Despite Increasing Use of INIs To Treat HIV Infection, Resistance To This Class Remains Stable

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BACKGROUND

Since the beginning of HIV treatment, changes in the use of antiretroviral (ARV) drugs have often led to changes in HIV resistance mutation patterns. The integrase inhibitor (INI) class has benefited from many developments: first raltegravir (RAL) and elvitegravir (EVG), followed by dolutegravir (DTG), cabotegravir (CAB) and bictegravir (BIC).

The aim of this study was to evaluate changes in resistance levels and profiles to INIs in relation to changes in the use of different INIs over 16 years in people living with HIV (PLWHIV) treated with ARVs and in virological failure.

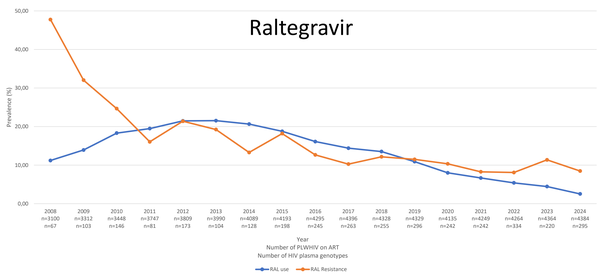
METHODS

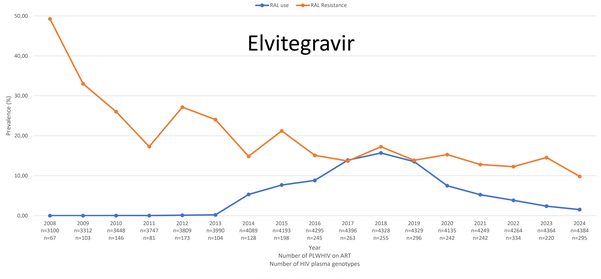
We analyzed the use of the different INIs in ARV-treated PLWHIV in an academic center (Pitié Salpêtrière Hospital, Paris, France, 2008-2024) and the HIV INI resistance profiles in RNA for PLWHIV in virological failure (2 HIV viral loads > 50 copies/mL or 1 VL > 200 copies/mL) (2008-2024; analyzed using the latest ANRS-MIE algorithm v33).

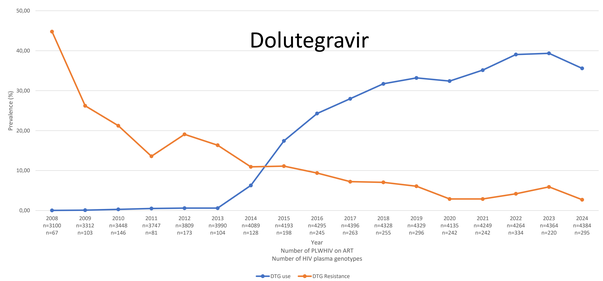
Large increases in use within the INI class do not increase resistance over time in ARV-treated PLWHIV with virological failure in a center with HIV viral load and resistance genotype follow-up.

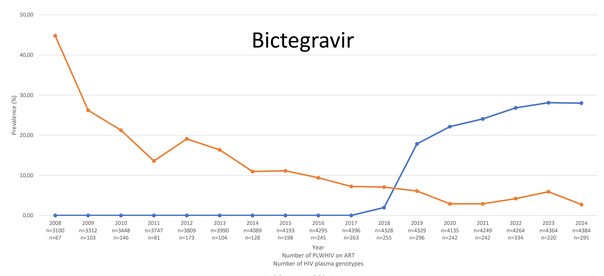
RESULTS

- **A large increase in the use of INIs over time,**
- **A high level of resistance at the beginning of use,**
- **In 2024, higher resistance for first-generation INIs compared to second-generation INIs.**









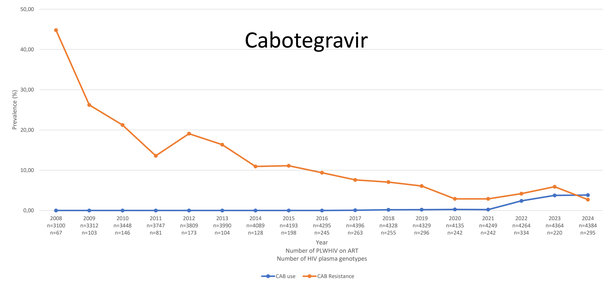


Figure 1: Use and resistance of the integrase inhibitor during the study period (2008-2023)
The use and resistance are expressed as percentages. The denominator (total number of PLWHIV on ARV treatment and total number of HIV integrase genotypes) for each year is reported under the year of use.

	Use	Resistance
ARV	↗ 3 100 to 4 384 PLWHIV	
INIs	↗ 3.3% to 71.2%	
RAL	↗ 3.2% to 21.5% in 2013 ↘ 2.5%	↘ 47.8 % to 8.5%
EVG	↗ 0.03% to 15.7% in 2019 ↘ 1.5%	↘ 49.2% to 9.8%
DTG	↗ 0.03% to 39.3% in 2023 ↘ 35.6%	↘ 44.8% to 2.7%
BIC	↗ 2.0% to 28.0%	↘ 44.8% to 2.7%
CAB	↗ 0.07% to 3.8%	↘ 44.8% to 2.7%

Table 1: Summary of trends in the use and resistance of INIs

CONCLUSIONS

The very high level of INI resistance at the start of INI use was probably due to the use of RAL in combination with other ARVs that were not fully sensitive during the first 3 years.

The INIs used today have a higher genetic barrier that limits the emergence of resistance mutations.

ADDITIONAL KEY INFORMATION

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