

# Screening in the Birth Room of Parturients with Unknown Human Immunodeficiency Virus (HIV) Serological Status at the Reference Health Center of Commune IV of the District of Bamako

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**How to cite this paper:** Saye, A., Mariko, S., Doumbia, N., Diarra, D., Diarra, S., Tangara, M., Dembélé, B., Mounkoro, N. and Dao, S. (2022) Screening in the Birth Room of Parturients with Unknown Human Immunodeficiency Virus (HIV) Serological Status at the Reference Health Center of Commune IV of the District of Bamako. *Open Journal of Obstetrics and Gynecology*, 12, 181-192. <https://doi.org/10.4236/ojog.2022.123018>

**Received:** January 16, 2022

**Accepted:** March 11, 2022

**Published:** March 14, 2022

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## Abstract

**Introduction:** In order to prevent the vertical transmission of the Human Immunodeficiency Virus (HIV), it is essential that pregnant women must know their HIV serological status. **Objective:** To determine the proportion of parturients with unknown Human Immunodeficiency Virus (HIV) status in the delivery room and to identify the associated factors. **Methods:** We conducted a prospective descriptive study carried out at the Reference Health Center of Commune IV in the district of Bamako from July 1, 2017 to July 1, 2018. The sample size was 267 parturients. The word processing was carried out on World software from the 2016 office suite at the end of the data entry and analysis was carried out on the IBM software, SPSS version 22.0. **Results:** A total of 267 women were eligible for our study, among which 14 parturients were seropositive, *i.e.*, a proportion of 5.2% of cases. The knowledge of parturients on HIV was 95.5% of cases, but more than half did not know the mode of mother-child transmission. Unschooling parturients were the most represented with 41.2%. **Conclusion:** In view of the large proportion (5.2%) of HIV-positive parturients in our study, voluntary screening activities in the delivery room remain necessary for the future of children born to HIV-positive mothers.

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## Keywords

HIV Screening, Parturients, Delivery Room

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### 1. Introduction

Mother-to-child transmission of HIV is the transmission of HIV from a mother to her child during pregnancy, childbirth or breastfeeding. It is also the most common way that children get infected with HIV [1] [2]. Mother-to-child transmission of HIV has declined dramatically in western countries thanks to the Prevention of Mother-to-Child Transmission (PMTCT). The risk is 15% to 20% in the absence of prevention. In African studies, the risk of mother-to-child transmission ranges from 25% to 45% in developing countries and 90% of these contaminations occurred during pregnancy, labor or through breast milk [3] [4]. Currently, cases of HIV transmission from infected mothers to their children are mainly linked to the mother's lack of screening, and/or a lack of care. It is recommended to continue the policy of systematic offer of HIV test during the prenatal check-up; to continue or start multiple therapies in pregnant women infected with HIV. Childbirth should be performed by a medically trained provider informed of the woman's HIV status. After childbirth, counseling is offered to the mother about the risk of re-infection and about how to feed the child [4].

In Africa, since the introduction of antiretroviral prophylaxis regimens, the situation has changed profoundly. It is estimated that in 2010, 81% of HIV-positive pregnant women received an ARV regimen for PMTCT, compared to only 45% in 2008, 35% in 2007 and 10% in 2004 [5]. All over the world, there are cases of failure to prevent mother-to-child transmission; these failures are primarily linked to cases of refusal of care [6]. To these are added several cases that occur when the mother has not had an HIV test. Since 2001, the pediatrics and obstetrics-gynecology departments of the CHU Gabriel Touré in Mali have been monitoring pregnant women infected with HIV and monitoring their children. Nine years after the start of this activity, the results are encouraging with a transmission rate superimposable on those of developed countries of 1.1% [7]. Despite this success in preventing mother-to-child transmission of HIV, some children were infected with this virus. It is with the aim of studying these characteristics that this work was initiated. In 2013, 54% of pregnant women in low- and medium-income countries did not have access to virological screening. This screening is the main key to access from prevention to treatment and care. Without treatment, a third of HIV-positive children die on their first birthday and a half die on their second. For children, the health benefits of HIV treatment are remarkable [8] [9]. By starting antiretroviral therapy before the twelfth week of life, children living with HIV have a 75% decrease in the HIV-related mortality rate [10] [11]. To end pediatric AIDS, governments and society as a whole must invest to strengthen maternal and child care. They must ensure that pregnant women eli-

gible for antiretroviral treatment receive treatment, start prophylaxis or treatment as early as possible from the 14th week of pregnancy with the most effective regimens containing 2 or 3 drugs, prophylaxis in the patient in infant up to the 6th week and maternal or baby throughout the breastfeeding period [12]. Note that not all pregnant women follow the ANC sessions correctly [13] [14] [15] [16] [17]. Therefore, there is a high number of parturients with an unknown HIV serological status. As a result, deliveries with an increased risk of mother-to-child transmission of HIV still take place in the maternity ward of the reference health center of Commune IV of the district of Bamako, although this could be avoided. No study had yet been carried out in the maternity ward of the reference health center of Commune IV of the Bamako district on the screening of parturients in the delivery room with unknown HIV serological status. Thus, the objective of this study was to determine the proportion of parturients in the delivery room with unknown HIV serological status and to identify the factors associated with it.

## 2. Methods

Our prospective descriptive study was conducted at the maternity ward of the reference health center (CSRef) of Commune IV in the district of Bamako from July 1, 2017 to July 1, 2018. It was organized around nine (09) community health centers and the René Cissé maternity hospital (MRC) and the El Razi medical center which are all integrated into the Prevention of Mother-to-Child HIV Transmission (PMTCT). Our study involved all pregnant women whose pregnancy had at least 28 weeks of unscreened amenorrhea for HIV received in the delivery room with cervical dilation less than or equal to 4cm. All pregnant women not tested for HIV received in the delivery room and having accepted HIV counseling/testing at the Reference Health Center of Commune IV in the district of Bamako were eligible. On the other hand, the patients not included were all those who had already benefited from HIV/AIDS screening before entering the delivery room, the patients who had not accepted the screening after counseling in the delivery room and finally those who accepted screening in the postnatal period.

We conducted an exhaustive recording of all cases meeting the inclusion criteria to constitute our sample size of 267 parturients. The data were collected by health workers, doctors or wise men using a structured questionnaire. This included variables relating to socio-demographic characteristics (maternal age, level of education, marital status and occupation), variables linked to pregnancy (parity, term of pregnancy; prenatal consultations (ANC)); state of the water bag; concept of HIV testing counseling offered during ANC; concept of HIV screening counseling in labor room) at the end of the variables linked to the level of birth (antiretroviral drugs (ARVs) administered, newborn status at birth; concept of resuscitation of the newborn; antiretroviral treatment administered newborn; newborn feeding method). Word processing was performed on World software

from the Office 2016 suite. And the data collected was entered and analyzed using IBM SPSS version 22.0 software. The significance level was set at 0.05 and the confidence intervals at 95%. Ethical considerations: Before the start of each interview, the investigation sheet was presented to the woman. After acceptance of the latter, the investigator made him sign the informed consent form. The anonymity of those participating in the study was respected. An identification number was assigned to each investigation. All data collected was stored in a secure location. All databases were secured with password-protected access systems. Limitations of the study: the consents were obtained in the pain of the labor ward.

### 3. Results

Out of a total of 20,304 deliveries during our study period, we recorded 302 un-screened parturients received in the delivery room, *i.e.*, a proportion of 1.5% of cases, including 282 women who agreed to participate in our study (to be screened at the delivery room). HIV/AIDS), *i.e.*, a prevalence of 1.4%, including 267 women and 268 newborns, including 3 stillborns. The fifteen women screened in the room could not be included in our study because of certain obstacles, namely: refusal to join our study, communication problem.

Almost 2/5 of the cases, *i.e.*, (110/267) parturients, were represented by women aged between 30 - 39 years and by those with no schooling. More than 8/10 of the cases or 229/267 of the parturients were unmarried.

On the other hand, a significant proportion of parturients (5%) did not know their HIV serological status beforehand.

Totally agree with your comment, there was a clear misinterpretation. The prevalence of seropositivity was 5.2% (n = 14). We wanted to say that approximately 95% of pregnant women were not sick (SRV negative) (n = 253) but never mind to reduce this significant prevalence there were awareness-raising efforts to be made so that all pregnant women can know their HIV serology status during pregnancy.

More than half a half of the cases, or 8/14 of the parturients had refused to communicate to their spouse the status of HIV seropositivity for reasons: fear of divorce 50% of cases, shame of the status 37.5% of cases and accusation of infidelity 12.5% of cases.

### 4. Discussion

With regard to the limits of our study, the collection of information was fraught with enormous difficulties, namely: the refusal to submit to screening despite counseling; the refusal to submit to our study after screening, the communication problem, some did not understand Bambara (the most commonly spoken language in the country) or French; the information was difficult to obtain at the time of labor, the painful uterine contractions meant that they did not all answer the questions. Women aged between 30 and 39 were in the majority in our study

with 41.2% of cases (**Table 1**). On the other hand, Tahirou Koké Traoré had found a more predominant age group of young women from 26 to 30 years old with a frequency of 43.75% [13] years. This could be explained by the fact that at age 30 and over, women had less regular prenatal consultations, which would be seen before and would not change the prognosis of childbirth. Housewives were the most represented in our study with a proportion of 67.8% 95% CI [0.650 - 0.706] (**Table 1**), which was slightly below what Tahirou Koké Traoré had reported 78.125% [13]. The size of the sample could partly explain this discrepancy.

Women with no schooling represented 41.2% 95% CI [0.82 - 0.442] of the cases in our sample (**Table 1**). This proportion was comparable to that found by Badian Dembélé which was 58.8% of unschooled patients [14]. In our study, the prenatal consultation rate for women was 86.5% 95% CI [0.845 - 0.886] (**Table 2**), this rate was comparable to that obtained by Badian Dembélé [14] which was 95.1%. In our study, HIV seroprevalence was 5.2% (**Table 3**) of parturients in the delivery room (n = 14), which was much lower than that previously obtained by Dembélé B., which was 10% [14]. The evolution of the state of knowledge of women on HIV/AIDS could be one of the explanations. The acceptability rate was 93% against 7% refusal to participate in our study. This rate was close to those reported in the literature: 97% by Dembélé B. [14], 92% by Agei *et al.* [15]; 93% by Tchendjou *et al.* [16]. The main reasons given to justify the refusal were: the wish to obtain the opinion of the partner (4/11), the fear of divorce in the event of HIV seropositivity (3/11), and the fear of the disease (2 /11). These authors had reported other reasons such as: the feeling of not being a subject (21.6%); the pre-pregnancy test (16.7%) and the fear of knowing the result (15.7%). In our study, 57.1% of HIV-positive women refused to inform their spouse (**Table 4**, **Table 5**) and the reasons cited were similar to those of the authors cited above. The factors associated with unawareness of HIV serological status in our study were represented by: lack of pregnancy monitoring, illiteracy, women mostly housewives without financial means, and in ignorance (**Table 6**). These factors were very similar to those mentioned in a study conducted among a population of Kinshasa (DRC) [18]. We recorded 14 newborns from HIV-positive mothers, including one case of macerated stillbirth, and the overall lethality was three (03) stillbirths, *i.e.*, 1.1% (**Table 7**). In our study, 100% of pregnant women tested HIV-positive in the delivery room had received treatment based on AZT + 3TC + EFV and 69.2% of newborns of HIV-positive mothers had received dual therapy based on NVP + AZT due to 0.2 ml/kg - 0.4 ml/kg versus 30.8% of NVP-based monotherapy at a dose of 0.2 ml/kg when AZT. This could be explained by a break in Zidovudine (AZT) during our study period (**Table 7**).

It should be noted that in our study, the PCR assessment of newborns of HIV-positive mothers was not honored by the parents (**Table 7**). It should still be specified that all the patients in our study had presented themselves to the consultation with a pediatrician and benefited from advice for exclusive artificial

breastfeeding. Despite the advice provided to eliminate postpartum transmission, 12 women or 92.3% had adopted exclusive breastfeeding. Only one newborn had benefited from exclusive artificial breastfeeding (**Table 7**).

**Table 1.** Distribution of parturients according to socio-demographic characteristics.

Age group (years)	Workforce	Percentage (%)
Less than 20	59	22.1
20 - 29	91	34.1
30 - 39	<b>110</b>	<b>41.2</b>
Over 39	7	2.6
Marital status		
Single	38	14.2
Married	<b>229</b>	<b>85.8</b>
Educational level		
No schooling	110	41.2
Primary	69	25.8
Secondary	61	22.8
Superior	27	10.2
Total	<b>267</b>	<b>100%</b>

**Table 2.** Distribution of pregnant women according to the prenatal consultation (CPN).

prenatal consultation	Workforce	Percentage (%)
Yes	231	86.5
No	36	13.5

**Table 3.** Distribution of parturients according to test result.

Serology	Number	Percentage (%)
Positive	14	5.2
Negative	253	94.8
Total	<b>267</b>	<b>100</b>

**Table 4.** Distribution of HIV-positive parturients according to the partner's information on their status.

Informed partner	Workforce	Percentage%
Yes	6	42.9
No	8	57.1
Total	14	100

**Table 5.** Distribution of parturients according to refusal to inform their partner.

Refused to inform his partner	Workforce	Percentage (%)
	4	50
Fear of divorce	3	37.5
Ashamed of the status	1	12.5
Accusation of infidelity	14	100

**Table 6.** Distribution of parturients according to associated factors.

Associated factors	n = (267)	%
Lack of knowledge about HIV/AIDS	12	4.5
Lack of pregnancy monitoring	36	13.5
Illiterate	110	41.2
Households without financial means	183	<b>68.5</b>
Ignorance (lack of schooling)	<b>110</b>	<b>41.2</b>
Partner information	n = 14	%
Partner not informed of their HIV status	8	57.1
Reasons for refusing to inform your partner	n = 8	%
Fear of divorce	4	50
Status shame	3	37.5
Accusation of infidelity	1	12.5

**Table 7.** Information on prevention of HIV transmission in newborns.

Parameters	Workforce	Percentage
ARV treatment of seropositive parturients	n = 14	<b>5.2</b>
AZT + 3TC + EFV	14	100
Positive ARV treatment for newborns born to HIV-mothers	Workforce	Percentage
NVP syrup + AZT syrup	9	69.2
NVP syrup	4	30.8
Total	<b>13</b>	<b>100</b>
PCR result of newborn of HIV positive mother	Workforce	Percentage
Unrealized	13	100

## 5. Conclusion

The proportion of women who gave birth without knowing their Human Immunodeficiency Virus (HIV) serological status was still high, despite the fact that HIV screening is offered during prenatal consultations. It would be necessary to continue voluntary counseling and testing activities in delivery room to signifi-

cantly reduce the risk of infection of Human Immunodeficiency Virus from mother to child.

### Contribution of the Authors

The study was designed by Sounkalo Dao and Amaguiré Saye. A preliminary questionnaire was established through a survey sheet held by a medical intern. Then the questionnaire was corrected and validated by Sounkalo Dao, the thesis director. Thus we had carried out an exhaustive recording of all the cases meeting the inclusion criteria through this validated questionnaire. Screening in the labor room was carried out by our health workers (midwife, nurse, obstetrician) who were all trained beforehand in the screening and management of HIV/AIDS in pregnant women. Data entry and analysis were carried out by Seydou Mariko and Mariam Tangara. Dessé Diarra, Nanko Doumbia, Sirima Diarra Brahim Dembélé, Niani Mounkoro had read and amended the manuscript until its final submission. All authors had read and approved the final manuscript.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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## Appendices

### Survey Sheet

HIV screening in the delivery room at the maternity ward of the referral health center of commune IV in the district of Bamako

#### Information about the Woman

Q01 Age /...../ 1: ≤19 years old, 2: 20 - 34 years old, 3: ≥35 years old

Q02 Level of education /...../ 1: No schooling, 2: Primary, 3: Secondary, 4: Higher

Q03 Profession /...../ 1: Housewife, 2: Sex professional 3: Saleswoman/shop-keeper, 4: Pupil/student, 5: Other

Q04 Malian nationality /...../ 1: Yes, 2: No If not, which one .....

Q05 Stay abroad /...../ 1: Yes, 2: No If yes, specify the country: .....

Q06 Marital status /...../ 1: Single, 2: Multiple partner 3: Monogamous married, 4: Polygamous married, 5: Divorced, 6: Widowed 7: Other: .....

Q07 Common lifetime /...../ 1: 1 - 2 years, 2: More than 2 years

#### Medical Background

Q08 Tuberculosis /...../ 1: Yes, 2: No

Q09 Transfusion ATCD /...../ 1: Yes, 2: No

Q10 Other to be specified: .....

#### Surgical History

Q11 Cesarean /...../ 1: Yes, 2: No

Q12 Cure of prolapsed /...../ 1: Yes, 2: No

Q13 Cystectomy /...../ 1: Yes, 2: No

Q14 Myomectomy /...../ 1: Yes, 2: No

Q15 Other to be specified: .....

#### Gynecological History

Q16 Vaginal discharge /...../ 1: Yes, 2: No

Q17 Ulceration/Genital wound /...../ 1: Yes, 2: No

Q18 Vulvar pruritus /...../ 1: Yes, 2: No

Q19 Burning/Painful urination /...../ 1: Yes, 2: No

Q20 Pelvic pain /...../ 1: Yes, 2: No

Q21 Other to be specified: ...

#### Obstetric History

Q22 Gesture /...../ 1: [1] 2: [2 - 3] 3: [4 - 5] 4: [≥6]

Q23 Parity /...../ 1: [0] 2: [1 - 3] 3: [4 - 5] 4: [≥ 6]

Q24 Living child /...../ 1: [0] 2: [1 - 4] 3: [5 - 8] 4: [ >8]

Q25 Child deceased /...../ 1: [0] 2: [1 - 4] 3: [ >4]

Q26 Abortion /...../ 1: [0] 2: [1 - 4] 3: [ >4]

Q27 ATCD of stillbirth /...../ 1: Yes, 2: No

#### Spouse Information

**Q28 Profession** /...../ 1: Comptable 2: Cultivateur, 3: Commerçant, 4: Ouvrier, 5: Artiste, 6: Chauffeur, 7: Agent de sante, 8: Autre

**Q29 Séjour à l'étranger** /...../ 1: Oui, 2: Non Si oui préciser le pays: .....

**Q30 Nationalité Malienne /...../ 1: Oui, 2: Non Si non préciser le pays: .....**

#### History of Pregnancy

Q31 CPN /...../ 1: Yes, 2: No if not why: .....

Q32 Number of CPNs /...../ 1: [0] 2: [1 - 3] 3: [4 - 8]

Q33 Place of CPN /...../ 1: CSREF CIV, 2: CSCOM 3: CHU 4: Other

Q34 Qualification of the author of the CPNs 1: Doctor, 2: Gyneco-obstetrician,  
3: Midwife, 4: Nurse, 5: Caregiver, 6: Other

Q35 VAT /...../ 1: Yes, 2: No

Q36 ITN use/...../ 1: Yes, 2: No

Q37 Iron supplementation/...../ 1: Yes, 2: No

Q38 IPT for malaria /...../ 1: Yes, 2: No

Q39 Deworming /...../ 1: Yes, 2: No

#### Screening and ARV Treatment

Q40 Test result /...../ 1: Positive, 2: Negative

Q41 ARV treatment /...../

- TDF + 3TC + EFZ (hiv1)
- AZT + 3TC + NVP (hiv1)
- TDF + 3TC + LPV/r (hiv2)
- AZT + 3TC + LTV/r (hiv2)

Q42 Heard of HIV/AIDS /...../ 1: Yes, 2: No

Q43 Source of information on HIV /..... /

- Television
- Radiophony
- Chat
- Health worker

Q44 Wants to inform his partner of his HIV status /.... /

- Yes
- No

Q45 Reason for refusal to inform partner /...../

- Accusation of infidelity
- Fear of divorce
- Ashamed to inform
- Other:

Q46 Reaction of the woman tested positive after the announcement of the re-  
sult /...../

- Resignation
- Crying
- Mutism
- Other specify: .....

#### Birth History

Q47 Mode of admission /...../ 1: Coming on her own 2: Evacuated

Q48 Reason for evacuation /...../

- Without motive
- Premature rupture of membranes

- Stationary expansion
- Lack of commitment 5-Other:

Q49 Gestational age /...../ 1: <28 WA 2: 28 - 33 WA, 3: 34 - 36 WA, 4: ≥37

WA

Q50 Rupture of membranes /...../ 1: Premature, 2: During labor

Q51 Time taken between the break and the expulsion /...../

- <6 hours,
- 6 - 12 hours,
- >12 hours

Q52 Type of delivery /...../

- Instrumental extraction
- Low voice without instrument
- Cesarean section

Q53 Issuance /...../ 1: Active, 2: Natural, 3: Artificial

Q54 Sequences of layers /...../ 1: Complicated, 2: Uncomplicated

New Born

Q55 Prognosis /...../ 1: Alive, 2: Stillborn

Q56 Resuscitate /...../1: Yes, 2: No

Q57 Gender /...../ 1: Male, 2: Female

Q58 Apgar at the 1st minute /...../ 1: [0], 2: [1 - 7], 3: [≥8]

Q59 Weight /...../

- <2500 g,
- 2500 - 3999 g,
- ≥4000 g

Q60 Size /...../ 1: ≥47 cm, 2: <47 cm

Q61 Premature /...../ 1: Yes, 2: No

Q62 Hypotrophic/...../ 1: Yes, 2: No

Q63 Macrosome /...../ 1: Yes, 2: No

Q64 Mode of breastfeeding /...../ 1: Maternal, 2: Artificial, 3: Mixed

Q65 ARV treatment of newborns of HIV-positive mothers

- NVP syrup + AZT syrup
- NVP syrup or AZT syrup
- 3-NVP syrup + 3TC (hiv2)