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Optimisation of antiretroviral therapy through a spending review: a population-based approach

Marta Zordan (1), Virginia Barchi (1), Andrea Di Lorenzo (1), Davide Checchi (1), Mirko Compagno (1), Elisabetta Teti (1), Loredana Sarmati (2), Anna Maria Geretti (2)

1 Clinical Infectious Diseases, Tor Vergata Hospital, Rome, Italy 2 Clinical Infectious Diseases, Department of System Medicine, Tor Vergata University, Rome, Italy

Introduction

- The 95-95-95 target is the goal UNAIDS aims to achieve by 2025. The objective requires a review of the cost-effectiveness of our treatment decisions to ensure the availability of the resources needed to reach it for all individuals living with HIV, including those who may require more complex and costly management.
- Within this vision of cost-effectiveness, we reviewed all adults living with HIV receiving antiretroviral therapy (ART) in our Centre, to identify opportunities for treatment changes that consider both patient benefit and healthcare spending.

Study Design

- We are reviewing all patients in care at Policlinico Tor Vergata (Rome) receiving the most expensive ART regimens. We identified three antiretroviral regimens with a higher monthly cost:
  - DRV/c/TAF/FTC € 656
  - DTG + TAF/FTC € 831
  - DRV/c/TAF/FTC + DTG € 1148

Methods

- Each case was discussed collectively, considering the patient's psychosocial profile and the clinical and treatment history.
- We considered patient's comorbidities, hepatitis B antibody status, medical and pharmacological history, any previous virological treatment failure and known HIV-1 resistance mutations.
- Where required to complement the treatment history in virologically suppressed individuals, cellular HIV-1 DNA was sequenced to identify archived drug resistance.

Table 1.

Characteristics of the population under analysis.

Total number		112
Sex, n (%)	Men	70 (62.5)
	Women	37 (33)
	MtF transexual	5 (4.5)
Age, median years (IQR)		51 years (42-58)
Transmission group, n (%)	Heterosexual	55 (49.1)
	MSM	21 (18,7%)
	IDU	26 (23,2%)
	Other/unknown	10 (8.9%)
Duration of HIV diagnosis, median years (IQR)		13 (8-18.5)

Table 1. (continue)

Classification CDC	A or B1	16 (14.2%)
	B ore B2	18 (16,1%)
	A3	4 (3,6%)
	B3	17 (15,1%)
	C2	3 (3%)
	C3	43 (38,4%)
	Missing data	11 (9,8%)
Nadir CD4 count, median cells/mm^3 [IQR]		98 [27-314]
Zenith viral load, median copies/mL [IQR]		205000 [88062-702250]
AIDS diagnosis, n (%)		59 (52,6%)
HBV status, n (%)	HBsAg positive	3 (2,7%)
	Anti-HBc positive	45 (40,2%)
	Vaccinated	31 (27,6%)
	Non-immune	33 (29,5%)

Results

We identified 112 individuals for review, representing 14% of the total clinic population (Table1). A large subset had experienced advanced HIV infection, including 43 (38.4%) presenting with CDC stage C3 at diagnosis and 59 (52.6%) in total with a documented AIDS diagnosis.

Table 2. ART regimens.

			Cost
Current regimen, n (%)	patient/mo		
	DRV/c/TAF/FTC	66 (59%)	655,5
	DTG + TAF/FTC	45 (40,1%)	831,1
	DRV/c/TAF/F + DTG	1 (0,9%)	1148,1
Duration of current regimen, median months [IQR]			13 [8-18.5]
Current viral load (copies/mL), n (%)	<50		60 (53,57%)
	50-200		5 (4,57%)
	>200		0 (0%)
Current CD4 counts, median celle/mm^3 [IQR]			563 [339-830]
Self-reported adherence to ART	Good		97 (86,6%)
	Discrete		6 (5,4%)
	Bad		9 (8%)
Viral load history, n (%)	>6 month without history of detectability		62 (55,3%)
	>6 month with history of detectability		26 (23,3%)
	<6 month with history of detectability		12 (10,7%)
	Never reached virosuppression		12 (10,7%)
Number of regimen cART (excluding current cART)	0		56 (50%)
	1		18 (16,1%)
	=/> 2		17 (16%)
	Missing data		21 (18,7%)

For 56 (50%) patients, the current ART regimen was the first-line initiated. Most individuals (62, 55.3%) had maintained virological suppression for more than 6 months, with 26 (23.3%) experiencing viral suppression with detectable episodes, 12 (10.7%) for less than six months, and the same number never achieving the goal. (Table2)

To date, among 95 cases already reviewed, 64 (67.3%) have already undergone a regimen change. A change is planned for further 17 (15,2%) patients, whereas in 14 cases (15.9%) a change was not possible, usually due to the presence of drug resistance. Outcome of review is summarized in Table 3.

The executed and planned therapeutic changes yield monthly cost savings of €14,402. Patient's satisfaction was high and refusal to change regimen was rare (n=1/95, 1.1%).

Table 3. Outcome of review

Total number		112
Reviewed to date, n (%)		95 (84.8)
Review planned, n (%)		17 (15.2)
Outcomes for reviewed individuals		
Regimen changed, n (%)		64 (67.4)
New regimen started (cost per month), n (%)	BIC/TAF/FTC (€599)	38 (59.3)
	DTG/3TC (€498)	11 (17.2)
	DOR/TDF/FTC (€431)	8 (12.5)
	DTG/RPV (€549)	3 (4,7)
	CAB+RPV LA (€469)	3 (4,7)
	DOR+TAF/FTC (€534)	1 (1.6)
Regimen change not possible, n (%)		14 (14.7)
Reasons for not changing the regimen	Investigations needed	5 (35,8%)
	Drug resistance	6 (42,9%)
	Drug-drug interactions	1 (7,1%)
	Toxicity	1 (7,1%)
	Patient's refusal	1 (7,1%)

Conclusion

- A patient-centred approach that considers the efficacy, safety and cost of ART proactively can benefit the entire clinical population by ensuring an optimized patient's treatment journey and improved use of resources.
- Patients understand and are happy to engage with the review process.