

NRTI Mutations:None

NNRTI Mutations:None

RT Other Mutations:A508G 100% cov=430 • E514D 100% cov=466 • S519N 100% cov=516 • Q520L 100% cov=516 • Q524K 100% cov=525 • K527G 100% cov=525 • E529D 100% cov=571 • V531VI 1: 88%, V: 12% • A534S 100% cov=637 • A554S 99% cov=631 • K558KR K: 85%, R: 15% • V559I 100% cov=472

Nucleoside Reverse Transcriptase Inhibitors		Non-nucleoside Reverse Transcriptase Inhibitors	
abacavir (ABC)	Susceptible	doravirine (DOR)	Susceptible
zidovudine (AZT)	Susceptible	efavirenz (EFV)	Susceptible
stavudine (D4T)	Susceptible	etravirine (ETR)	Susceptible
didanosine (DDI)	Susceptible	nevirapine (NVP)	Susceptible
emtricitabine (FTC)	Susceptible	rilpivirine (RPV)	Susceptible
lamivudine (3TC)	Susceptible		
tenofovir (TDF)	Susceptible		

No drug resistance mutations were found for NRTI.

No drug resistance mutations were found for NNRTI.

INSTI Major Mutations:E138K 99% cov=1,406 • G140A 100% cov=1,431 • Q148K 99% cov=1,552

INSTI Accessory Mutations:S230R 91% cov=3,068

IN Other Mutations:S17N 100% cov=304 • V31I 99% cov=542 • K46Q 100% cov=878 • I60M 100% cov=1,427 • I72V 95% cov=1,671 • V79I 100% cov=2,050 • T112V 99% cov=2,154 • I113V 100% cov=2,154 • T124A 100% cov=1,393 • T125A 98% cov=1,392 • V126F 100% cov=1,392 • G134N 83% cov=1,229 • I135V_ V: 83%, _: 16% • K136Q 83% cov=1,229 • V165I 99% cov=1,779 • D167E 95% cov=1,922 • K173KR R: 68%, K: 32% • V201I 100% cov=3,166 • I208M 100% cov=2,905 • T218S 100% cov=2,829 • L234I 83% cov=2,876 • S283G 100% cov=4,678

Integrase Strand Transfer Inhibitors	
bictegravir (BIC)	High-Level Resistance
cabotegravir (CAB)	High-Level Resistance
dolutegravir (DTG)	High-Level Resistance
elvitegravir (EVG)	High-Level Resistance
raltegravir (RAL)	High-Level Resistance

IN comments

Major

- **E138K/A/T** are common nonpolymorphic accessory resistance mutations selected in patients receiving RAL, EVG, CAB, and DTG. Alone they do not reduce INSTI susceptibility. However, they contribute to reduced susceptibility in combination with other mutations particularly those at position 148.
- **G140S/A/C** are non-polymorphic mutations that usually occur with Q148 mutations. Alone, they have minimal effects on INSTI susceptibility. However, in combination with Q148 mutations they are associated with high-level resistance to RAL and EVG and intermediate reductions in DTG and BIC susceptibility.
- **Q148H/K/R** are nonpolymorphic mutations reported in persons receiving RAL, EVG, CAB, and DTG. They nearly always occur in combination with G140A/S or E138K. In this setting they are associated with near complete resistance to RAL and EVG, high-levels of reduction in CAB susceptibility, and low-to-intermediate reductions in DTG and BIC susceptibility.

Accessory

- **S230R** is a nonpolymorphic INSTI-selected mutation that primarily occurs in combination with other INSTI-resistance mutations. By itself, it appears to have minimal effect on susceptibility to available INSTIs.
- There is evidence for high-level **DTG** resistance. If **DTG** is used, it should be administered twice daily.

Drug resistance mutation scores of INSTI:

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Rule	BIC ⚡	CAB ⚡	DTG ⚡	EVG ⚡	RAL ⚡
<u>E138K</u>	10	10	10	15	15
<u>E138K + G140A</u>	10	15	10	15	15
<u>E138K + Q148K</u>	10	20	10	0	0
<u>G140A</u>	10	10	10	30	30
<u>G140A + Q148K</u>	10	20	10	0	0
<u>Q148K</u>	30	50	30	60	60
<u>S230R</u>	10	20	20	20	20
Total	90	145	100	140	140