Adjustments to Antiretroviral Therapy Regimens in Co-infected Human Immunodeficiency Virus and Hepatitis C Virus Patients

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BACKGROUND

- The number of hepatitis C virus (HCV) infected patients receiving treatment with direct acting antivirals (DAA) is increasing.[1]
- Previous studies have established that in patients with human immunodeficiency virus (HIV) co-infection, the same HCV treatment regimens are equally efficacious.[2,3]
- Patients with HIV co-infection may require an adjustment in their antiretroviral therapy (ART) to prevent drug interactions with DAA agents ART.[4]
- Common interactions between HCV DAAs and HIV ART and recommended adjustments have been established, however there is a gap in knowledge regarding the frequency and impact of these adjustments in a real world setting.[5]

OBJECTIVE

To describe a real world cohort of HIV/HCV co-infected patients in an outpatient infectious diseases clinic and quantify the frequency and impact of ART adjustments required prior to DAA initiation.

METHODS

- **Design:**
  - Single center, retrospective cohort analysis
  - Vanderbilt University Medical Center Infectious Diseases Clinic
- **Inclusion Criteria:**
  - Patients with HIV/HCV co-infection
  - Patients who were prescribed and initiated DAA treatment from September 2015 to September 2017
- **Statistical analysis**:
  - Frequency distributions were used to describe baseline characteristics, DAA treatments utilized, and ART details
- **Primary Outcome:**
  - The number of days from prescriber decision to treat (referred to as benefits investigation (BI)) to DAA treatment initiation between patients requiring an adjustment in ART and those who did not
- **Secondary Outcomes:**
  - Frequency HIV ART adjusted for DAA initiation
  - Description of ART regimens requiring adjustment
  - Description of DAA regimens initiated

RESULTS

n=129	No ART Adjustment *n*	ART Adjustment *n*	All *n*
Age (mean)	50	53	51
Genotype			
1a *n* (%)	68	19	87 (67%)
1b *n* (%)	12	7	19 (15%)
2 *n* (%)	3	2	5 (4%)
3 *n* (%)	11	3	14 (11%)
Other	3	1	4 (3%)
Race			
White	55	14	69 (54%)
Black	38	16	54 (42%)
Other	4	2	6 (4%)
Antiretroviral Regimen (Before Adjustment)			
Integrase Inhibitor-Based *n* (%)	77	3	80 (62%)
Protease Inhibitor-Based *n* (%)	14	22	36 (28%
Non-Nucleoside Inhibitor-Based *n* (%)	6	7	13 (10%)

Table 2: ART Regimens Prior to DAA Initiation

ART Regimens Requiring Adjustment	*n*
TDF/FTC + DRVr	13
TDF/FTC + ATVr	6
EFV/TDF/FTC	6
EVGc/TDF/FTC	2
ABC/3TC + ATVr	1
ABC/3TC + ATV	1
ABC/3TC + DRVr	1
TDF+ ATVr	1
NVP + TDF	1

TDF: tenofovir disoproxil fumarate; FTC: emtricitabine; DRVr: darunavir/ritonavir; ATVr: atazanvir/ritonavir; EFV: efavirenz; EVGc: elvitegravir/cobicistat; ABC: abacavir; 3TC: lamivudine; NVP: nevirapine

Figure 1: Number of Patients in which ART Adjusted

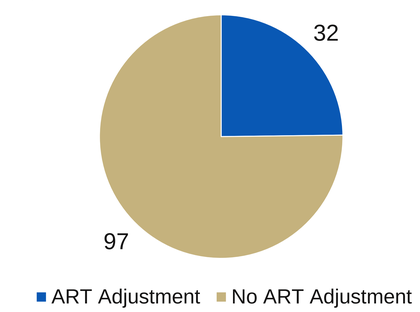
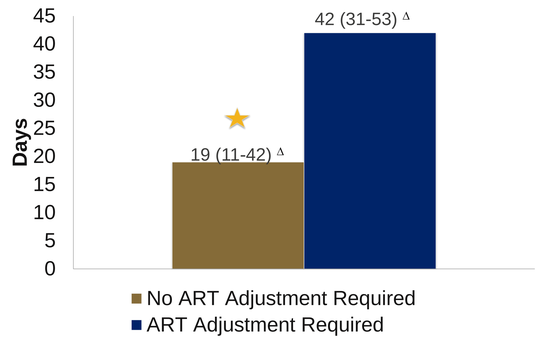
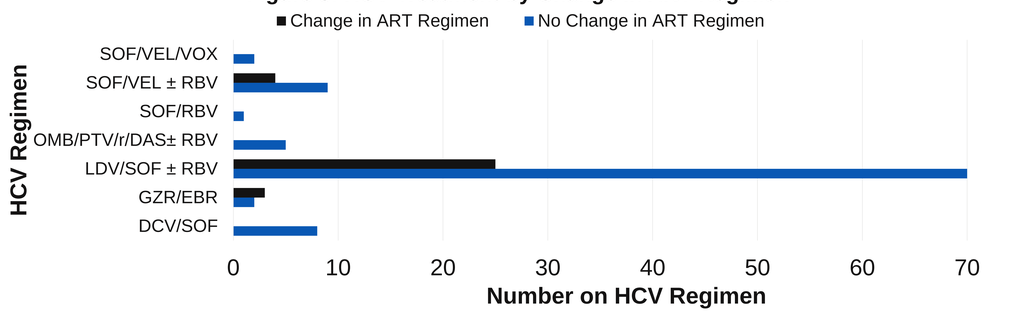


Figure 2: Time to DAA Initiation by ART Adjustment



ΔRepresented as median (IQR)
* Denotes statistical significance (p<0.0001)

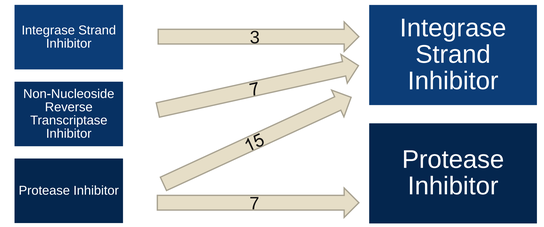
Figure 3: HCV Treatment by Change in ART Regimen



SOF: sofosbuvir; VEL: velpatasvir; VOX: voxilaprevir; RBV: ribavirin; OMB: ombitasvir; PTV: paritaprevir; r: ritonavir; DAS: dasabuvir; LDV: ledipasvir; GZR: grazoprevir; EBV: elbasvir; DCV: daclatasvir

RESULTS CONTINUED

Figure 4: ART Regimen Adjustment by Type



DISCUSSION

- Patients requiring ART adjustment were most commonly on a TDF/FTC + boosted protease inhibitor.
- All therapeutic adjustments were made prior to initiating an HCV regimen to mitigate the risk of renal dysfunction with TDF.
- Patients on regimens that include a protease inhibitor are more likely to have an adjustment in ART and thus a delay in therapy.
- Patients who required an adjustment in ART therapy had a statistically significant longer time between the decision to start therapy by the provider and initiating therapy.

CONCLUSION

- Time to DAA initiation was more than twice as long in patients requiring an adjustment in ART.
- Patients with co-infection of HIV and HCV may have complex pharmacotherapy considerations that can be mitigated by collaborative practice between a clinical pharmacist and an ID physician.
- Further study of drug-drug interactions between ART and DAA is needed to determine the necessity of adjusting ART treatment.
- New ART and DAA regimens may impact the need for ART adjustment in the future.

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