Retention of antiretroviral naïve patients registered in HIV care in a program clinic in Pune, India

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Abstract

Background: Retention in HIV care ensures delivery of services like secondary prevention, timely initiation of treatment, support, and care on a regular basis. The data on retention in pre antiretroviral therapy (ART) care in India is scanty. Materials and Methods: Antiretroviral naïve HIV-infected adult patients registered between January 2011 and March 2012 in HIV care (pre-ART) were included in the study. The follow-up procedures were done as per the national guidelines. Patients who did not report to the clinic for 1 year were considered as pre-ART lost to follow-up (pre-ART LFU). They were contacted either telephonically or by home visits. Logistic regression analysis was done to find out factors associated with pre-ART loss to follow-up. Results: A total of 689 antiretroviral naïve adult patients were registered in the HIV care. Fourteen (2%) patients died and 76 (11%) were LFU till March 2013. The multivariate analysis showed that baseline CD4 count >350 cells/mm³ (P < 0.01) and illiteracy (P = 0.044) were significantly associated with LFU. Of the total pre-ART LFUs, 35 (46.1%) informed that they would visit the clinic at their convenient time. NGOs that referred 16 female sex workers (FSWs) who were LFU (21.1%) informed that they would make efforts to refer them to the clinic. Conclusion: Higher CD4 count and illiteracy were significantly associated with lower retention in pre-ART care. Developing effective “retention package” for patients and strengthening linkage strategies between key sub-population such as FSWs and ART programming will help to plug the leaky cascade in HIV care.

Key words: HIV care, pre-antiretroviral therapy, retention

INTRODUCTION

India has an estimated population of 2.1 million HIV-infected individuals with an adult prevalence of 0.27%.[1] On 1st April 2004, Government of India launched the free antiretroviral therapy (ART) program.[2] As on March 2012, a total of 355 ART centres are functional in 31 States and Union Territories and more than 5, 16,000 patients are receiving ART in these centres.[3] Current national guidelines recommend treatment initiation at CD4 count of ≤350 cells/mm³ or WHO clinical stages III and IV irrespective of CD4 count.[4]

HIV care starts when an individual diagnosed with HIV infection is successfully linked to services, assessed for eligibility, followed till the ART is initiated and lifelong thereafter. Retaining patients in the pre-ART period is especially important as it gives the opportunity to provide clinical services, helps timely initiation of ART and provides psychosocial support. There are reports on retention of patients on ART in the national program[5,6] but few reports have described the retention of patients...
and factors associated with it in pre-ART care in India.[5]

In this study, we report the retention of HIV-infected individuals registered for HIV care (pre-ART) in a Government ART centre at National AIDS Research Institute (NARI) in Pune, India.

**MATERIALS AND METHODS**

The National AIDS Control Organisation extended a free ART roll out program clinic at the end of 2010 to National AIDS Research Institute. All adult patients included in this study were registered between January 2011 and March 2012 and ART naïve at the time of registration. Patients who were on ART at the time of registration were not considered for the study. Endpoint for all follow-up was considered as March 31st, 2013.

As per the existing guidelines, patients with CD4 count ≤350 cells/mm$^3$ or with coexisting tuberculosis infection were informed about the need for treatment initiation and were advised to visit for clinical assessment, baseline investigations, and counseling sessions including preparedness and drug adherence. They were initiated on ART after completion of these procedures. The patients with higher CD4 count were advised to report to ART centre once in 6 months for clinical evaluation and CD4 count estimation. Demographic and clinical information of all patients were noted in the data record card designed by the program. The counselors contacted the patients telephonically from the clinic if they did not report on their scheduled visit date. Home visits were made to patients who could not be reached on the contact numbers provided by them. Those who did not come for 1 year (i.e. when the last CD4 count was more than 12 months old) were termed as “pre-ART” lost to follow-up (pre-ART LFU) as per the operational guidelines.[3] The data were analyzed after obtaining Ethics Committee approval.

**Statistical analysis**

All HIV-infected ART naïve adult patients registered in HIV care (pre-ART) were included in the study. LFU among patients with CD4 count ≤350 cells/mm$^3$ and >350 cells/mm$^3$ and among 351–400 cells/mm$^3$ and >400 cells/mm$^3$ were compared using two sample Z test for proportion. Binary logistic regression was used to find the predictors of LFUs. The analysis was done using SPSS (16.0 version, SPSS South Asia Private Limited, Bangalore) software, and statistical significance was considered with $P < 0.05$ (2-sided).

**RESULTS**

A total of 689 antiretroviral naive adult patients were registered between January 2011 and March 2012 at the ART Centre. The female: male ratio was 1.4:1 and the median age was 35 years (interquartile range [IQR]: 30–41 years). A total of 492 (71.4%) patients were employed at the time of registration. The median CD4 count was 245 cells/mm$^3$ (IQR: 143-376 cells/mm$^3$). 106 patients (15.4%) had tuberculosis at baseline visit.

Of the total patients; 489 (71%) had CD4 count ≤350 cells/mm$^3$ (median = 191 cells/mm$^3$, IQR: 111-257 cells/mm$^3$). Of these, 450 (92%) were initiated on ART after performing their baseline investigations, clinical evaluation, and counseling as per the national guidelines.[4] 9 patients (1.8%) died, 8 (1.6%) were transferred to other ART centres and 22 (4.5%) were LFU during study period (median = 269 cells/mm$^3$, IQR: 193–309 cells/mm$^3$).

Of the 193 patients with baseline CD4 count >350 cells/mm$^3$ (median = 512 cells/mm$^3$, IQR: 418-702 cells/mm$^3$), 4 (2.1%) died, 10 (5.2%) were transferred out to other ART centres and 51 (26.4%) (median = 564 cells/mm$^3$, IQR: 461-815 cells/mm$^3$) were LFU. ART was initiated subsequently to 53 (27.5%) patients as their CD4 count dropped and required to be treated (mean days: 200, standard deviation: 183). 75 (38.9%) patients were under regular follow-up while CD4 count could not be obtained for three patients.

The proportion of LFUs was significantly higher ($P < 0.01$) in patients with CD4 count >350 cells/mm$^3$ as compared to those with CD4 count ≤350 cells/mm$^3$. The data were analyzed further to compare the proportion of LFUs between patients with CD4 count 351–400 cells/mm$^3$ and >400 cells/mm$^3$ which did not show a significant difference ($P = 0.35$).

Baseline demographic and biological characteristics associated with loss to follow-up in patients registered for HIV care (pre-ART) are shown in the Table 1. The univariate analysis showed that females, age <25 years, illiterate, unmarried, being employed and baseline CD4 count >350 cells/mm$^3$ had a higher risk of loss to follow-up. However, the multivariate analysis showed that baseline CD4 count >350 cells/mm$^3$ ($P < 0.01$) and illiteracy ($P = 0.044$) were significantly associated with loss to follow-up among patients in HIV care (pre-ART). The patients with CD4 count between 351 and 400 cells/mm$^3$ and with >400 cells/mm$^3$ were
5.39 (95% confidence interval [CI]: 2.20-13.24) and 7.25 (95% CI: 4.11-12.80) times more likely to be LFUs as compared patients with CD4 count ≤350 cells/mm$^3$. Illiterate patients were 1.78 (95% CI: 1.02-3.10) times more likely to be LFUs as compared to others.

Of those who were LFU, 22 (28.9%) were males, and 54 (71.1%) were females. Among females who were LFU, 16 (29.6%) each were sex workers and housewives. The female sex workers (FSWs) who were LFU had a median CD4 count 509 cells/mm$^3$ (IQR: 377–882 cells/mm$^3$) and were asymptomatic.

The data on telephonic contact and home visits among LFU patients are shown in Figure 1. It was observed that 35 (46.1%) patients informed that they would visit the clinic as per their convenience. Four NGOs who had referred 16 (21.1%) FSWs informed that they would make efforts to motivate them for follow-up. 12 patients (15.8%) had left the city either for work or permanently, 5 (6.6%) were registered in other ART centres, 3 (3.9%) were not interested in follow-up, 4 (5.3%) had given wrong addresses, and 1 (1.3%) had expired. Of the 35 patients who informed that they would visit the clinic, 25 had baseline CD4 count >350 cells/mm$^3$ while 8 had CD4 count <350 cells/mm$^3$. The CD4 count could not be obtained for two patients.

DISCUSSION

Retention in HIV care ensures delivery of a variety of services such as prevention, treatment, support, and care on a regular basis.[3] The pre-ART care which is one of the four crucial basic steps in HIV care is an important component of treatment cascade. The present study reports retention among patients registered in pre-ART care in a program clinic in Pune.

At the time of presentation, a sizeable proportion (71%) of patients had CD4 count lower than the recommendations of the national guidelines. A case surveillance data for all individuals newly diagnosed with HIV infection and the clinical surveillance of HIV disease from Germany have mentioned that 58.1% were late presenters for care which is less than our report.[8] The probability of late presentation for HIV diagnosis in their data seems to be particularly high for migrants. Therefore, the authors have recommended targeted test promotion rather than opt-out screening. Another study from rural India has reported that 68.7% of HIV-infected patients were diagnosed with CD4 count <350 cells/mm$^3$.[9] The authors have recommended developing new strategies for avoiding HIV late presentation.

Early suspicion for HIV, referral for diagnosis and linkage to ART centres is crucial especially
when the current guidelines have evolved toward recommending starting ART at CD4 count <350 cells/mm$^3$. This will help in reducing the morbidity and mortality in HIV-infected individuals.

The LFU (4.5%) and mortality (1.8%) among patients who were eligible for ART (CD4 count ≤350 cells/mm$^3$) in our study is less as compared to the report from Gambia (17.2% and 14.9%, respectively).[10] This might be due to the longer study period criteria and inclusion of all HIV types in this African study.

The LFU in our study with higher CD4 count was less as compared to those reported from a study in Kenya (26.4% vs. 33.8%, respectively). This might be due to the larger number of patients, short duration of follow-up and difference in the LFU definition in Kenya study.[11] A study from South Africa in patients who were not yet eligible for ART has reported poor retention in HIV care prior to eligibility for ART. They also reported that lower odds of retention were associated with higher initial CD4 count which is similar to our finding.[12] A review article on HIV care from Sub-Saharan Africa has mentioned 55% retention (range: 42–95%) after enrollment till ART initiation which is less than our report.[13] The authors have recommended better health information systems that allow patients to be tracked between service delivery points and to properly evaluate pre-ART loss to care.

In this study, it was observed that the retention of patients with higher CD4 count was significantly lower as compared to others ($P < 0.01$). This could be because they were asymptomatic and may not have perceived the need of regular clinic visits in spite of counseling. Furthermore, the therapeutic care offered to them was comparatively less and therefore visiting the clinic for monitoring purpose could have prompted them to visit “at their convenient time.” Considering these challenges of retaining patients that require longer follow-up, the counseling sessions should be structured and modified to ensure reainment. With the recent report of a significant reduction in HIV incidence among discordant couples, it may be required to integrate prevention and treatment programs in future, and the efforts could be directed accordingly.[14]

Currently, linking of the core population to care and support services through line listing has been highlighted in the national program and over 90% of sex workers who test HIV positive are reported to be linked to ART services. Our findings suggest that it is crucial to spend quality time and efforts to ensure that persons belonging to core groups such as sex workers are retained in the HIV care.

Our pre-ART retention was significantly low in illiterate patients ($P = 0.044$). The counseling sessions need to be customized for such patients. Pictorial material with effective visual impressions which are easily understandable can be developed and used during counseling sessions. These materials will help in better understanding of the importance of comprehensive HIV care and in turn higher retention in illiterate patients. A study conducted in South Africa on information, motivation, and behavioral skills for early pre-ART engagement in HIV care identified the critical deficits and strengths and suggested that individuals in pre-ART HIV care may benefit from education and counseling focused on providing more accurate information about pre-ART treatment and

Figure 1: Outcome of contact information among lost to follow-up patients ($n = 76$) at the program clinic in Pune
infectivity. These authors have suggested that strengthened personal or social motivation can result from individual and/or group opportunities to build positive attitudes, clinic-level intervention to promote more positive interactions with the care team and system of care, and community-level campaigns of continuing efforts to decrease community-level HIV stigma. All these factors would help in better retention of patients.

Though the telephonic contacts were done for the majority of LFU patients, they had to be contacted 2-3 times for getting the responses. Even though the ration cards or proof of residence were collected for all the patients registered in HIV care, addresses for home visits were found to be incorrect for some patients (5.3%) This highlights the need for ART centre to update the contact details of all the patients during follow-up visits or develop strategies for collecting accurate data and provide greater confidence to patients on the confidentiality. The phone numbers provided by the patients during registration visit have to be checked promptly so that the correct numbers can be obtained. Special counseling and motivational strategies have to be planned for those who responded that they would visit the clinic at their convenient time but did not actually visit the clinic.

Our limitation of the study was relatively short follow-up. However, the LFU of almost 26.4% among those who had CD4 count >350 cells/mm³ is a major concern and certainly needs strategies to retain these registered patients under follow-up. They could be advised to visit at 3 monthly interval to the ART centres in addition to the 6 monthly follow-up visit for CD4 count estimation at least during the first 12 months of registration. The data were analyzed retrospectively, and the record cards did not have information on some of the important practical issues such as transportation difficulties, inability to remain absent from the place of work and family problems that might have been associated with loss to follow-up. Hence, these factors could not be included in the analysis.

To the best of our knowledge, this is the first report from India on retention among pre-ART registered patients from the program clinic. The reasons for pre-ART loss to follow-up should be studied across the ART centres in the country which will help in developing effective pre-ART “package” that can be developed for better retention and to plug the leaky cascade in HIV care in India.

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