Resistance in Primary HIV Infection in France 2014–2025: Impact on First-line Therapy and PrEP

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BACKGROUND

Transmitted HIV drug resistance (HIV-DR) may jeopardize the benefit of antiretroviral therapy (ART) and prevention (PrEP).

Drug resistance testing is recommended at diagnosis of HIV in France and provides valuable insight for clinical decision-making and population-level monitoring.

METHODS

We assessed the prevalence of HIV-DR virus and predicted susceptibility to antiretroviral drugs (ART) among 3825 primary infected patients diagnosed between 2014 and 2025 within 6 months from the primary infection.

Resistance to NRTIs, NNRTIs, PIs, INSTIs and capsid inhibitor was determined using the ANRS v35 algorithm.

HIV-1 subtype was determined from the RT sequence using Blast tool and Los Alamos Database.

Dramatically increase of non-B subtype from 37% in 2014 to 73% in 2025

The sensitivity rate for first-line treatments remains above 97%

For PrEP, resistance to TDF/FTC, cabotegravir and lenacapavir was < 1%

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sample size		358	389	399	424	366	351	248	273	236	291	277	182
Sex (%)	Man	92	90	89	91	88	88	90	85	89	89	90	92
	Woman	8	10	11	9	12	12	10	15	11	11	10	8
Age (median)		37	37	35	35	35	35	32	33	35	34	33	34
CD4 (cells/mm^3) (median)		488	448	484	458	431	465	460	439	439	453	471	455
Viral Load (log_{10})		5,6	5,5	5,5	5,7	5,7	5,6	5,7	5,6	5,6	5,7	5,8	5,9
Country of Birth (%)	France	77	72	69	68	63	63	72	70	65	66	70	71
	Africa	8	8	10	10	13	15	12	13	11	15	13	13
	Other/Unknown	15	20	21	22	24	22	16	17	24	19	17	16
Region of disagnosis (%)	Paris Area	30	30	27	30	27	23	27	31	21	21	24	18
	Other Region	70	70	73	70	73	77	73	69	79	79	76	82

Table 1: Patients characteristics

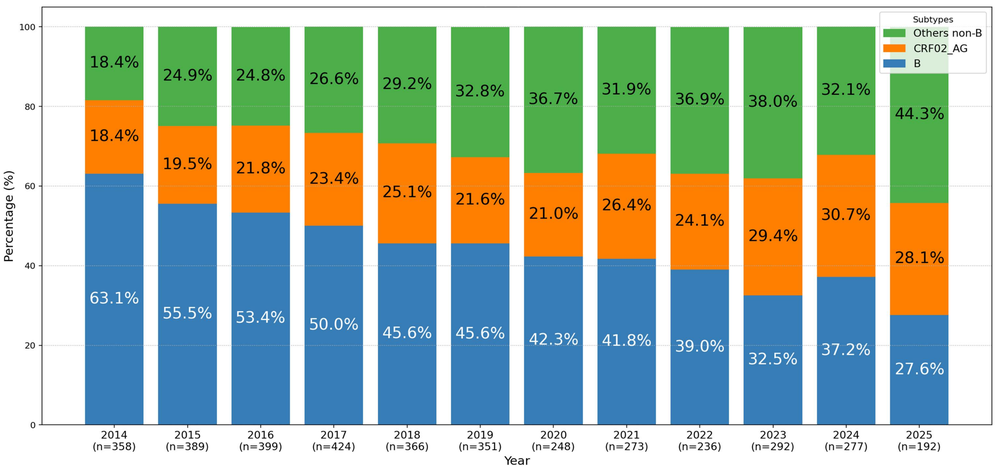


Figure 1: Subtype evolution according to year of inclusion

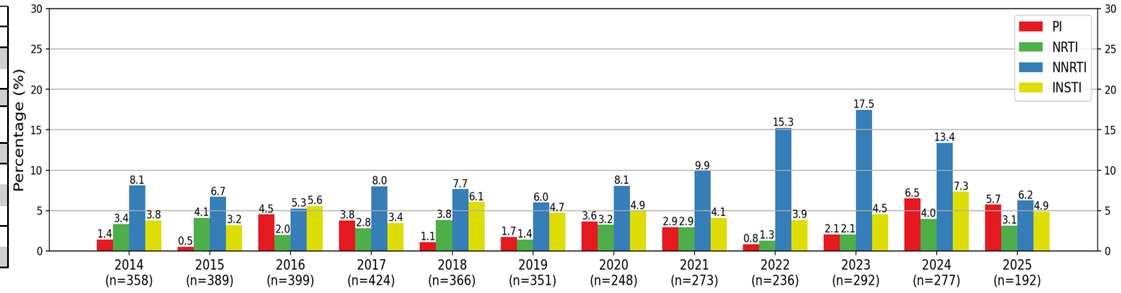


Figure 2: Prevalence of HIV-DR virus according to ART class and year of inclusion

- There was no trend over time in the proportion of viruses resistant to drug classes except for NNRTIs.
- In this case, resistance remained stable at 7% from 2014 to 2020, then increased to 17.5% in 2023.

This increase is attributed to the high proportion of non-B subtypes, due to polymorphic mutations that confer resistance using the ANRS v35 algorithm, and to the presence of transmission clusters with a E138A RT mutation.

According to the 2024 French and EACS recommendations for ART initiation, the proportion of fully active triple ART between 2014 and 2024 was around 99% except in 2020 and 2024 where a frequency of 3TC/FTC resistant virus of 2-3% was described.

For dual ART, sensitivity ranged from 99.2% to 97.4% for DTG/3TC, from 93.5% to 89.4% for DTG/RPV and CAB/RPV.

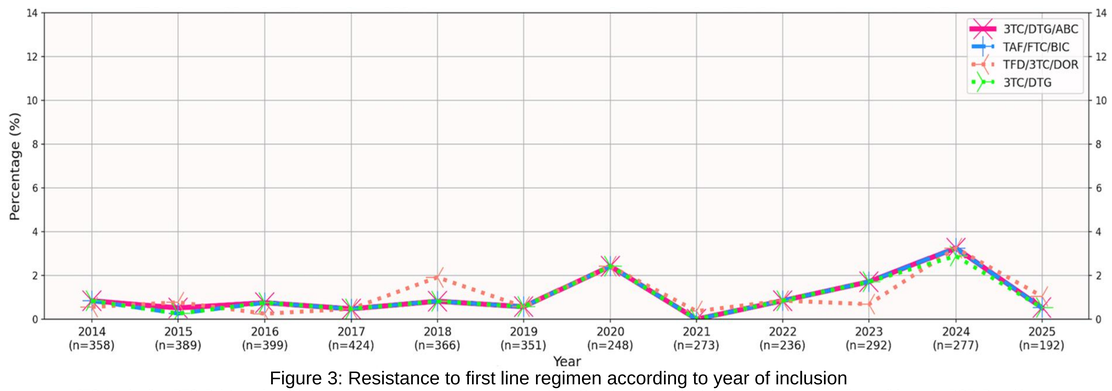


Figure 3: Resistance to first line regimen according to year of inclusion

3TC: Lamivudine, DTG: Dolutegravir, ABC: Abacavir, TAF: Tenofovir alafenamide fumarate, FTC: Emtricitabine, BIC: Bictegravir, TDF: Tenofovir disoproxil fumarate, DOR: Doravirine

When considering ARV used for PrEP, resistance to TDF/FTC (to 3TC/FTC alone between 1- 3%), cabotegravir and lenacapavir was < 1%.

CONCLUSIONS

National surveillance of transmitted HIV resistance combined with viral subtype characterization remains essential to inform future treatment and prevention recommendations.

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