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## Emergency obstetric patients in developing countries and prevalence of HIV infection

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### Summary

The availability of VCT for HIV for booked antenatal patients offers a unique opportunity for best obstetrics practice but not for patients presenting with emergencies and unknown HIV status. Health workers who attend to such patients are at higher risk of acquiring HIV infections. Between 1<sup>st</sup> March 2005 and 30<sup>th</sup> September 2007, unbooked emergency obstetric patients in the labour ward of a teaching hospital who consented were tested using double rapid immunodiagnostic technique and confirmed by Western Blot. HIV positive patients were post-test counselled and offered single dose nevirapine tablet (200mg) in labour with syrup given to the baby at birth at 2mg/kg followed by syrup zidovudine for 6 weeks. The results showed that 275 (89.0%) of the 309 women pre-test counselled agreed to testing. The mean age of clients was 27.7 years ( $\pm$  4.4 SD). The mean gestational age at presentation was 36.4 weeks ( $\pm$  4.2 weeks). Primigravidae constituted 37.5% of the patients. Twenty-one (7.6%) of these consenting patients were HIV positive. In conclusion, the HIV prevalence of 7.6% among these unbooked obstetric patients is higher than the 4.7% among our booked antenatal patients and National prevalence of 4.4%. This poses substantial risk of transmission of HIV to attending health workers considering the readiness with which needle prick accident can occur in emergency situations.

**Keywords:** *Emergency, obstetrics, patients, HIV*

### Résumé

La disponibilité du VCT aux patients VIH en soins prénatales apporte une unique opportunité pour les meilleurs soins obstétriques, mais pas pour les patients en urgence et de statut VIH inconnu. Le personnel de santé qui s'occupe de tels patients est au grand risque d'infections du VIH. Entre 1<sup>er</sup> Mars

2005 et 30<sup>th</sup> Septembre 2007, Les patients obstétriques non enregistrés en urgence à l'unité d'accouchement après un consentement étaient testés utilisant la double technique immunodiagnostic rapide et confirmé par le Western Blot. Les patients séropositifs étaient conseillés après test et obtenait une dose unique de nevirapine comprimés (200mg) en accouchement avec le syrup 2mg/kg pour l'enfant juste à sa naissance, suivit de la zidovudine syrup pour 6 semaines. Les résultats montraient que 275 (89.0%) sur 309 femmes conseillés avant le test acceptaient d'être testées. La moyenne d'âge des patients étaient de 27.7  $\pm$  4.4 SD. La moyenne d'âge de gestation était de 36.4  $\pm$  4.2 semaines. Les primigravides constituaient 37.5% des patients. Vingt et un (7.6%) étaient séropositif. En conclusion, Le taux du VIH de 7.6% parmi les patients obstétriques non enregistrées est plus élevé que 4.7% parmi celles enregistrées aux soins prénatales et un taux national de 4.4%. Ceci pose un risque substantiel de transmission du VIH au personnel de santé considérant les usages des aiguilles pendant les situations d'urgence.

### Introduction

The HIV pandemic has continued to increase worldwide. By the end of 2007 there were 33.5 million people living with HIV/AIDS all over the world with 4.3 million new infections in the year. There were 2.9 million AIDS death during the year [1]. This pandemic has not spared any part of the world but the effects are more felt in sub-Sahara Africa where less than 10% of the world population reside but carry about 70% of the HIV/AIDS burden [2]. These countries ironically have fragile health care systems and low resources to combat the pandemic.

Health care workers (HCWs) may be exposed to the risk of infection with blood borne viruses. Approximately 3 million percutaneous exposures to bloodborne pathogens occur annually among 35 million HCWs worldwide resulting in about 16,000 hepatitis C, 66,000 hepatitis B and about 5000 HIV infections [3]. These make the infections the most important of the twenty diseases that have been transmitted to Health care workers by needle stick

injuries in health care setting [4,5]. HIV transmission among health care workers occurs when there is an injury from needles or sharp instruments contaminated with HIV-infected blood or there is exposure of infected blood or other body fluid through an open cut or a mucous membrane [6,7]. A survey of 2439 HCWs in United states showed that over 50% of them had experienced one or more percutaneous injuries in their career [8,9]

In Africa the risk to Health care workers is greater due to suboptimal infection control practices and likely exposure to more infected patients with HIV and other blood borne viruses [3]. However, only 4 percent of worldwide cases of occupational HIV infections were reported from this region [10]. This contrast with the situation in developed countries with only about 4% of HIV infected populace but over 90% of documented occupational HIV infection reported. The reasons for this contrast have been attributed to lack of surveillance and reporting of occupational exposure to infected blood in places where postexposure prophylaxis, treatment and workers compensation are lacking [10].

A number of interventions like promotion of standard/universal precautions, provision of protective equipment, routine hepatitis B vaccination, post-exposure prophylaxis, injury surveillance and enactment of appropriate legislation, have been implemented to maximise HCW safety in high-income countries [10]. These benefits are rarely available or yet to be broadly institutionalised in Nigeria's health facilities [10,11]. These coupled with the known side effects of antiretroviral drugs makes prevention of occupationally acquired HIV infection by establishment and practice of universal precaution important. This is especially important in delivery rooms where a large number of patients with unknown HIV status are treated. In these circumstances, it is imperative to practice universal precaution. Even at this, the magnitude of occupational hazards like transmission of HIV can remain high.

Many studies have looked at the feasibility of VCT for HIV among obstetric patients with unknown status in labour room setting [13,14,15,16]. There are few studies on the risks posed by these patients to their health care givers. However, it is believed that these risks will be exacerbated by a range of factors like hospital overcrowding, lower ratio of HCWs to patients, limited awareness of the risks associated with exposure to blood, failure to implement universal precaution, inadequate supplies of basic safety equipments including sharps containers, etc [10,17,18,19].

This study was, therefore, carried out in order to estimate the prevalence of HIV among patients presenting for emergency obstetric care in the labour room of University College Hospital, Ibadan. This we, believed, will provide good evidence for the need to put in place and practice universal precaution while attempting to manage these patients with the best obstetric practice and linkage with antiretroviral therapy and other reproductive health services.

## Materials and methods

### *Study site*

This study was carried out in the labour room of the University College Hospital (UCH), Ibadan. This is the first tertiary and teaching hospital in Nigeria established in 1957. It is situated in Ibadan, capital of Oyo State, Ibadan, with population of 2,550,593 [20], is one of the biggest cities in Nigeria and Africa. It serves as the referral centre for all the private and public health facilities, including other tertiary centres, in Nigeria. The hospital with over 850 beds commenced Prevention of mother to child transmission of HIV programme in August 2002 as one of the first eleven primary centres in the countries. Testing for HIV in labour commenced in February 2005 with the option of opt-out.

### *Study population*

The unbooked patients with unknown HIV status presenting for treatment at the labour room of the hospital were offered pre-test counselling for HIV screening over 31 months period between 1<sup>st</sup> of March 2005 and 30<sup>th</sup> of September 2007 as part of routine Prevention of Mother to Child Transmission of HIV Programme of the Hospital. Data concerning age, occupation, parity, clinical diagnosis and gestational age at presentation to the nearest completed weeks were collected.

### *Testing procedure*

The testing method involved the initial screening of each participating unbooked patient for HIV using rapid immunodiagnostic test kits (Determine®, Abbot; and start-pak®, Chembio), after counselling and obtaining her written consent, in parallel. This was followed by collection of five millimetres of venous blood aseptically from reactive patients and sent for confirmation by Western Blot techniques in the hospital's HIV reference laboratory. The prevalence of HIV infection among these unbooked patients was calculated as the measure of documenting the potential risk of occupational acquisition

of HIV by HCWs who are constantly exposed to these patients with unknown HIV status [21]

The patients confirmed to be HIV positive were offered PMTCT services using the established PMTCT protocol of single dose tablet Nevirapine (200mg) to the mother in labour and syrup Nevirapine, at 2mg/kg birth weight, within 72 hours of delivery and zidovudine syrup for 6 weeks along with other best obstetrics practices. There was also the intention to treat the mother with ART if confirmed and eligible using the Nigeria national guideline and linkage with other reproductive health services like family planning, cervical cancer screening, STI clinic and child and infant immunisation clinic.

#### Data analysis

Appropriate data were extracted from the programme records and entered into Epi-info statistical programme. Descriptive statistics was used to summarize the variables in the data set. The results were expressed in tables and pie charts with appropriate labelling.

#### Results

During the study period 309 of the unbooked patients presenting for obstetric emergencies were approached and counselled for HIV screening. Two hundred and seventy-five (89.0%) consented to participate and they form the study population. The patients' age and parity ranged between 20 and 39 years zero and 6 respectively with an average of 27.7 years  $\pm$  4.4 SD and 3.5 respectively (Table 1).

Table 1: Social and obstetric profiles of the patients

Patient's profile	No.	%
Mean age of respondents (Yrs)	27 $\pm$ 4.4	
Marital status		
a. Single	16	5.8%
b. Married	259	94.2%
Parity of respondents		
0	103	37.4%
1	58	21.1%
2	56	20.4%
3	26	9.5%
4	18	6.5%
5	9	3.3%
6	5	1.8%
Mean gestational age at presentation (weeks)	36.4 $\pm$ 4.2	
Number of patients pre-test counselled	309	
Number of patient counselled, consented and tested for HIV	275	89.0%

Majority (52.0%) of the patients were petty traders. Most of the women (66.7%) were referred from government secondary health facilities. The mean gestational age at presentation was 36.4 weeks ( $\pm$  4.2 weeks SD).

Twenty-one of the tested patients were positive for HIV giving a prevalence of 7.6% (Fig.1).

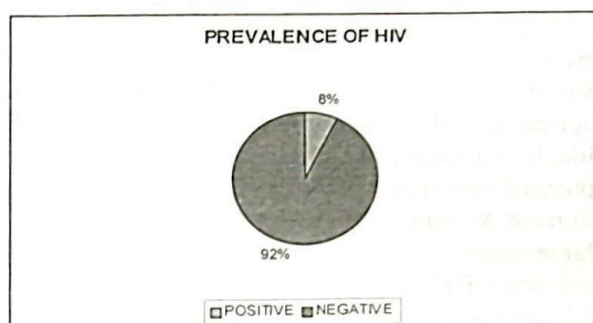


Fig. 1: Prevalence of HIV

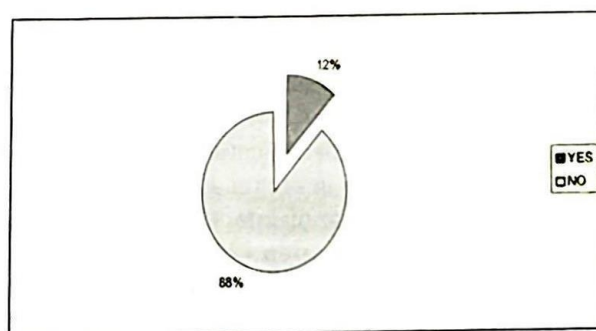


Fig. 2: Proportion of Respondents with prior HIV screening

Figure 2 shows that only 33 (12.0%) of the tested patients were aware of their status prior to presentation in UCH.

#### Discussion

Human immunodeficiency virus infections continue to be of public health importance with daily increase in new infections. Studies have consistently shown that health care workers continue to face a significant risk of being infected with HIV and possibly other

blood borne infections daily [9]. The prevalence of 7.6% in this study is high and portends a substantial risk of acquiring infections by contacts with blood and other body fluids of patients. This prevalence is higher than the National prevalence of 4.4% and of 4.7% among our booked patients [22,23]. This high prevalence of HIV among this group of obstetric patients might be a reflection of the increasing HIV infection in the country especially among the poor and vulnerable group to which these patients belong. One other concern is that antenatal care and, as such, opportunity for early determination of HIV status among this group is poor. There is no doubt that the earlier a woman is aware of her HIV status in pregnancy, the greater the number of options that are available to her and the better the chance of optimizing HIV care for her and her infant(s)[24]. Ideally all pregnant women should receive early prenatal care with voluntary HIV testing. However, in most African settings, this is not the case with a large number of mothers presenting in labour with unknown HIV status as shown in this study. Only 12.0% of the patients have had HIV screening done prior to presentation in UCH and are, thus, aware of their status. This makes early intervention like the institution of highly active antiretroviral therapy in the eligible patients impossible. This represents a missed opportunity due to the failure to reduce the viral load of these women before delivery, thus reducing the risk of vertical and horizontal transmission of HIV. For missed opportunity during antenatal period, rapid HIV testing at labour and delivery are additional strategies to further reduce the rate of perinatal HIV transmission [24]. Identification of HIV infected pregnant women late in pregnancy or during labour still allows for the use of interventions that reduce perinatal HIV transmission [25]. The intrapartum single dose nevirapine to the mother and postpartum single dose syrup to the child within 72 hours of delivery, as provided for the patients identified during the study period and which has become a standard of care in our delivery room, have been found to reduce the risk of transmission of HIV to the baby by 50% at a very low cost [26].

The risk of nosocomial infection among these patients can be significant. There is, therefore, the need for caution while treating these patients to avoid risk of exposure to blood and blood products more so that such patients, though infective, might not be symptomatic especially at the early stage and depending on the immunity of the patient as reflected by, usually, high serum CD4+ cells.

There is the added possibility of admitting women in the window period, when they are yet to be reactive to the labour room setting. It therefore, means that the provision of adequate materials for universal precaution and strict adherence to its practice should be the norm [6]. This principle of universal precaution has been widely accepted as one of the measures to prevent and reduce the risk of HCWs acquiring HIV and other blood borne infections. Every health facility is encouraged to adopt this approach, which has been shown to be feasible, acceptable and cost-effective. However, a number of factors have been responsible for its poor widespread utilisation especially in developing countries [27]. These should be addressed by the various stakeholders involved.

It is also advocated, that strict adherence to standard precautions in handling patients' blood and other body fluids should be the rule. Education of HCWs about the epidemiology and control of blood-borne pathogens should be incorporated into job description and orientation. Adequate provision of materials for Universal precaution and management of patients will be a rewarding investment and serve as a means of minimizing the risk of nosocomial viral infection. All health facilities involved in care of pregnant women should make counselling and testing for HIV a matter of priority.

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