



# Current Profile of New HIV Infections Among Adults in Northern Benin in 2016

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**Abstract:** Objective: The study aimed to describe the current epidemiological, clinical and immunological profile of newly detected HIV - positive patients in Northern Benin by 2016. Methods: It was a prospective study conducted from May 2 to October 31, 2016 on three main sites of care of people living with HIV (PLHIV) in the department of Borgou in Benin. All new cases of HIV infection have been systematically and comprehensively recruited. Initial epidemiological, clinical and immunological data were collected using a questionnaire. These data were entered and analyzed using the Epi Info 7 software. Results: In total, 185 adults (68 male and 117 female) newly screened HIV positive were included in this study. The middle age was  $36.2 \pm 10.9$  years and the sex ratio was 0.6 One hundred and thirty-five patients (73%) were between 25 and 50 years old. In terms of the profession, 132 patients (71.3%) were engaged in liberal activities (craftmen, traders and retailers). The majority was schooled (113 or 61.1%) and resided in urban areas (146 or 79%). One hundred and sixteen patients lived in couple (62.7%) with an average monthly income estimated at 70 US Dollars. Clinically, 123 patients (66.5%) were in WHO stage III. The body mass index was over  $18.5 \text{ kg/m}^2$  in 124 patients (67%). The median number of TCD4 lymphocytes was 254.5 cells/ml and 25 patients (13.5%) had a number of CD4 over 500 cells/ml. HIV1 was really predominant (97.8%). Most patients (152 or 82.2%) had been screened for clinical suspicion. Conclusion: HIV infection in Benin remains the prerogative of young, female, educated and poor people. Screening is delayed and hence the need to develop innovative strategies for early HIV testing in Benin.

**Keywords:** Adults, HIV, New Infections, Profile, Borgou, Benin

## 1. Introduction

According to the UNAIDS 2016 report, 36.7 million people were living with HIV among which 25.8 million in sub-Saharan Africa. The number of new infections was 2.1 million, of which 2/3 were in sub-Saharan Africa [1].

In Benin, national HIV prevalence is stable at around 1.2% since a decade with a concentration of the epidemic within

the key populations of sex workers (SW) and men who have sex with men (MSM) [2].

In 2016, 37,637 PLHIV were on antiretroviral therapy (ART), while according to the spectrum projections, Benin would have 65,094 patients requiring ART. Thus, there were approximately 27,457 PLHIV, i.e 42.2% of patients who

were unaware of their HIV status, or did not go to treatment sites to get ARV therapy [1]. To improve access to antiretroviral, Benin aligned itself in 2014 with the WHO recommendations of 2013 [3, 4] and is currently in the process of adopting the 2016 guidelines for starting ART in any person tested positive for HIV, regardless of its clinical and immunological status [5]. The implementation of these recommendations was aimed at improving the clinical and immunological status of patients at initiation of ART because several studies have demonstrated the short- and long-term benefit of early initiation of PLHIV to antiretroviral therapy [6-9]. The present study aimed to evaluate the current epidemiological, clinical and immunological profile of new HIV infections detected in Northern Benin in 2016.

## 2. Patients and Methods

### 2.1. Study Area and Period

The study was conducted on the three main sites of care of the PLHIV of the department of Borgou (CHUD Borgou, NGO OSV Jordan and Hospital of Zone of Boko) from May 2 to October 31<sup>st</sup>, 2016.

### 2.2. Study Design

A tricentric cross-sectional design with prospective data collection was carried out in the study area.

### 2.3. Study Population

Study population was all adults HIV positive received during data collection time in the three centers.

### 2.4. Sampling Procedures

Systematic sampling method was used to select in the study population, all new HIV positive and ART naïve patients after given verbal consent. So, patients under the age of 15 and those who have already been on antiretroviral therapy have been excluded.

### 2.5. Data Collection

All consenting patients were given a thorough clinical examination to complete the pre-established questionnaire. The data collected were socio-demographic (age, sex, marital status, occupation, monthly income, place of residence) and clinical (discovery, inaugural symptoms and initial clinical stage, weight, height, pathological history and evolutionary diseases). Patients were then referred to the virology laboratory where a blood sample was taken. This sample allowed us to confirm the diagnosis and an initial assessment which includes at least the number of CD4 lymphocytes, complete blood count, transaminases and the serum creatinine. Confirmation of HIV infection was made by a fourth generation Elisa test. All these elements are part of a systematic routine check-up of newly screened HIV-positive people before they are initiated into antiretroviral therapy. The technical range being very limited, some diagnostic

(particularly opportunistic infections) mentioned in this work were retained on the basis of syndromic arguments and satisfactory therapeutic tests.

### 2.6. Data Analysis

The data were recorded in the Epi Data 3.1 software and then the descriptive analysis was made using the Epi Info 7 software. Averages and standard deviations were calculated for quantitative variables and frequencies for qualitative variables.

### 2.7. Ethical Consideration

The participating in this study was voluntary. Formel authorization was obtained from the Beninese national HIV program. The data was processed in strict confidentiality and anonymously. Codes were using to identify records at analysis.

## 3. Results

### 3.1. Socio-demographic Profile of Patients Newly Diagnosed HIV-Positive

At the end of this study, 185 newly HIV-positive adults were included. The middle age was  $36.2 \pm 10.9$  years and the sex ratio was 0.6. One hundred and thirty-five patients (73%) were between 25 and 50 years of age. The majority of patients were self-employed (132 cases or 71.3%), attended school (113 cases or 61.1%) and lived in urban areas (146 cases or 79%). One hundred and sixteen patients (62.7%) were married or living in a couple and had an average monthly income estimated at 70 US Dollars, or about US \$ 2.33 per day. Table 1 presents the sociodemographic data of the respondents.

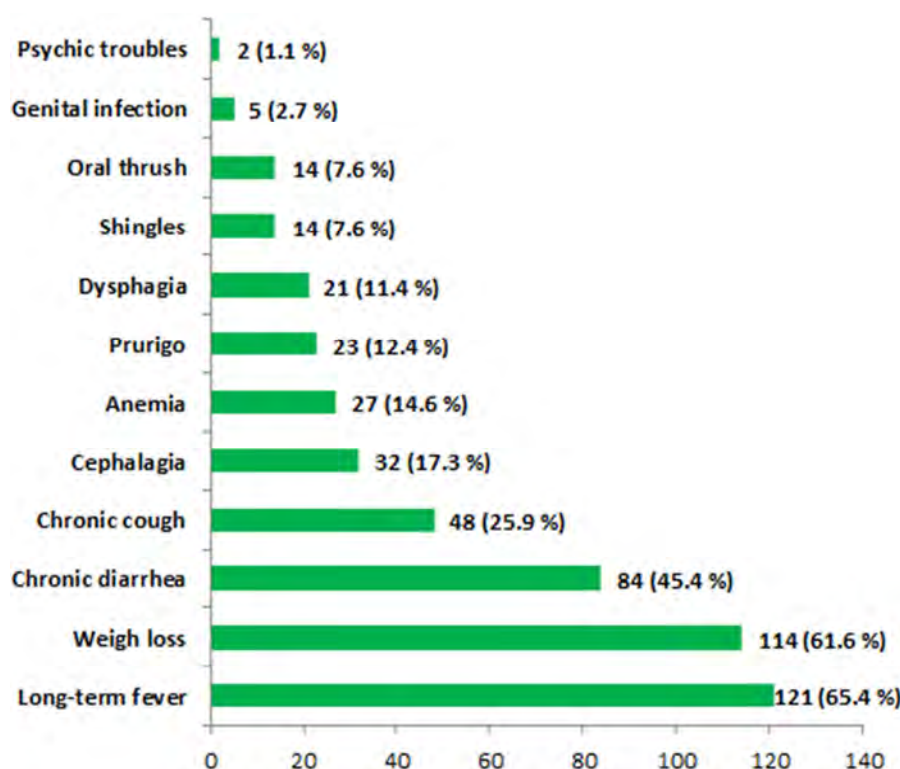
**Table 1.** Distribution of 185 new HIV infections in North Benin according to socio-demographic characteristics.

| Variables  | Categories      | Frequency | %    |
|------------|-----------------|-----------|------|
| Sex        | Male            | 68        | 36.8 |
|            | Female          | 117       | 63.2 |
|            | Total           | 185       | 100  |
| Age        | 15-24           | 23        | 12.4 |
|            | 25-50           | 135       | 73   |
|            | >50             | 27        | 14.6 |
|            | Total           | 185       | 100  |
|            | Pupils/Students | 11        | 6    |
| Profession | None            | 24        | 13   |
|            | Pay             | 18        | 9.7  |
|            | liberal         | 132       | 71.3 |
|            | Total           | 185       | 100  |
| Schooling  | Not enrolled    | 72        | 38.9 |
|            | Schooled        | 113       | 61.1 |
|            | Total           | 185       | 100  |
| Residence  | Urban           | 146       | 79   |
|            | Rural           | 39        | 21   |
|            | Total           | 185       | 100  |
| Religion   | Christian       | 94        | 50.8 |
|            | Muslim          | 88        | 47.6 |
|            | Traditional     | 3         | 1.6  |
|            | Total           | 185       | 100  |

| Variables      | Categories                  | Frequency | %    |
|----------------|-----------------------------|-----------|------|
| Marital status | Married                     | 116       | 62.7 |
|                | Single                      | 40        | 21.6 |
|                | Divorced                    | 15        | 8.1  |
|                | Widows                      | 14        | 7.6  |
|                | Total                       | 185       | 100  |
| Addiction      | Alcohol addiction           | 48        | 25.9 |
|                | Tobacco                     | 6         | 3.2  |
|                | Alcohol + tobacco           | 12        | 6.5  |
|                | Neither alcohol nor tobacco | 119       | 64.3 |
|                | Total                       | 185       | 100  |
| Nationality    | Beninese                    | 170       | 91.9 |
|                | other                       | 15        | 8.1  |
|                | Total                       | 185       | 100  |

### 3.2. Initial Clinical, Nutritional and Immunological Status of Patients

Clinically, 20 patients (10.8%) were at stage IV WHO, 123 patients (66.5%) at stage III WHO, 19 patients (10.3%) at stage II and 23 patients (12.4%) at stage I. The nutritional status of the patients surveyed was assessed on the basis of body mass index and it was noted that 61 patients (33%) were thin, 98 had normal nutritional status (52.9 %), 19 were obese (10.3%) and seven were overweight (3.8%). Long-term fever (121 cases or 65.4%), weight loss (114 cases or 61.6%), persistent diarrhea (84 cases or 45.4%) and chronic cough (48 cases or 25.9%) were the four main symptoms found (Figure 1).



**Figure 1.** Distribution of the 185 new cases of HIV infection in Northern Benin according to the symptoms presented at the initial examination in 2016.

Bacterial infections (122 cases or 65.9%), mainly tuberculosis (96 cases or 51.9%) and salmonellosis (19 cases or 10.3%) were the most frequent, followed by parasitic infections (109 cases or 58.9%), mycotic (80 cases or 43.2%) and viral (58 cases or 31.4%). On the immunological level, the median number of TCD4 lymphocytes was 254.5 cells/ml with extremes of 5 and 1,031 cells/ml. The initial number of CD4 was less than 200 cells/ml in 98 patients (53%), with 200 - 500 cells/ml in 62 patients (33.5%) and more than 500 cells/ml in 25 patients (13.5%).

### 3.3. Circumstances of Discovery and Serotype of HIV

HIV1 was really predominant (181 cases or 97.8%) and there were four cases of HIV2 (2.2%).

Depending on the screening circumstance, 152 cases (82.2%) were screened on clinical suspicion, 30 cases (16.2%) were voluntary, and three cases (1.6%) were screened during prenatal consultations.

## 4. Discussion

### 4.1. Socio-demographic Profile of Patients Newly Diagnosed HIV-Positive

The current socio-demographic profile of people newly infected with HIV in Northern Benin is largely comparable to that described in most of the studies conducted in sub-Saharan Africa. AIDS remains in Benin and sub-Saharan Africa a disease affecting mostly young people, predominantly female, resident in urban areas and having low purchasing power [9-12]. It emerges from this study that preventive measures should be given priority to young girls in urban areas, with low incomes and in liberal professions such as hairdressing, sewing, resale or small business. The profile described above is compatible with that of sex workers; the majority of whom practice clandestinely and

sometimes live in a couple.

#### 4.2. *Circumstances of Discovery and Initial Clinical and Immunological Status of Patients*

In 82.2% of cases, our respondents were screened because they had clinical manifestations related to AIDS. They were classified in stage III or IV WHO in 77.3% of the cases which indicates a late screening. This is the finding in most studies in the sub-region [9-11, 13, 14]. Indeed, the screening strategy at the initiation of caregivers recommended by the WHO is not applied leaving room for screening on clinical suspicion. Therefore, most patients integrate HIV care programs into the AIDS stage with multiple opportunistic infections. In our study, bacterial and parasitic opportunistic infections were the most frequent and were manifested by long-term fever, weight loss, diarrhea and chronic cough. In fact, they were mainly tuberculosis, the first opportunistic bacterial infection in PHAs in sub-Saharan Africa [15, 16] and opportunistic digestive parasites [17] whose diagnosis is not always possible in our context where technical conditions are not often available. Effective integration of HIV and tuberculosis programs is therefore necessary to ensure an efficient response to both diseases [15, 18, 19].

This study therefore advocates concrete actions to detect people living with HIV at an earlier stage. Integration of HIV testing in community areas coupled with a referral system through the network of civil society organizations, with the involvement of community outreach workers and peer educators identified by sector of activity, could help to facilitate the accessible and early screening.

## 5. Conclusion and Recommendation

In Benin, HIV infection remains the prerogative of young people, mostly female, with low purchasing power. The screening is too late, because performed on clinical suspicion which remains the main circumstance of the discovery of the infection. It is therefore urgent to develop innovative strategies as HIV self-screening and community-based screening, for the early detection of HIV in Benin as a guarantee of early access to antiretroviral treatment.

## Limitation

The main limit of this study was the poverty of the technical platform limiting certain diagnoses. This issue may raise possibility of information bias. It would also be desirable to extend the study period to one year in order to avoid possible influences of the season on the use of health centers.

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