

NRTI Mutations:	None
NNRTI Mutations:	None
RT Other Mutations:	S519N <small>100% HIV-1_H2</small> • Q524K <small>98% HIV-1_H2</small> • K527G <small>98% HIV-1_H2</small> • E529D <small>100% HIV-1_H2</small> • A534S <small>100% HIV-1_H2</small> • A554S <small>100% HIV-1_H2</small> • V559I <small>98% HIV-1_H2</small>
<div><div>Nucleoside Reverse Transcriptase Inhibitors</div><div><div>abacavir (ABC)</div><div>Susceptible</div></div><div><div>zidovudine (AZT)</div><div>Susceptible</div></div><div><div>stavudine (D4T)</div><div>Susceptible</div></div><div><div>didanosine (DDI)</div><div>Susceptible</div></div><div><div>emtricitabine (FTC)</div><div>Susceptible</div></div><div><div>lamivudine (3TC)</div><div>Susceptible</div></div><div><div>tenofovir (TDF)</div><div>Susceptible</div></div></div> <div><div>Non-nucleoside Reverse Transcriptase Inhibitors</div><div><div>doravirine (DOR)</div><div>Susceptible</div></div><div><div>efavirenz (EFV)</div><div>Susceptible</div></div><div><div>etravirine (ETR)</div><div>Susceptible</div></div><div><div>nevirapine (NVP)</div><div>Susceptible</div></div><div><div>rilpivirine (RPV)</div><div>Susceptible</div></div></div>	

No drug resistance mutations were found for NRTI.

No drug resistance mutations were found for NNRTI.

INSTI Major Mutations:	E138K <small>97% HIV-1_H2</small> • G140A <small>98% HIV-1_H2</small> • Q148K <small>98% HIV-1_H2</small>
INSTI Accessory Mutations:	S230R <small>97% HIV-1_H2</small>
IN Other Mutations:	K14R <small>99% HIV-1_H2</small> • V31I <small>100% HIV-1_H2</small> • I60M <small>100% HIV-1_H2</small> • Q62Q <small>97% HIV-1_H2</small> • I72V <small>98% HIV-1_H2</small> • V79I <small>100% HIV-1_H2</small> • I84L <small>100% HIV-1_H2</small> • T112M <small>100% HIV-1_H2</small> • I113V <small>100% HIV-1_H2</small> • T124A <small>98% HIV-1_H2</small> • T125A <small>100% HIV-1_H2</small> • V126F <small>100% HIV-1_H2</small> • G134N <small>99% HIV-1_H2</small> • K136Q <small>100% HIV-1_H2</small> • V150VA <small>97% HIV-1_H2</small> • R187K <small>97% HIV-1_H2</small> • V201I <small>100% HIV-1_H2</small> • K211KR <small>97% HIV-1_H2</small> • T218S <small>100% HIV-1_H2</small> • L234I <small>100% HIV-1_H2</small> • S283D <small>100% HIV-1_H2</small>

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:

Download CSV

Rule	BIC	CAB	DTG	EVG	RAL
E138K	10	10	10	15	15
E138K + G140A	10	15	10	15	15
E138K + Q148K	10	20	10	0	0
G140A	10	10	10	30	30
G140A + Q148K	10	20	10	0	0
Q148K	30	30	30	60	60
S230R	10	20	20	20	20
Total	90	145	100	140	140