

# HIV in Cochabamba, Bolivia: Mortality, Comorbidities & Treatment

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## Objectives

- To complete a preliminary study on mortality among HIV-positive patients in Cochabamba, Bolivia
- To assess socioeconomic, clinical, and cultural factors that affect comorbidities and fatalities in this population
- To identify factors that affect delay in antiretroviral treatment (ART) initiation and adherence among patients at the Institute for Human Development (IDH)

## Early diagnosis, ART adherence, and tuberculosis prevention are key determinants of mortality: an analysis of HIV-related deaths in Cochabamba, Bolivia

### Introduction

- In the past 10 years, HIV has progressed from a crippling pandemic to a treatable chronic condition due to the widened use and availability of antiretroviral therapy (ART)<sup>1,2,3</sup>
- As of 2015, it is estimated that 18,000 people in Bolivia are living with HIV<sup>4</sup>
- The percentage of HIV+ patients in Bolivia receiving ART is only 29%, far below the global estimate of 46%<sup>5,6</sup>
- Bolivian Law #3729 obligates the Ministry of Health to cover costs of ART if the patient cannot do so<sup>7</sup>
- Cochabamba accounts for 18% of Bolivia's HIV+ population<sup>8</sup>
- In 2015, 33% of the HIV+ patients admitted to Hospital Viedma in Cochabamba, Bolivia died of secondary infections and/or malnutrition

### Methods

- Retrospective cohort study using data from medical records of 71 HIV+ patients who died between 2013 and 2017 at Hospital Viedma and IDH
- Opportunistic infections, causes of death, and treatment regimen and adherence were analyzed

### Results

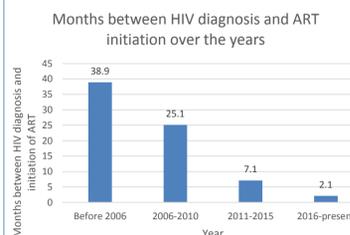
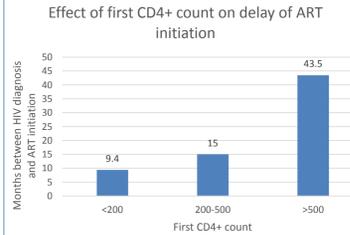
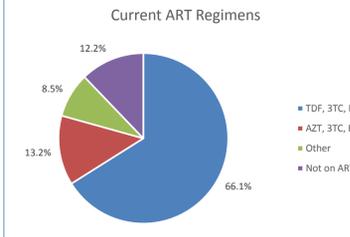
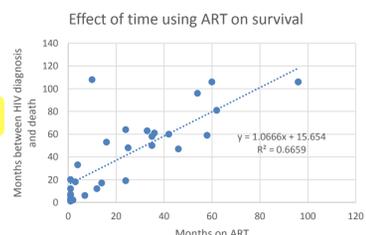
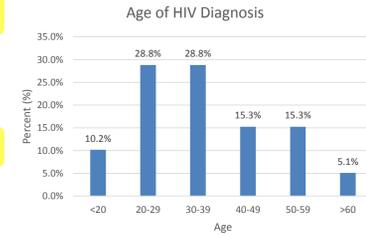
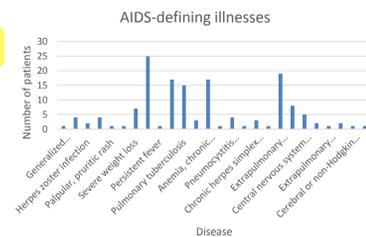
- Average age of death 39.0 years
- Highest level of education for the majority of patients was primary or secondary school
- 73.4% of the patients did not provide information on sexual orientation
- Most common AIDS-defining illnesses included pulmonary (21.1%) and extrapulmonary tuberculosis (47.5%), chronic diarrhea (35.2%), and anemia (23.9%)
- Most common causes of death were respiratory insufficiency (23.9%) and sepsis (36.6%)
- 57.7% of patients received ART which prolonged survival after HIV and AIDS diagnosis by 31.1 and 12.1 months, respectively, compared to patients that did not receive ART

### Discussion

- 35.2% were female which is slightly higher than those of North America and Europe, which may be attributed to the high percentage of females in Bolivia that are victims of intimate partner violence<sup>9,10</sup>
- The primary mechanism of transmission of HIV in Cochabamba could not be determined because many subjects did not disclose sexual orientation; there is still a large stigma that exists in Bolivia regarding homosexuality
- Of the patients that survived for at least three years after their HIV diagnosis, 87% received ART
- 35.7% of patients that died within 30 days of their AIDS diagnosis received ART but only at the time of their diagnosis
- Of the 9 people in the cohort who were compliant with their treatment, most had an AIDS diagnosis within 40 days of their HIV diagnosis, suggesting a late diagnosis
- Women on treatment survived an average of 34 months longer than men, most likely due to better adherence to ART, especially among women of childbearing age to prevent transmission to any future children<sup>8,9</sup>
- 61% of the individuals with tuberculosis received their AIDS diagnosis along with their HIV diagnosis, indicating a greater progression of the disease
- In the study population, only 27.3% of HIV/tuberculosis coinfecting individuals were on ART, indicating that ART may also play a role in lowering the fatalities due to septic shock<sup>11,12</sup>
- Future studies should investigate previous hospital admissions to determine incidence of nosocomial infections and they should assess usage of tuberculosis prophylaxis

### Conclusion

- Respiratory insufficiency and sepsis, especially with a comorbid tuberculosis infection, are the leading causes of death among HIV+ patients
- Early ART administration and treatment adherence may be helpful at improving mortality in tuberculosis coinfecting individuals
- Future efforts should focus on early diagnosis of HIV and increasing testing amongst at risk populations



## CD4 count, viral load and age are the main factors that affect delay in ART initiation

### Introduction

- Usage of ART is a determining factor of HIV related mortality<sup>13</sup>
- ART is important for the prevention of tuberculosis (and later septic shock) and chronic anemias in HIV+ patients<sup>14</sup>
- A healthy doctor-patient relationship is required to ensure that treatment is efficacious and is being adhered to

### Methods

- Data was collected from 189 current patients at IDH who were diagnosed between 1993 and 2017
- Dates of birth, diagnosis, first routine labs, and first and second consults were obtained
- Other data obtained included gender, if they were a transfer patient, dates of initiation and change of ART regimen, type of ART used, dates of first CD4 and viral load and their respective counts

### Results

- 20.7% of the population was female, and 15.34% were transferred from another clinic
- The average age of diagnosis was 32.9
- 88.89% of the cohort had started an ART regimen
- The median number of days between diagnosis and start of ART was 121, the median number of days between first and second consult was 27
- The average first CD4 count was 305.68 and the median number of days between diagnosis and first CD4 count was 38
- Patients with an initial CD4 <200 started ART, on average, 10.8 months before those with a higher CD4, p = 0.0070
- Patients with a viral load of <400 started treatment, on average, 9.5 months later than those with a higher count, p = 0.0463
- Individuals who rejected ART had an average CD4 count that was 185.2 higher than those who were treated with ART, p = 0.0007
- Individuals who rejected ART were on average 10.8 years younger than those who were on treatment, p = 0.0007

### Conclusion

- People with a lower CD4 count or a higher viral load are more likely to start ART earlier following their diagnosis
- Individuals most likely to reject treatment were younger and had a higher CD4 count
- There is a positive correlation between first CD4 count and the amount of time it takes to start ART
- There is a correlation between the year of diagnosis and the delay in ART initiation, in more recent years treatment has been started sooner after an HIV diagnosis

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