**Supplementary Table 1a: Prevalence of major IAS-USA NRTI resistance mutations by HIV subtype**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NRTI****mutation** | **Overall****N=787** | **Subtype-A N=311** | **Subtype-C N=244** | **Subtype-D N=194** | **Global** **p value** | **Subtype-C vs Subtype-A** | **Subtype-C vs Subtype-D** | **Subtype-D vs Subtype-A** |
| **Odds Ratio (95% CI)** | **p value** | **Odds Ratio (95% CI)** | **p value** | **Odds Ratio (95% CI)** | **p value** |
| **All global tests for difference across subtypes at this amino acid position p>0.05** |
| NRTI | 748 (95%) | 298 (96%) | 232 (95%) | 181 (93%) | 0.18 | 1.66 (0.48, 5.81) | 0.43 | 3.00 (0.82, 11.03) | 0.10 | 0.55 (0.25, 1.25) | 0.16 |
| TAMS | 587 (75%) | 240 (77%) | 173 (71%) | 144 (74%) | 0.10 | 1.49 (0.80, 2.78) | 0.21 | 2.06 (1.05, 4.02) | 0.04 | 0.72 (0.45, 1.16) | 0.18 |
| TAM-1 | 395 (50%) | 154 (50%) | 115 (47%) | 107 (55%) | 0.53 |  | 0.41 |  | 0.98 |  | 0.32 |
| M41L | 325 (41%) | 128 (41%) | 90 (37%) | 90 (46%) | 0.47 |  | 0.28 |  | 0.71 |  | 0.38 |
| D67N | 284 (36%) | 114 (37%) | 89 (36%) | 66 (34%) | 0.30 |  | 0.32 |  | 0.12 |  | 0.40 |
| T69\* | 4 (1%) | 3 (1%) | 0 (0%) | 1 (1%) | 0.81 |  | 0.56 |  | NE |  | NE |
| K70 any | 263 (33%) | 111 (36%) | 65 (27%) | 71 (37%) | 0.94 |  | 0.74 |  | 0.74 |  | 0.98 |
| K70E\* | 18 (2%) | 7 (2%) | 0 (0%) | 8 (4%) | 0.20 |  | NE |  | 0.53 |  | 0.14 |
| K70R | 247 (31%) | 105 (34%) | 65 (27%) | 63 (32%) | 0.83 |  | 0.70 |  | 0.95 |  | 0.57 |
| L74V | 35 (4%) | 3 (1%) | 24 (10%) | 7 (4%) | 0.07 | 5.49 (1.21, 24.87) | 0.03 | 1.43 (0.39, 5.22) | 0.59 | 3.84 (0.95, 15.56) | 0.06 |
| Y115F | 22 (3%) | 8 (3%) | 9 (4%) | 4 (2%) | 0.35 |  | 0.20 |  | 0.16 |  | 0.74 |
| M184 any | 729 (93%) | 297 (95%) | 217 (89%) | 180 (93%) | 0.29 |  | 0.81 |  | 0.37 |  | 0.12 |
| M184I | 19 (2%) | 7 (2%) | 7 (3%) | 5 (3%) | 0.77 |  | 0.75 |  | 0.49 |  | 0.59 |
| M184V | 716 (91%) | 293 (94%) | 212 (87%) | 176 (91%) | 0.17 | 1.02 (0.41, 2.55) | 0.97 | 1.93 (0.73, 5.08) | 0.18 | 0.53 (0.26, 1.07) | 0.07 |
| T215 any | 468 (59%) | 191 (61%) | 128 (52%) | 123 (63%) | NE |  | 0.97 |  | 0.94 |  | 0.96 |
| T215F | 189 (24%) | 89 (29%) | 46 (19%) | 44 (23%) | 0.20 | 0.78 (0.46, 1.32) | 0.36 | 1.14 (0.64, 2.02) | 0.66 | 0.69 (0.45, 1.05) | 0.08 |
| T215Y | 300 (38%) | 109 (35%) | 87 (36%) | 88 (45%) | 0.09 | 1.21 (0.74, 1.96) | 0.45 | 0.78 (0.46, 1.31) | 0.34 | 1.55 (1.05, 2.30) | 0.03 |
| K219 any | 232 (29%) | 105 (34%) | 63 (26%) | 55 (28%) | 0.33 |  | 0.89 |  | 0.34 |  | 0.15 |
| K219E | 102 (13%) | 44 (14%) | 25 (10%) | 29 (15%) | 0.99 |  | 0.97 |  | 0.96 |  | 0.91 |
| K219Q | 135 (17%) | 63 (20%) | 39 (16%) | 28 (14%) | 0.20 | 0.95 (0.54, 1.69) | 0.87 | 1.48 (0.78, 2.82) | 0.23 | 0.64 (0.39, 1.05) | 0.08 |
| **Any global test for difference across subtypes at this amino acid position p<0.05** |
| K65R | 67 (9%) | 28 (9%) | 30 (12%) | 8 (4%) | <0.001 | 4.66 (1.61, 13.45) | 0.004 | 13.60 (3.68, 50.30) | <0.001 | 0.34 (0.13, 0.90) | 0.03 |
| Q151M\* | 29 (4%) | 2 (1%) | 25 (10%) | 0 (0%) | 0.002 | 8.27 (1.52, 88.53) | 0.007 | 13.43 (1.90, NE) | 0.006 | 0.66 (NE, 8.48) | 0.52 |
| L210W | 226 (29%) | 102 (33%) | 47 (19%) | 64 (33%) | 0.02 | 0.46 (0.27, 0.80) | 0.005 | 0.47 (0.26, 0.85) | 0.01 | 0.98 (0.65, 1.48) | 0.92 |
| TAM-2 | 444 (56%) | 187 (60%) | 135 (55%) | 101 (52%) | 0.02 | 1.34 (0.81, 2.19) | 0.25 | 2.02 (1.19, 3.43) | 0.009 | 0.66 (0.45, 0.97) | 0.03 |

Adjusting for NRTI (stavudine, tenofovir, zidovudine, or other) at failure, other NRTI (stavudine and zidovudine) use prior to failure, years on ART, viral load, CD4, and clinical failure. Odds ratios shown for all pairwise comparisons where any pairwise comparison has p<0.1.Numbers in the overall column include recombinants, but these are excluded from models.

NE = Not estimable

\* Exact logistic regression used. Adjusting for NRTI (stavudine, tenofovir, or zidovudine) at failure, NRTI (stavudine and zidovudine) use prior to failure, years on ART <4, viral load<100,000, CD4<100, and clinical failure

**Supplementary Table 1b: Prevalence of major IAS-USA NNRTI resistance mutations by HIV subtype**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NNRTI mutation** | **Overall****N=787** | **Subtype-A N=311** | **Subtype-C N=244** | **Subtype-D N=194** | **Global p value** | **Subtype-C vs Subtype-A** | **Subtype-C vs Subtype-D** | **Subtype-D vs Subtype-A** |
| **Odds Ratio (95% CI)** | **p value** | **Odds Ratio (95% CI)** | **p value** | **Odds Ratio (95% CI)** | **p value** |
| **All global tests for difference across subtypes at this amino acid position p>0.05** |
| NNRTI | 766 (97%) | 301 (97%) | 239 (98%) | 188 (97%) | 0.94 |  | 0.72 |  | 0.84 |  | 0.88 |
| L100I\* | 9 (1%) | 3 (1%) | 2 (1%) | 3 (2%) | 0.89 |  | NE |  | NE |  | 0.69 |
| K103 any | 311 (40%) | 122 (39%) | 86 (35%) | 85 (44%) | 0.67 |  | 0.81 |  | 0.56 |  | 0.37 |
| K103N | 296 (38%) | 112 (36%) | 82 (34%) | 85 (44%) | 0.24 | 1.09 (0.73, 1.63) | 0.67 | 0.78 (0.51, 1.21) | 0.27 | 1.40 (0.94, 2.07) | 0.10 |
| K103S | 24 (3%) | 11 (4%) | 7 (3%) | 3 (2%) | 0.26 |  | 0.61 |  | 0.11 |  | 0.18 |
| Y188 any | 40 (5%) | 20 (6%) | 12 (5%) | 5 (3%) | 0.14 | 0.93 (0.40, 2.15) | 0.86 | 2.55 (0.81, 7.98) | 0.11 | 0.36 (0.13, 1.00) | 0.05 |
| Y188C\* | 2 (0%) | 0 (0%) | 1 (0%) | 1 (1%) | 0.66 |  | NE |  | NE |  | 0.46 |
| Y188H\* | 2 (0%) | 1 (0%) | 1 (0%) | 0 (0%) | NE |  | NE |  | NE |  | NE |
| Y188L | 38 (5%) | 20 (6%) | 11 (5%) | 4 (2%) | 0.09 | 0.87 (0.37, 2.03) | 0.74 | 2.98 (0.87, 10.26) | 0.08 | 0.29 (0.10, 0.87) | 0.03 |
| G190 any | 263 (33%) | 105 (34%) | 88 (36%) | 56 (29%) | 0.52 |  | 0.65 |  | 0.51 |  | 0.25 |
| G190A | 251 (32%) | 100 (32%) | 85 (35%) | 53 (27%) | 0.52 |  | 0.68 |  | 0.48 |  | 0.25 |
| G190S | 15 (2%) | 7 (2%) | 3 (1%) | 4 (2%) | 0.81 |  | 0.51 |  | 0.64 |  | 0.88 |
| M230L | 20 (3%) | 8 (3%) | 6 (2%) | 5 (3%) | 0.99 |  | 0.90 |  | 0.97 |  | 0.93 |
| **Any global test for difference across subtypes at this amino acid position p<0.05** |
| V106 any | 67 (9%) | 16 (5%) | 42 (17%) | 7 (4%) | <0.001 | 3.27 (1.72, 6.22) | <0.001 | 4.88 (2.08, 11.49) | <0.001 | 0.67 (0.27, 1.66) | 0.39 |
| V106A | 26 (3%) | 15 (5%) | 5 (2%) | 6 (3%) | 0.38 |  | 0.21 |  | 0.77 |  | 0.35 |
| V106M | 43 (5%) | 1 (0%) | 39 (16%) | 1 (1%) | <0.001 | 57.53 (7.43, 445.45) | <0.001 | 36.75 (4.74, 284.82) | <0.001 | 1.57 (0.10, 25.26) | 0.75 |
| E138 any | 100 (13%) | 37 (12%) | 45 (18%) | 14 (7%) | 0.002 | 1.76 (1.06, 2.90) | 0.03 | 3.08 (1.59, 5.94) | <0.001 | 0.57 (0.30, 1.09) | 0.09 |
| E138A | 50 (6%) | 17 (5%) | 26 (11%) | 6 (3%) | 0.003 | 2.42 (1.21, 4.87) | 0.01 | 4.40 (1.69, 11.43) | 0.002 | 0.55 (0.21, 1.43) | 0.22 |
| E138G | 12 (2%) | 4 (1%) | 6 (2%) | 2 (1%) | 0.59 |  | 0.44 |  | 0.36 |  | 0.78 |
| E138K\* | 1 (0%) | 0 (0%) | 1 (0%) | 0 (0%) | 0.25 |  | 0.34 |  | 0.49 |  | NE |
| E138Q | 36 (5%) | 16 (5%) | 12 (5%) | 5 (3%) | 0.29 |  | 0.97 |  | 0.17 |  | 0.13 |
| E138R\* | 1 (0%) | 0 (0%) | 0 (0%) | 1 (1%) | 0.52 |  | NE |  | NE |  | 0.40 |
| Y181 any | 311 (40%) | 102 (33%) | 128 (52%) | 65 (34%) | 0.004 | 1.85 (1.27, 2.70) | 0.001 | 1.72 (1.13, 2.62) | 0.01 | 1.07 (0.72, 1.60) | 0.73 |
| Y181C | 286 (36%) | 93 (30%) | 114 (47%) | 63 (32%) | 0.02 | 1.72 (1.18, 2.51) | 0.005 | 1.46 (0.96, 2.23) | 0.08 | 1.18 (0.79, 1.76) | 0.43 |
| Y181I | 10 (1%) | 5 (2%) | 4 (2%) | 1 (1%) | 0.61 |  | 0.89 |  | 0.38 |  | 0.32 |
| Y181V | 18 (2%) | 7 (2%) | 10 (4%) | 1 (1%) | 0.27 |  | 0.77 |  | 0.11 |  | 0.15 |
| V108I | 148 (19%) | 43 (14%) | 45 (18%) | 48 (25%) | 0.008 | 1.48 (0.91, 2.42) | 0.11 | 0.72 (0.44, 1.17) | 0.18 | 2.07 (1.31, 3.29) | 0.002 |
| H221Y | 161 (20%) | 64 (21%) | 66 (27%) | 24 (12%) | 0.01 | 1.25 (0.82, 1.92) | 0.30 | 2.28 (1.34, 3.90) | 0.002 | 0.55 (0.33, 0.92) | 0.02 |
| K101 any | 144 (18%) | 41 (13%) | 56 (23%) | 36 (19%) | 0.05 | 1.77 (1.10, 2.84) | 0.02 | 1.18 (0.72, 1.94) | 0.50 | 1.50 (0.91, 2.45) | 0.11 |
| K101E | 132 (17%) | 35 (11%) | 53 (22%) | 35 (18%) | 0.02 | 1.92 (1.17, 3.15) | 0.009 | 1.11 (0.67, 1.83) | 0.69 | 1.74 (1.04, 2.89) | 0.03 |
| K101P | 12 (2%) | 6 (2%) | 3 (1%) | 1 (1%) | 0.45 |  | 0.71 |  | 0.37 |  | 0.21 |
| P225H | 49 (6%) | 22 (7%) | 4 (2%) | 22 (11%) | 0.02 | 0.36 (0.11, 1.24) | 0.10 | 0.20 (0.06, 0.68) | 0.01 | 1.82 (0.91, 3.67) | 0.09 |

Adjusting for NNRTI at failure, NNRTIs taken prior to failure, years on ART, viral load, CD4, and clinical failure. Odds ratios shown for all pairwise comparisons where any pairwise comparison has p<0.1.Numbers in the overall column include recombinants, but these are excluded from models.

NE = Not estimable

\* Exact logistic regression used. Adjusting for NNRTI at failure, other NNRTIs taken prior to failure, years on ART <4, viral load<100,000, CD4<100, and clinical failure.

**Supplementary Table 2a: Prevalence of major IAS-USA NRTI resistance mutations by first line ART exposure**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **NRTI mutation** | **Overall N=787** | **NRTI at failure** | **Global p value** | **Tenofovir vs Stavudine** | **Zidovudine vs Stavudine** | **Zidovudine vs Tenofovir** |
| **Stavudine N=200** | **Tenofovir N=96** | **Zidovudine N=486** | **Odds Ratio (95% CI)** | **p value** | **Odds Ratio (95% CI)** | **p value** | **Odds Ratio (95% CI)** | **p value** |
| **All global tests for difference across NRTIs at this amino acid position p>0.05**  |
| NRTI | 748 (95%) | 186 (93%) | 93 (97%) | 464 (95%) | 0.69 |  | 0.46 |  | 0.42 |  | 0.83 |
| T69\* | 4 (1%) | 0 (0%) | 0 (0%) | 4 (1%) | NE |  | NE |  | NE |  | NE |
| Q151M\* | 29 (4%) | 21 (11%) | 0 (0%) | 8 (2%) | 0.58 |  | NE |  | 0.40 |  | NE |
| K219 any | 232 (29%) | 41 (21%) | 29 (30%) | 161 (33%) | 0.13 | 1.36 (0.62, 3.01) | 0.44 | 1.96 (1.09, 3.56) | 0.03 | 1.44 (0.77, 2.68) | 0.25 |
| K219E | 102 (13%) | 18 (9%) | 17 (18%) | 67 (14%) | 0.37 |  | 0.24 |  | 0.17 |  | 0.96 |
| K219Q | 135 (17%) | 23 (12%) | 12 (13%) | 99 (20%) | 0.12 | 0.78 (0.25, 2.42) | 0.67 | 1.89 (0.92, 3.90) | 0.09 | 2.42 (0.94, 6.21) | 0.07 |
| **Any global tests for difference across NRTIs at this amino acid position p<0.05**  |
| TAMS | 587 (75%) | 117 (59%) | 49 (51%) | 418 (86%) | <0.001 | 0.74 (0.33, 1.67) | 0.47 | 5.54 (2.89, 10.60) | <0.001 | 7.49 (4.03, 13.95) | <0.001 |
| TAM-1 | 395 (50%) | 73 (37%) | 23 (24%) | 297 (61%) | <0.001 | 0.32 (0.14, 0.76) | 0.009 | 3.09 (1.77, 5.38) | <0.001 | 9.60 (4.61, 19.97) | <0.001 |
| TAM-2 | 444 (56%) | 90 (45%) | 42 (44%) | 311 (64%) | <0.001 | 1.00 (0.48, 2.08) | 0.99 | 2.62 (1.52, 4.53) | <0.001 | 2.63 (1.48, 4.69) | 0.001 |
| M41L | 325 (41%) | 51 (26%) | 21 (22%) | 251 (52%) | <0.001 | 0.59 (0.25, 1.42) | 0.24 | 3.98 (2.22, 7.16) | <0.001 | 6.75 (3.22, 14.16) | <0.001 |
| K65R | 67 (9%) | 24 (12%) | 33 (34%) | 10 (2%) | <0.001 | 18.72 (5.21, 67.30) | <0.001 | 0.29 (0.09, 0.95) | 0.04 | 0.02 (0.01, 0.05) | <0.001 |
| D67N | 284 (36%) | 61 (31%) | 18 (19%) | 205 (42%) | <0.001 | 0.37 (0.15, 0.92) | 0.03 | 2.46 (1.38, 4.39) | 0.002 | 6.65 (3.01, 14.71) | <0.001 |
| K70 any | 263 (33%) | 46 (23%) | 31 (32%) | 186 (38%) | 0.004 | 0.94 (0.43, 2.07) | 0.88 | 2.10 (1.19, 3.71) | 0.01 | 2.23 (1.18, 4.23) | 0.01 |
| K70E\* | 18 (2%) | 1 (1%) | 15 (16%) | 2 (0%) | <0.001 | 7.97 (1.08, NE) | 0.03 | 0.10 (0.00, NE) | NE | 0.02 (0.00, 0.14) | <0.001 |
| K70R | 247 (31%) | 45 (23%) | 17 (18%) | 185 (38%) | <0.001 | 0.37 (0.15, 0.94) | 0.04 | 2.16 (1.22, 3.84) | 0.009 | 5.83 (2.55, 13.32) | <0.001 |
| Y115F | 22 (3%) | 5 (3%) | 11 (11%) | 3 (1%) | <0.001 | 6.70 (0.81, 55.16) | 0.08 | 0.37 (0.05, 2.90) | 0.35 | 0.06 (0.01, 0.28) | <0.001 |
| L210W | 226 (29%) | 33 (17%) | 7 (7%) | 185 (38%) | <0.001 | 0.08 (0.02, 0.34) | <0.001 | 1.94 (1.03, 3.68) | 0.04 | 23.00 (6.38, 82.93) | <0.001 |
| T215 any | 468 (59%) | 82 (41%) | 28 (29%) | 356 (73%) | <0.001 | 0.23 (0.10, 0.56) | 0.001 | 4.58 (2.58, 8.14) | <0.001 | 19.56 (9.17, 41.69) | <0.001 |
| T215F | 189 (24%) | 28 (14%) | 15 (16%) | 146 (30%) | <0.001 | 0.59 (0.21, 1.63) | 0.31 | 2.57 (1.35, 4.91) | 0.004 | 4.36 (1.82, 10.45) | <0.001 |
| T215Y | 300 (38%) | 57 (28%) | 14 (15%) | 227 (47%) | <0.001 | 0.16 (0.06, 0.47) | <0.001 | 2.35 (1.33, 4.17) | 0.003 | 14.56 (5.42, 39.07) | <0.001 |
| L74V | 35 (4%) | 19 (10%) | 3 (3%) | 10 (2%) | 0.001 | 0.67 (0.10, 4.60) | 0.69 | 0.26 (0.05, 1.27) | 0.10 | 0.39 (0.08, 1.95) | 0.25 |
| M184 any | 729 (93%) | 170 (85%) | 93 (97%) | 461 (95%) | 0.20 | 3.63 (0.78, 16.79) | 0.10 | 2.13 (0.77, 5.86) | 0.14 | 0.59 (0.16, 2.16) | 0.42 |
| M184I | 19 (2%) | 8 (4%) | 9 (9%) | 2 (0%) | 0.003 | 1.53 (0.27, 8.78) | 0.63 | 0.07 (0.01, 0.57) | 0.01 | 0.05 (0.01, 0.28) | <0.001 |
| M184V | 716 (91%) | 164 (82%) | 88 (92%) | 459 (94%) | 0.07 | 2.41 (0.71, 8.17) | 0.16 | 2.92 (1.16, 7.32) | 0.02 | 1.21 (0.44, 3.32) | 0.71 |

Adjusting for subtype, NRTI use prior to failure, years on ART, viral load, CD4, and clinical failure. Recombinants not included. Odds ratios shown for all pairwise comparisons where any pairwise comparison has p<0.1. 7 patients were taking none of, or more than one, of stavudine, tenofovir, and zidovudine at failure, these were included in the model with a separate category of NRTI at failure (results not shown; more likely to have the L74V,Y115F resistance mutations only). NE = Not estimable

\* Exact logistic regression used. Adjusted for subtype**,** NRTI use prior to failure, years on ART <4, viral load<100,000, CD4<100, and clinical failure

**Supplementary Table 2b: Prevalence of major IAS-USA resistance mutations to NNRTI by first line ART exposure**

|  |  |  |  |
| --- | --- | --- | --- |
| **NNRTI mutation** | **Overall N=787** | **NNRTI at failure** | **Nevirapine vs Efavirenz** |
| **Efavirenz N=193** | **Nevirapine N=594** | **P value** | **Odds Ratio (95% CI)** |
| **All global tests for difference across NNRTIs at this amino acid position >0.05** |
| NNRTI | 766 (97%) | 188 (97%) | 578 (97%) | 0.87 |  |
| K101 any | 144 (18%) | 38 (20%) | 106 (18%) | 0.41 |  |
| K101E | 132 (17%) | 32 (17%) | 100 (17%) | 0.17 |  |
| K101P | 12 (2%) | 6 (3%) | 6 (1%) | 0.13 |  |
| V106 any | 67 (9%) | 19 (10%) | 48 (8%) | 0.61 |  |
| V106A | 26 (3%) | 2 (1%) | 24 (4%) | 0.08 | 5.97 (0.79, 45.32) |
| V106M | 43 (5%) | 17 (9%) | 26 (4%) | 0.11 |  |
| V108I | 148 (19%) | 45 (23%) | 103 (17%) | 0.08 | 0.62 (0.37, 1.05) |
| E138 any | 100 (13%) | 22 (11%) | 78 (13%) | 0.64 |  |
| E138A | 50 (6%) | 15 (8%) | 35 (6%) | 0.17 |  |
| E138G | 12 (2%) | 1 (1%) | 11 (2%) | 0.71 |  |
| E138K\* | 1 (0%) | 0 (0%) | 1 (0%) | NE |  |
| E138Q | 36 (5%) | 6 (3%) | 30 (5%) | 0.10 | 5.51 (0.72, 42.05) |
| E138R\* | 1 (0%) | 0 (0%) | 1 (0%) | NE |  |
| H221Y | 161 (20%) | 31 (16%) | 130 (22%) | 0.08 | 1.78 (0.94, 3.36) |
| M230L | 20 (3%) | 7 (4%) | 13 (2%) | 0.39 |  |
| **Any global tests for difference across NNRTIs at this amino acid position <0.05** |
| K103 any | 311 (40%) | 128 (66%) | 183 (31%) | <0.001 | 0.14 (0.08, 0.22) |
| K103N | 296 (38%) | 124 (64%) | 172 (29%) | <0.001 | 0.15 (0.09, 0.24) |
| K103S | 24 (3%) | 6 (3%) | 18 (3%) | 0.26 |  |
| Y181 any | 311 (40%) | 40 (21%) | 271 (46%) | <0.001 | 7.37 (3.71, 14.62) |
| Y181C | 286 (36%) | 36 (19%) | 250 (42%) | <0.001 | 6.35 (3.20, 12.59) |
| Y181I | 10 (1%) | 1 (1%) | 9 (2%) | NE |  |
| Y181V | 18 (2%) | 3 (2%) | 15 (3%) | 0.99 |  |
| Y188 any | 40 (5%) | 21 (11%) | 19 (3%) | <0.001 | 0.20 (0.09, 0.44) |
| Y188C\* | 2 (0%) | 2 (1%) | 0 (0%) | 0.19 |  |
| Y188H\* | 2 (0%) | 0 (0%) | 2 (0%) | NE |  |
| Y188L | 38 (5%) | 19 (10%) | 19 (3%) | <0.001 | 0.22 (0.10, 0.51) |
| P225H | 49 (6%) | 39 (20%) | 10 (2%) | <0.001 | 0.03 (0.01, 0.08) |
| G190 any | 263 (33%) | 62 (32%) | 201 (34%) | 0.004 | 2.20 (1.29, 3.74) |
| G190A | 251 (32%) | 57 (30%) | 194 (33%) | 0.002 | 2.39 (1.38, 4.15) |
| G190S | 15 (2%) | 6 (3%) | 9 (2%) | 0.78 |  |
| L100I\* | 9 (1%) | 8 (4%) | 1 (0%) | 0.009 | 0.07 (NE, 0.65) |

Adjusting for subtype, NNRTI use prior to failure, years on ART, viral load, CD4, and clinical failure. Recombinants not included in models. Odds ratios shown for pairwise comparison with p<0.1.

NE = Not estimable\* Exact logistic regression used. Adjusted for subtype, NNRTI use prior to failure, years on ART <4, viral load<100,000, CD4<100 and clinical failure