



Identification of Risk Predictors for Antiretroviral Therapy Non-Adherence using Pharmacy Claims

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Using HIV specialized services was found to be an important predictor of adherence to antiretroviral therapy.

BACKGROUND

- Non-adherence to antiretroviral (ARV) therapy may lead to emergence of drug resistance and treatment failure. HIV specialized pharmacies have staff with advanced disease state education, high levels of cultural competency, and HIV stigma awareness. This training is coupled with face to face proactive patient service programs designed to promote adherence to all medications for HIV and comorbid condition treatments and retention in care.

OBJECTIVE

- To identify factors focused on patient demographics and medication use profiles that are predictive of patient antiretroviral non-adherence among HIV-infected adolescents using pharmacy claims and predictive modeling techniques.

METHODS

- The study sample identified patients with pharmacy claims evidence of being on approved antiretroviral guideline regimens from 2013-2015.
- Medication adherence was measured in proportion of days covered (PDC) for a 1-year period from their first fill; patients were considered non-adherent if an individual's PDC was less than 0.90. Modeled variables included demographics (e.g., age, gender), year of index ARV fills, patient insurance plan type, and 90 binomial indicator variables representing each of the 90 therapeutic classes. These variables were then fitted into multiple predictive models including logistic regression, decision tree, and ensemble models using SAS® Enterprise Miner™.
- Variables were flagged as important variables to predict non-adherence if the variables were shown to have significant association with non-adherence from the logistic regression model or had variable relative importance value greater than 0.1 from the decision tree model.

RESULTS

- History of using analgesics, antidiabetics, antifungals, antihypertensives and not using antihyperlipdemics, vaccines, androgens-anabolic, and nasal agents were significant predictors of ARV non-adherence.
- Being younger (age<50) and without commercial insurance coverage also increased the risk of nonadherence.
- Not using HIV specialized services is the most important predictor of ARV non-adherence.

Figure 1. Antiretroviral User Population Selection

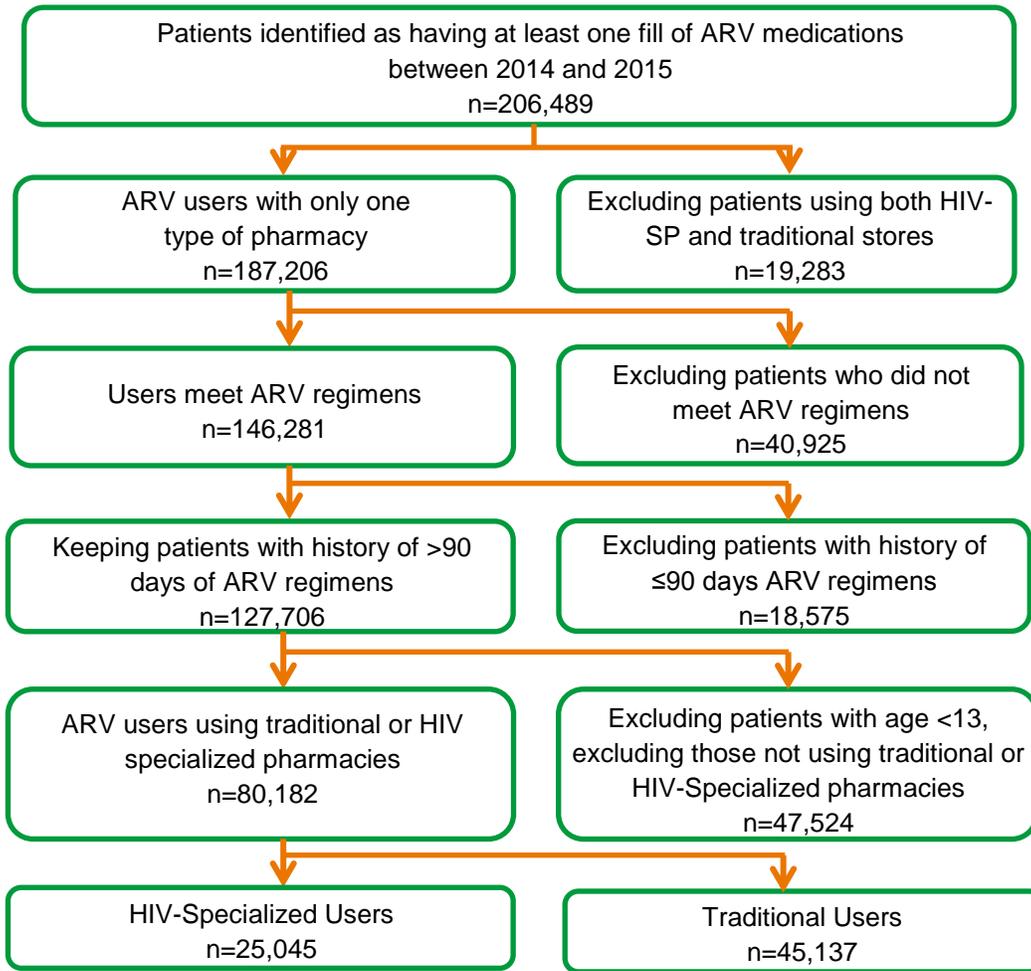


Figure 2. Adjusted Effects of Baseline Factors Associated with ARV Non-adherence Using Logistic Regression

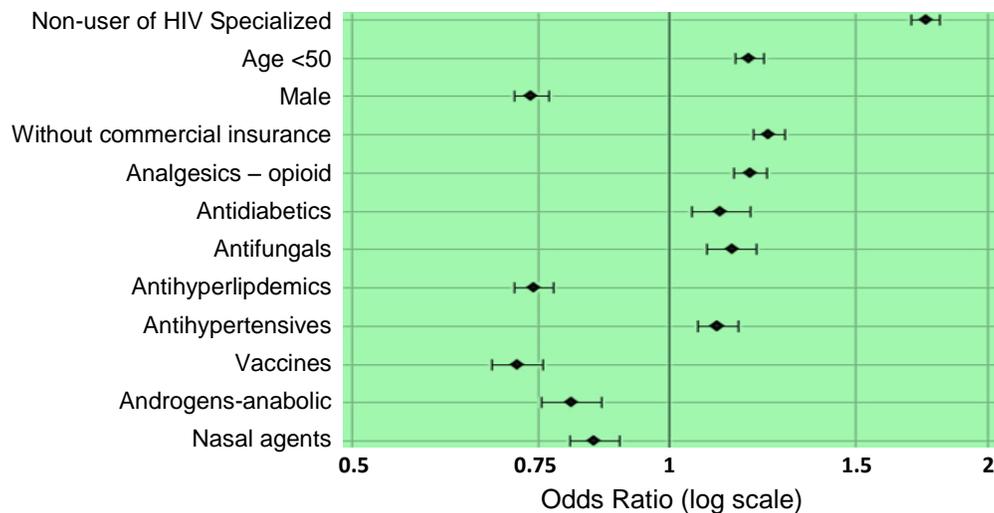


Figure 3. Illustration of Decision Tree and Splitting Rules

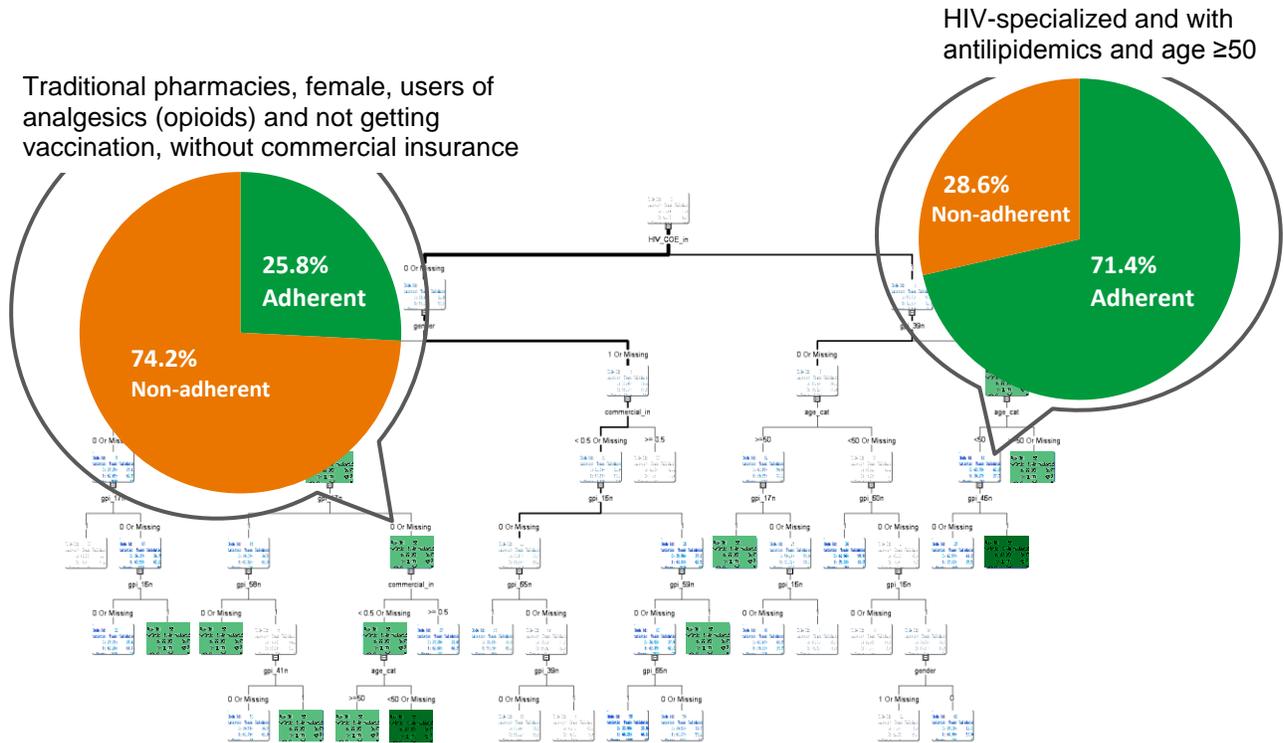
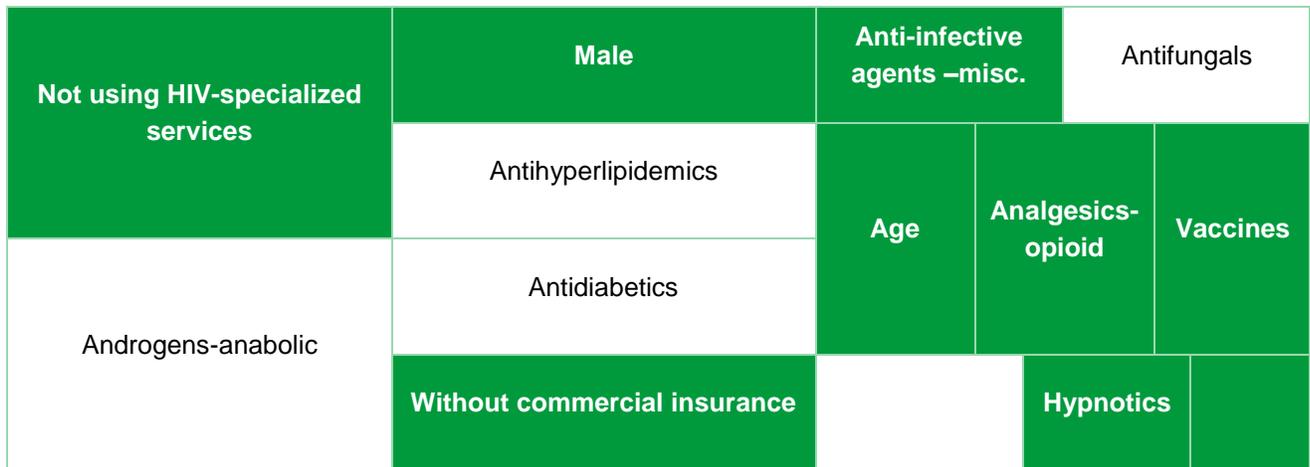


Figure 4. Variable Importance in Non-adherence Risk Prediction



*Importance of the predictors is reflected by of their area sizes. Variables with areas shaded in blue contributed directly to the tree splitting rules while those shaded in white contributed to the splitting in roles as surrogates.

CONCLUSION

- By understanding risk predictors for non-adherence, pharmacists at HIV specialized pharmacies will be able to customize support based upon individualized needs and to proactively support patients to prevent adherence declines.

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Contributing Authors:

John Hou, PhD; Heather Kirkham, PhD, MPH; Glen Pietrandoni, R.Ph., AAHIVP; Ambrose Delpino, PharmD, AAHIVP
Walgreens, Deerfield, IL

For more information on this presentation, please contact: research@walgreens.com.

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