

# Correlating age-at-diagnosis of lung cancer in the HIV/AIDS population

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## Abstract

**Background:** Lung cancer is increasing in the HIV/AIDS population. A 2-to-5-fold increase in lung cancer risk is reported for persons with HIV/AIDS (PWA) compared to the general population.<sup>1</sup> This observation cannot be fully explained by patterns of tobacco use.<sup>2</sup> Chronic pulmonary inflammation, infectious and non-infectious, may potentiate the effects of smoking, increasing the risk of lung cancer. Some reports suggest lung cancer risk is unrelated to immunosuppression<sup>3</sup> while others paradoxically find a definitive correlation.<sup>4</sup> Studies examining age-at-onset of lung cancer in PWA have shown a younger age-at-onset of lung cancer diagnosis in PWA compared to the general population, namely 50 versus 54 years-old, respectively.<sup>5</sup> Data is not available comparing age-at-diagnosis and lag time between HIV and lung cancer.

**Methods:** We queried the Center for AIDS Research database at the University of Pennsylvania with over 3000 patients with HIV, specifically searching for those with lung cancer. The query included age, sex, race, smoking status, dates of HIV and lung cancer diagnoses, and CD4<sup>+</sup> cell counts throughout the study period.

**Results:** From 1983 to 2006, lung cancer was identified among 30 PWA. The average ages of HIV and lung cancer diagnoses were 40 and 52, respectively. Patients developed lung cancer within 11 years (average) of their initial HIV diagnosis. The lag time between HIV and lung cancer diagnoses, however, were substantially lower in recent years, decreasing from 11 to <3 years after 1997.

**Conclusion:** Lung cancer occurs at a younger age in the HIV population than in the general population for reasons that remain unclear. After 1997, the average interval between HIV and cancer diagnoses shifted dramatically from an average of 11 years to an average of <3 years. It is noteworthy that the HIV treatment paradigm changed in the 1990s with the advent of HAART, particularly protease inhibitors. Our preliminary data suggest that despite restoring immune system functionality with HAART the predisposition to lung cancer may be enhanced.

## Background

- Lung cancer is increasing in the HIV/AIDS population.
- 2-to-5-fold increase in lung cancer risk is reported for persons with HIV/AIDS compared to the general population.<sup>1</sup>
- Possible etiologies:
  - Tobacco use<sup>2</sup>
  - Chronic pulmonary inflammation
  - Infectious diseases
  - Immunosuppression<sup>3,4</sup>
  - Younger age-at-onset of lung cancer in HIV/AIDS population<sup>5</sup>

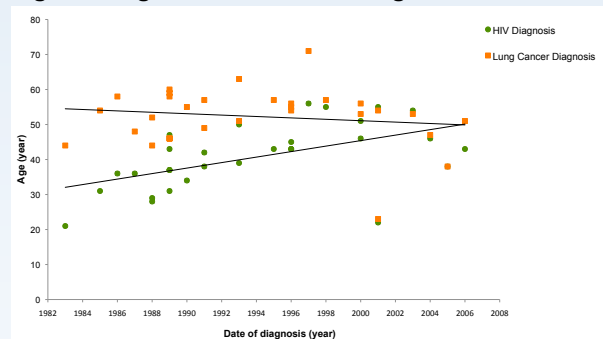
## Methods

- Retrospective chart review of patients enrolled in the Center for AIDS Research at the University of Pennsylvania Health System.
- Query of patients with dual diagnosis of HIV and lung cancer.

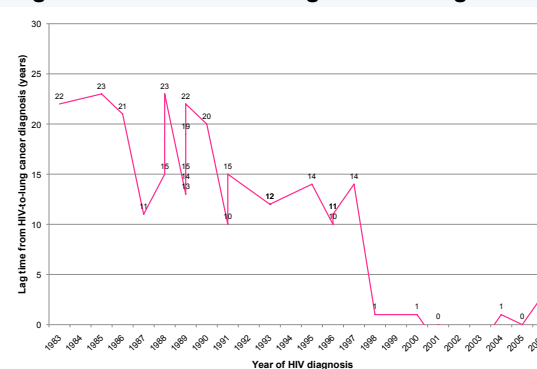
## Results

Characteristic	Value (Mean or Percentage)
Age at HIV diagnosis	40.6 years
Age at lung cancer diagnosis	52.3 years
Sex	
Male	70%
Female	27%
Transgender	3%
Tobacco Use	100%
Race	
Caucasian	36.6%
African American	56.6%
Other	6.6%
Number of years with known HIV infection	11
Number of years with lung cancer	8
Status	
Living	57%
Deceased	43%

## Age-at-Diagnosis of HIV and Lung Cancer



## Lag Time From HIV-to-Lung Cancer Diagnosis



## Conclusion

- Lung cancer diagnosis occurs at a younger age in the HIV population.
- Avg age at HIV diagnosis **40**
- Avg age at lung cancer diagnosis **52**
- Patients developed lung cancer within 11 years (average) of their initial HIV diagnosis.
- Lag time (average) between HIV and lung cancer diagnoses decreased in recent years.

**11 years → 3 years**

### Reasons for this abrupt change:

- Increasing medical access and utilization
- Awareness
- Research
- Changing focus of the physician

Preliminary data suggest that despite restoring immune system functionality with HAART, the predisposition to lung cancer may be enhanced.

## References

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