

**Changes in Antiretroviral Medication Use**  
**in Liver Transplant Candidates with HIV**

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**BACKGROUND**

- End-stage liver disease (ESLD) is a leading cause of death for HIV+ individuals, and liver transplantation (LT) is increasingly common among HIV+ recipients.
- Some antiretroviral therapy (ART) classes, such as cytochrome p450 inhibitors, can complicate post-LT immunosuppression, but little is known about national trends in ART use in this setting.

**METHODS**

**Study Population**

- We linked SRTR data (2007-2016) with pharmacy claims data (Symphony Health Solutions).
  - 91.0% (n=90,380) of the SRTR LT waitlist in the study period was captured in the linkage.
- HIV+ candidates were identified by ≥1 fill of HIV-specific ART. The prescription nearest to each candidate's listing date was used.
- ART categories (in combination with the nucleoside reverse-transcriptase inhibitor backbone): non-nucleoside reverse-transcriptase inhibitors (NNRTIs); pharmacoenhancers (protease inhibitors, cobicistat); integrase inhibitors, fusion inhibitors, and entry inhibitors/CCR5 co-receptor antagonists.

**Analyses**

- We compared demographic and health characteristics of LT candidates by HIV-status, using rank-sum and chi-squared tests.
- We explored factors associated with different ART regimens using logistic regression.

**RESULTS**

Candidate Characteristics	HIV+ (n=857)	HIV- (n=89,523)	p-value
Age at listing, Median (IQR)	53 (48-59)	56 (50-62)	<0.001
% Men	80.6	64.4	<0.001
% African American	21.4	9.0	<0.001
Cause of ESLD			<0.001
% Hepatitis C Virus	33.5	26.1	
% Hepatitis B Virus	20.4	2.0	
% Alcoholic Liver Disease	7.2	23.2	
% Malignancy	16.8	11.1	
% NAFLD/NASH	2.6	10.9	
% Other	19.5	26.6	
Insurance			<0.01
% Private	52.9	56.6	
% Medicaid	19.5	16.3	
% Medicare	25.9	23.6	
% Other	1.8	3.5	

- We identified 857 (0.95%) HIV+ LT candidates.
- HIV+ candidates were younger and more likely to be African American, male, with liver disease due to hepatitis C or hepatitis B, and on public insurance (Table 1).
- Over time, pharmacoenhancers were used less (65.1% in 2007 to 16.0% in 2016) while integrase inhibitor use increased (3.4% in 2008 to 56.0% in 2016) (Figure 1).
- Adjusting for age, sex, year, insurance status, and cause of ESLD:
  - Pharmacoenhancers were more likely to be used by African Americans (aOR: 1.60, 95% CI: 1.10-2.32; p<0.05).
  - However, integrase inhibitor use was not associated with African American race (aOR: 0.83, 95% CI: 0.54-1.28; p=0.4)

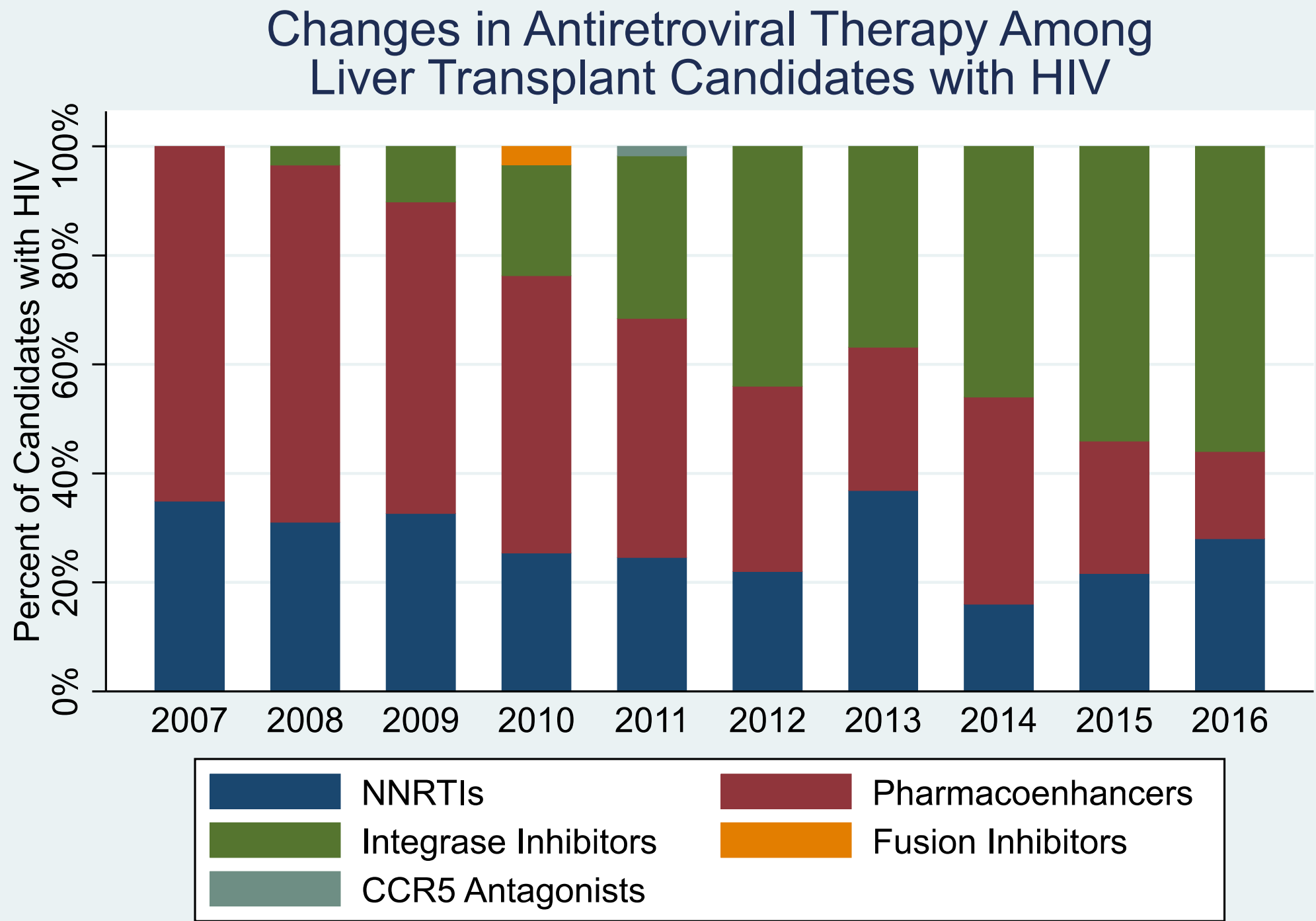


Figure 1. Proportion of HIV+ LT candidates prescribed each ART regimen by year.

**CONCLUSION**

- We used a novel data linkage to describe a unique and previously unstudied population of HIV+ LT candidates on the US waitlist.
- The most commonly used ART class changed over time from pharmacoenhancers to integrase inhibitors.
- African Americans were more likely to be prescribed ART regimens containing pharmacoenhancers, which can interact with post-LT immunosuppression.

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