

INSTI Major Mutations: [G140S](#) • [Q148H](#)

INSTI Accessory Mutations: [G163R](#)

IN Other Mutations: [S17N](#) • [R20K](#) • [L28I](#) • [S39C](#) • [G70R](#) • [T124A](#) • [T125A](#) • [V201I](#) • [I208L](#)

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

IN comments

Major

- [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

- [G163R](#)[K](#) are nonpolymorphic in all subtypes except subtype F. They are accessory resistance mutations as they usually occur in combination with other INSTI-resistance mutations particularly [N155H](#).
- There is evidence for intermediate **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 ÷
G140S	10	10	10	30	30
G140S + Q148H	10	20	10	0	0
Q148H	25	30	25	60	60
Q148H + G163R	5	20	5	0	0
G163R	0	0	0	15	15
Total	50	80	50	105	105