Real-World Comparison of HIV-ASSIST with Expert Opinion in Selecting Antiretroviral Therapy for Complex Patients

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BACKGROUND

HIV-ASSIST is an online, clinical decision support tool that helps HIV clinicians select antiretroviral (ARV) regimens for patients with HIV by incorporating resistance mutations and patient characteristics[1]. Concordance between HIV-ASSIST recommendations and expert opinion has been reported to be as high as 89% in treatment-experienced patients

OBJECTIVE

The objective of this study was to evaluate the concordance between HIV-ASSIST and consensus HIV expert opinion for heavily treatment-experienced patients seen in a Ryan White funded HIV clinic

METHODS

14 patients were identified through a routine HIV drug resistance teaching conference at UC San Diego. Consensus on best ARV regimen among 5 HIV experts was achieved via a two-round modified Delphi methodology. Consensus regimens were compared to the top 5 regimens recommended by HIV-ASSIST. HIV-ASSIST regimens were characterized as being **high**, **moderate** or low-risk for subsequent virologic failure based on expert opinion.

Table 1: Summary Characteristics of Patients

Patient Characteristic	Total (N=14)
Age, median (IQR)	58 (51-62)
Male sex, n (%)	13 (93%)
Substance use disorder, n (%)	5 (36%)
Depression, n (%)	5 (36%)
Requesting simplification, n (%)	3 (21%)
Years since dx, median (range)	23 (4-30)
VL<50, n (%)	9 (64%)
CD4 <=200, n (%)	5 (36%)
History of using entry inhibitor, n (%)	9 (64%)
Resistance documented	
NRTI, n (%)	14 (100%)
NNRTI, n (%)	10 (71%)
PI, n (%)	10 (71%)
INSTI, n (%)	7 (50%)
Number of resistant classes, mean (range)	3 (2-5)

Table 2: Discordant Cases - Consensus vs Top 5 HIV-ASSIST Regimens

| Patient Case and Significant PMH	VL/ CD4	ARV resistance	Consensus Regimen	HIV-Assist Regimen
54 yo male, COPD on fluticasone/salmeterol inhaler	VL: <20 CD4: 327	NRTI, NNRTI	TAF/FTC/BIC+DOR	1. DTG/RPV 2. DTG+DOR 3. CAB/RPV 4. DTG+DOR/TDF/3TC 5. DTG+RPV/TDF/FTC
61 yo male, HTN, meth use, GERD on PPI	VL: <20 CD4: 590	NRTI, NNRTI, PI	TAF/FTC/BIC	1. DTG+IBA+DOR 2. DTG+FOS+IBA 3. DTG+IBA+MVC 4. DTG+FOS+MVC 5. DTG+FOS+IBA+DOR
63 yo male, DM, meth use, depression; requests daily regimen (misses pm doses of meds). R5 tropic.	VL: 157 CD4: 567	NRTI, NNRTI, PI, 1st generation INSTI	MVC+DOR+ TAF/FTC/DRV/c +DTG	1. MVC+FOS+ BIC/TAF/FTC 2. BIC/TAF/FTC 3. DTG+FOS+MVC 4. DTG+FOS+MVC+DRV/r+ TAF/FTC 5. FOS+MVC+DRV/r+BIC/TAF/FTC
58 yo male, cirrhosis, DVT on warfarin, liver transplant candidate. Plan to start tacrolimus and prednisone.	VL: <20 CD4: 138	NRTI, NNRTI, PI, T-20	TAF/FTC/BIC +IBA or TAF/FTC/BIC +FOS	1. IBA+DRV+EVG/c/TAF/FTC 2. DTG+FOS+IBA+DRV/r 3. FOS+IBA+DRV+EVG/c/TAF/FTC 4. DTG+FOS+IBA 5. FOS+DRV+EVG/c/TAF/FTC
62 yo male, B cell ALL on chemo (hyper CVAD) and HLD.	VL: <20 CD4: 144	NRTI, NNRTI, PI, MVC, T-20	TAF/FTC/BIC+ DOR	1. DTG+IBA 2. DTG+IBA+TAF/FTC 3. DTG+IBA+TAF/FTC 4. IBA+BIC/TAF/FTC 5. IBA+BIC/TAF/FTC
60 yo male, HLD, meth use. Poor adherence to ARVs; requests daily regimen.	VL: 245 CD4: 407	NRTI, NNRTI, PI	TAF/FTC/BIC+ DRV/c	1. DTG+IBA+TDF/FTC 2. DTG+TDF/FTC 3. DTG+IBA+TDF/FTC 4. DTG+TAF/FTC 5. DTG+IBA+TAF/FTC
57 yo male lipodystrophy, chronic GI complaints. on cholestyramine and PPI. No IBA.	VL: <20 CD4: 90	NRTI, NNRTI, PI, INSTI, MVC	FOS+TAF/FTC+ DOR+DTG BID	1. DTG+FOS+TAF/FTC 2. FOS+BIC/TAF/FTC 3. DTG+TAF/FTC 4. BIC/TAF/FTC 5. DTG+FOS
67 yo male CAD, GERD. On statin & PPI. R5 tropic	VL: 49 CD4: 300	NRTI, NNRT, PI	TAF/FTC/BIC+ DOR	1. DTG+IBA+DOR 2. DTG+IBA+MVC 3. DTG+MVC+DOR 4. DTG+FOS+IBA 5. DTG+FOS+DOR
68 yo male CKD stage 2, HLD, AFib, MVR. R5 tropic.	VL: <20 CD4: 400	NRTI, PI. Phenotype with NNTRI resistance	TAF/FTC/BIC+ DOR	1. DTG/RPV 2. DTG+DOR 3. DTG+DOR/TDF/3TC 4. DTG+RPV/TDF/FTC 5. DTG+DOR+TDF/FTC

Table 2 Continued

Patient Case and Significant PMH	VL/ CD4	ARV resistance	Consensus Regimen	HIV-Assist Regimen
56 yo male, asthma, HLD. On statin. No T-20	VL: <20 CD4: 444	NRTI, NNRTI, PI, INSTI.	FOS+TAF/ FTC+DTG BID	1. DOR/TDF/3TC 2. DTG+DOR/TDF/3TC 3. DTG+DOR+TDF/FTC 4. DOR+TAF/FTC 5. IBA+BIC/TAF/FTC

Results

- The patients analyzed were medically and psychosocially complex with a high rate of multi-class resistance (**Table 1**).
- Expert-recommended regimens were concordant with one of the top five HIV-ASSIST recommended regimens for 4/14 (**28%**) cases (**Table 2**).
- 20/70 (29%) of the top five HIV-ASSIST regimens were classified as high risk for virologic failure and 12/70 (17%) regimens were classified as moderate risk for virologic failure (**Figure 1**).

Figure 1: Classification of HIV-ASSIST regimens by risk for virologic failure.
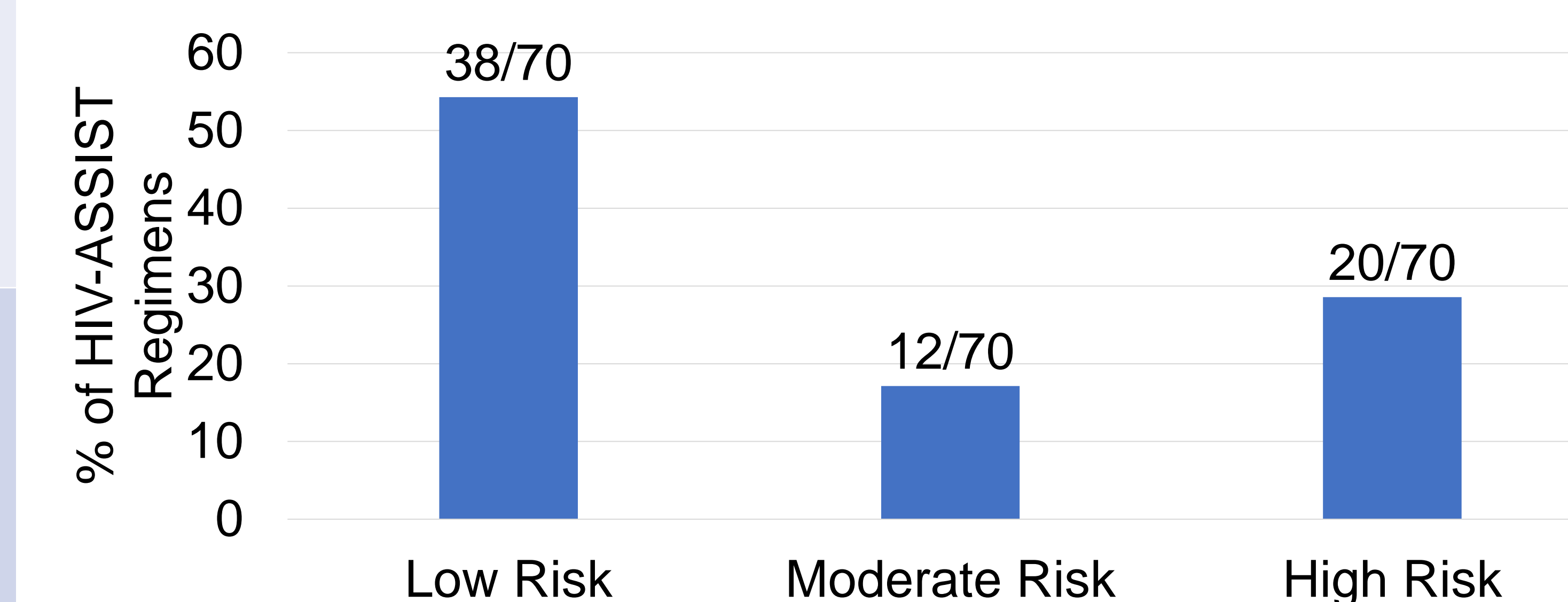
Conclusions

Compared to prior reports, we found **lower concordance** between ARV regimens recommended by HIV experts vs those recommended by the HIV-ASSIST tool in patients with HIV drug-resistance and/or complex comorbidities and potential DDIs. Moreover, several HIV-ASSIST regimens were considered **moderate or high risk for virologic failure**. We recommend caution in using the HIV-ASSIST tool for **complex patients with significant drug resistance**.

References:
1. Maddali MV, Mehtani NJ, Converse C, et al. Development and Validation of HIV-ASSIST, an Online, Educational, Clinical Decision Support Tool to Guide Patient-Centered ARV Regimen Selection. JAIDS Journal of Acquired Immune Deficiency Syndromes 2019; 82:188–194.