who accepted the HIV test after informed consent. **Non-inclusion:** Excluded from this work: participants who were screened for HIV in NPCs less than 3 months, who refused HIV testing after counselling.

For parturients received in the active phase of labour, counselling/screening was done in immediate postpartum. Post-test counselling was performed on all patients who accepted screening with immediate announcement of the result. Initial therapeutic education was done in all patients whose serological test returned positive. Confirmation and typing were requested from the laboratory and made later within a maximum of one week. All newborns of HIV-positive mothers received antiretroviral therapy (bitherapy) based on: Nevirapine syrup - Zidovudine syrup. The newborns were referred to the paediatrics after they were

taken into care in the delivery room.

**Data analysis:** Data collection was done by an individual survey sheet for each parturient screened.

The data entry was on Microsoft Word 10 and analyzed on Microsoft Excel 10, IBM SPSS 20 software. The khi2 test was used to compare proportions. The links are statistically significant if  $P < 0.05$ . The anonymity and confidentiality of those involved in the study were respected.

The Kayes region is located in western Mali. It covers an area of 120,760 km<sup>2</sup> and has a population of 2,338,999. The Fousseyni DAOU Hospital in Kayes is a public hospital of 2nd reference with a capacity of 160 beds. **Difficulties encountered during this study:** the failure of the 17-day screening test in the delivery room, the rupture of ARVs by 3 days for hiv-positive participants.

## 4. Results

### 4.1. Epidemiological Aspects

During our study period, we recorded 4269 deliveries. HIV-positive patients known before labour accounted for 0.21%. Four hundred and six participants received counselling/testing in the delivery room; of which 36 refused the test: 8.87% and 370 accepted or 91.13%. Thirteen patients tested positive or 3.51%. Nine out of thirteen (69%) patients want informed the procreator of their HIV status. The 20 - 35 age group was the most represented at 76.92%. Out-of-school participants were the most represented with a frequency of 76.93%. They had received information on HIV/AIDS at 98.1% and 57.85% had their information in health centres. The marital status of the tracked parturients is shown in **Table 1**.

**Table 1.** Epidemiological aspects of HIV-detected parturient from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

Age	HIV–	HIV+	Profession	HIV–	HIV+
≤19 years old	78 (21.85%)	2 (15.39%)	Housewife	<b>295 (82.63%)</b>	<b>10 (76.93%)</b>
<b>20 - 35 years old</b>	<b>229 (64.15%)</b>	<b>10 (76.92%)</b>	<b>Seller. shopkeeper</b>	29 (8.12%)	1 (7.69%)
35 years old	50 (14.00%)	1 (7.69)	<b>Official</b>	1 (0.28%)	1 (7.69%)
Total	357 (100%)	13 (100)	<b>Student/Student</b>	11 (3.08%)	0
			<b>Sex professional</b>	2 (0.56%)	0
			<b>Housekeeper</b>	19 (5.32%)	1 (7.69%)
			<b>Total</b>	357 (100%)	13 (100%)

Marital status	HIV–	HIV+
Monogamous bride	221 (61.90%)	3 (23.08%)
Polygamous bride	96 (26.89%)	9 (69.23%)
Single	30 (8.40%)	0 (0%)
Divorce	4 (1.12%)	0 (0%)
Widow	6 (1.68%)	1 (7.69%)
Total	357 (100%)	13 (100%)

## 4.2. Clinical and Therapeutic Aspects

Among the women screened and in the HIV group: 23.81% had performed antenatal consultations compared to 76.19% of women screened for HIV—had not performed antenatal consultations. **Table 2** summarizes the situation of conducting prenatal consultations.

Several reasons were notified, this was the crainte of divorce in case of Positivity of the HIV test in 11.11%, to take the advice of the partner for the completion of the test in 50%. Some of them thought they were healthy at 5.56%. This was the cause of the disease in 27.78% and without a well-founded reason in 5.55% (**Table 3**).

We noted the reactions of the participants to the result. Just over half of the participants accepted their status, 61.52%, in 15.38% of crying, éni in 7.69% and diagnosis in 15.38%. Patients' reactions to the HIV test result were reported in **Table 4**.

**Table 2.** Prenatal consultations for HIV-screened parturients from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

The completion of the NPCs	HIV–	HIV+
Yes	85 (23.81%)	4 (30.77%)
<b>No</b>	<b>272 (76.19%)</b>	<b>9 (69.23%)</b>
Total	357 (100%)	13 (100%)

Khi<sup>2</sup> = 0.33, p = 0.56.

**Table 3.** The main reasons for refusing to perform the HIV test for the parturients screened from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

Reason for refusal	Effective	%
Fear of divorce so positivity	4	11.11
<b>Get the partner's opinion on the test</b>	<b>18</b>	<b>50</b>
Think you're healthy	2	5.56
Fear of disease	10	27.78
No motive	2	5.55
Total	36	100

**Table 4.** Reactions of HIV-detected parturients to the positif result from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

Reaction	Effective	%
Accept	8	61.52
Denial	1	7.69
Cry	2	15.38
Refusal of diagnosis	2	15.38
Total	13	100

Depending on the timing of counselling and among those who tested positive, 61.54% of women were screened in the latency phase of labour versus 15.38% in the active phase and 23.08% in the immediate postpartum. For those with a negative result, 68.07% were episted in the latency phase, 23.18% in active phase and 8.40% in the immediate postpartum. The data on the timing of counselling are summarized in **Table 5**.

Positive patients tested for antiretroviral therapy were given ten of ovir “lamuvudine” effavirenz (TDF-3TC-EFV) in the delivery room in 92.31% of cases. We recorded a case of success of 7.69%. Vaginal delivery was the most common at 77%, with caesarean section 23%. Retroviral treatment and delivery are presented in **Table 6** and **Figure 1**.

### 4.3. Fetal Prognosis

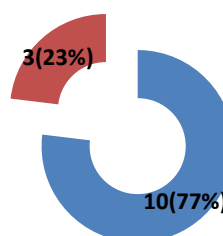
Newborns had a good prognosis in their first weeks of life in 85%; fetal lethality was observed in 15% of newborns including 1 case of fresh stillbirth and 1 case of pediatric deaths for neonatal suffering.

**Table 5.** The time for counselling for women screened for HIV from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

Time for counselling	HIV–	HIV++
Latency	243 (68.07%)	8 (61.54%)
Active	85 (23.81%)	2 (15.38%)
Immediate partum post	30 (8.40%)	2 (23.08%)
Total	357 (100%)	13 (100%)

**Table 6.** Antiretroviral treatment for HIV patients from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

Molecules	Effective	Percentage
TDF-3TC-EFV	11	84.62
No	2	15.38
Total	13	100



■ voie basse ■ Césarienne

**Figure 1.** The mode of delivery of HIV-screened patients from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

In our study, newborns weighing between 2500 - 3999 gr were 69.23% versus 37.77% of lower weight 2500 gr. We found 3 cases of prematurity or 23.08%; hypotrophy is 7.69%. Newborns had an Apgar score between 4 and 7 in 53.85% of cases; and 38.46% a score above 8. We recorded a case of fresh stillbirths or 7.69%. Anti-retroviral treatment has been initiated in newborns. This was a dual therapy done by nevirapine-zidovudine in 92.31% of cases.

Positive-tested mothers opted for artificial breastfeeding at 83.34% versus 8.33% for exclusive breastfeeding and 8.33% for mixed breastfeeding.

The neonatal prognosis is presented in **Table 7**.

## 5. Discussion

### 5.1. Epidemiological Aspects

In the literature, HIV/AIDS testing of parturients has been studied by authors. Various frequency rates have been reported. Dembélé B. [6] in its series in Mali reports a frequency 10% much lower than ours which is 3.51%. The age range 20 - 35 years was 76.92%. The parturients lived in a monogamous diet in 61.90%. Among the positive participants, married women accounted for 92.31%, of whom 75% lived in a polygamous regime. This result is superimposed with that of Dembélé B. [6] which reported 94.6% of married women and 74.3% of polygamous women.

The glare of divorce; fear of HIV/AIDS, stigmatization of people with HIV

**Table 7.** Antiretroviral treatment, breastfeeding and neonatal prognosis of newborns from HIV-positive patients from February 2018 to January 2019 at Fousseyni Daou Hospital in Kayes, Mali.

Molecules	Effective	Percentage	Apgar	HIV-	VIH+
NVP-AZT	12	92.31	0	6 (1.68%)	1 (7.69%)
No	1	7.69	1 - 7	24 (6.72%)	7 (53.85%)
Total	13	100	≥8	327 (91.60%)	5 (38.46%)
			Total	357 (100%)	13 (100%)

Weight	HIV-	HIV+	Term	HIV-	HIV+
≤2500 g	105 (29.41%)	4 (30.77%)	Prematurity	6 (1.68%)	3 (23.08%)
2500 - 3999 g	252 (70.59%)	9 (69.23%)	Hypotrophy	3 (0.84%)	1 (7.69%)
Total	357 (100%)	13 (100%)	Normotrophy	348 (97.48%)	9 (69.23%)

Term	HIV-tested	HIV	Breastfeeding	Effective	%
Prematurity	6 (1.68%)	3 (23.08%)	Artificial	10	83.34
Hypotrophy	3 (0.84%)	1 (7.69%)	Mixed	1	8.33
Normotrophy	348 (97.48%)	9 (69.23%)	Maternal	1	8.33
Total	357 (100%)	13 (100%)	Total	12	100

means that some patients refuse to take the HIV test. Despite the counselling, some refuse to take the test. The authors report different rates of HIV acceptance among participants and various reasons for refusing to test for HIV. In our series, counselling and screening were offered to all participants. Among them, we noted 91% acceptance rate and 9% refusal rate. The reasons given for refusing to take the test were in our series: fear of illness and fear of divorce in the event of a result positif, 27.78% and 11.11% respectively. Megni Gbeto-Obey *et al.* in Benin reported 74.8% acceptance rate [7]. The main reactions observed to the announcement of HIV were: resignation in 70.3%, crying with 21.6% and mutism with 8.1%. This result is consistent with that obtained by Ndayishimiyé J. in Benin [8].

## 5.2. Clinical and Therapeutic Aspects

The period of prenatal consultations is ideal for HIV testing as part of the prevention of mother-to-child transmission. However, some pregnant people do not perform the test during this period. For these, screening in the birthing room or in the immediate postpartum are times to carry out the test. In our series, the participants who did not perform antenatal consultations accounted for 76.19%. Positive participants received antiretroviral treatment in the delivery room in 92.31% of cases compared to 7.69% or 1 cases of refusal of treatment.

Of our pregnant women, 77% gave birth vaginally compared to 23% of caesarean section. These caesarean sections were indicated in obstetrics unrelated to the HIV status of the parturients. Dembélé B [6] found in his study, 89.2% of vaginal births versus 10.8% of caesarean section. The aftermath of immediate deliveries was simple in 100% of cases.

## 5.3. Newborn Diet and Neonatal Prognosis

The neonatal prognosis depends on the birth weight, the HIV status of the mother, the implementation of antiretroviral treatment in the mother and the newborn, the presence or not of malformation of gestational age at birth. In our study, newborns weighing between 2500 - 3999 gr were 69.23% versus 37.77% of lower weight 2500 gr. Diouf A. *et al.* [9] in Dakar found an average birth weight of 2314 g. Sombie I *et al.* [10] reported an average birth weight of 2831 g of newborns of HIV-positive mothers against a birth weight of 2896 g of newborns of HIV-negative mothers. We found 3 cases of prematurity or 23.08%; hypotrophy is 7.69%. Sombie *et al.* [10] found 8.1% of preterm infants from HIV-infected mothers compared to 3.6% of preterm infants of HIV-negative mothers. In Europe and the United States, the rate of preterm birth among infected women is about 10% [11]. Newborns had an Apgar score between 4 and 7 in 53.85% of cases; and 38.46% a score above 8. We recorded a case of fresh stillbirths or 7.69%. Dembélé B. [6] found that 94.6% of newborns had an Apgar score between 8 - 10; and 2.7% a score between 4 and 7. Anti-retroviral treatment has been initiated in newborns. This was a dual therapy done by nevirapine-zidovu-

dine in 92.31% of cases. Positive-tested mothers opted for artificial breastfeeding at 83.34% versus 8.33% for exclusive breastfeeding and 8.33% for mixed breastfeeding. Dembélé B [6] reports in its series an artificial breastfeeding rate of 30.6%.

Newborns had a good prognosis in their first weeks of life in 85%; perinatal lethality was observed in 15% of newborns including 1 case of fresh stillbirth 1 case of pediatric death for neonatal suffering. Dembélé B. [6] observed 91.9% of the newborns were alive at their first week of life, total perinatal lethality amounted to 8.1% or 3 cases: 1 macerated stillbirth and 2 newborn deaths in their first week of life.

## 6. Conclusion

Counselling and voluntary HIV/AIDS testing during labour and immediate post-partum can detect many pregnant women who escape screening during antenatal consultations.

## Authors' Contributions

All the authors participated in the writing of the manuscript. They all approve the final version of the manuscript.

## Ethics Authorisation

The ethics committee's authorization was found prior to the start of the study.

## Conflicts of Interest

The authors state that they have no conflict of interest in this work.

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