

Supplementary Table 1: Correlates of viral load failure according to viral load threshold ^a

| | VL>1,000 vs ≤1,000 (Copies/mL) | VL>40 vs ≤40 (Copies/mL) | VL>1,000 vs VL>40 and ≤1,000 (Copies/mL) |
|---|-----------------------------------|-----------------------------|---|
| Age (Per 10 years older) | 0.68 (0.51, 0.89)* | 0.83 (0.67, 1.03) | 0.73 (0.54, 0.99) |
| Male vs. Female | 0.80 (0.49, 1.3) | 0.73 (0.49, 1.1) | 0.97 (0.54, 1.73) |
| WHO Stage 2 ^b | 0.56 (0.22, 1.46) | 1.07 (0.52, 2.21) | 0.43 (0.14, 1.31) |
| WHO Stage 3 ^b | 1.29 (0.63, 2.64) | 1.45 (0.79, 2.67) | 1.00 (0.41, 2.44) |
| WHO Stage 4 ^b | 0.52 (0.21, 1.28) | 0.87 (0.44, 1.74) | 0.46 (0.16, 1.34) |
| TB treatment on 2nd line | 2.64 (1.23, 5.70)* | 1.76 (0.83, 3.73) | 2.50 (0.94, 6.66) |
| Per Year Longer on 1st line | 1.13 (0.99, 1.30) | 1.04 (0.93, 1.16) | 1.18 (0.99, 1.41) |
| Per Year Longer on 2nd line | 0.83 (0.72, 0.95) | 0.87 (0.79, 0.96) | 0.88 (0.75, 1.03) |
| Complete One Month Adherence vs. Incomplete | 0.58 (0.17, 1.93) | 0.80 (0.26, 2.43) | 0.55 (0.12, 2.54) |
| Complete 7-day Adherence vs. Incomplete | 0.73 (0.28, 1.91) | 2.25 (0.90, 5.59) | 0.12 (0.01, 0.99) |
| Per 100 cell higher CD4 Count | 0.69 (0.59, 0.82)* | 0.80 (0.72, 0.89)* | 0.78 (0.65, 0.94)* |
| Per 1 unit higher CD4 Percent | 0.93 (0.89, 0.96) | 0.94 (0.91, 0.96) | 0.95 (0.91, 0.99) |
| TI on 1st line vs. No TI | 1.77 (0.88, 3.57) | 1.39 (0.74, 2.63) | 1.68 (0.71, 3.97) |
| TI on 2nd line vs No TI | 1.95 (0.57, 6.64) | 1.06 (0.34, 3.36) | 2.74 (0.49, 15.36) |
| TI between 1st and 2nd line vs No TI | 2.66 (0.92, 7.70) | 1.62 (0.57, 4.65) | 2.79 (0.68, 11.50) |
| Unique ARV regimen | 1.96 (0.65, 5.90) | 1.22 (0.44, 3.44) | 2.29 (0.53, 9.89) |
| >1 1st line regimens vs. 1 | 0.76 (0.45, 1.26) | 0.68 (0.45, 1.02) | 0.97 (0.53, 1.77) |
| >1 2nd line regimen vs. 1 | 0.97 (0.54, 1.72) | 0.92 (0.58, 1.47) | 1.03 (0.52, 2.03) |
| Pregnancy vs. None ^c | 2.54 (1.32, 4.89) | 1.28 (0.76, 2.17) | 3.03 (1.36, 6.77) |
| pMTCT vs. None | 0.16 (0.02, 1.30) | 1.06 (0.34, 3.31) | 0.08 (0.01, 0.77) |

Footnote: ^a Odds Ratio (95% Confidence Interval) from unadjusted logistic regression analyses;

^b WHO Stage 1 Reference; ^c Among those with any pregnancy. Abbreviations: ARV, antiretroviral; pMTCT, prevention of mother to child transmission TB, tuberculosis; TI, treatment interruption; VL, viral load; WHO, World Health Organization. * Remained significant (p<0.05) in a multivariable logistic regression model that included age, TB treatment on 2nd-line, time on 2nd line and CD4 count.

Supplementary Table 2: Characteristics of patients with and without sequences at VL \leq 1,000 copies/mL^a.

| | Total Cohort (n=109) | No Sequence (n=74) | Sequence Available (n=35) | p-value |
|---|-------------------------|-----------------------|------------------------------|---------|
| Continuous Variables: Median (range) | | | | |
| Age | 41 (22, 72) | 41 (29, 72) | 43 (22, 69) | 0.889 |
| Years on 1st line | 2.7 (0.6, 10.39) | 2.61 (0.6, 8.05) | 2.77 (0.84, 10.39) | 0.372 |
| Years on 2nd line | 1.82 (0.44, 7.52) | 2.21 (0.45, 7.52) | 1.59 (0.44, 7.45) | 0.379 |
| CD4 Count (cells/ μ L) | 278 (31, 1377) | 284 (39, 1377) | 241 (31, 740) | 0.179 |
| CD4 Percent: median | 16 (2, 36) | 16 (5, 36) | 14 (2, 28) | 0.158 |
| VL (Log10 Copies/mL) | 2.13 (1.61, 3) | 2.09 (1.61, 2.97) | 2.18 (1.62, 3) | 0.494 |
| Categorical Covariates: number, % | | | | |
| Male | 47, 43% | 29, 39% | 18, 51% | 0.301 |
| WHO Stage 1 | 12, 11% | 7, 10% | 5, 15% | 0.599 |
| WHO Stage 2 | 21, 20% | 14, 19% | 7, 21% | - |
| WHO Stage 3 | 50, 47% | 37, 51% | 13, 38% | - |
| WHO Stage 4 | 24, 22% | 15, 21% | 9, 26% | - |
| TB Treatment on 2nd Line | 7, 6% | 5, 7% | 2, 6% | 1.000 |
| Incomplete 1-month adherence | 3, 3% | 2, 3% | 1, 3% | 1.000 |
| Incomplete 7-day adherence | 1, 1% | 1, 1% | 0, 0% | 1.000 |
| TI on 1st Line | 11, 10% | 9, 12% | 2, 6% | 0.497 |
| TI on 2nd Line | 2, 2% | 2, 3% | 0, 0% | 1.000 |
| TI between 1st and 2nd Line | 3, 3% | 3, 4% | 0, 0% | 0.550 |
| Unique ARV Regimen | 3, 3% | 3, 4% | 0, 0% | 0.550 |
| >One First-Line Regimen | 38, 35% | 24, 32% | 14, 40% | 0.519 |
| >One 2 nd -Line Regimen | 25, 23% | 19, 26% | 6, 17% | 0.716 |
| Previous Pregnancies ^b | 18, 29% | 11, 24% | 7, 41% | 0.216 |

Footnote: ^a Measures presented as *median (range)* for continuous and *n, %* for categorical measures. P-values are from Wilcoxon Rank Sum for continuous measures and Fisher exact tests for categorical measures. ^b Pregnancy history unknown for 2/62. Abbreviations: ARV, antiretroviral; TB, tuberculosis; TI, treatment interruption; VL, viral load; WHO, World Health Organization.

Supplementary Table 3: Characteristics of patients with and without sequences at VL>1,000 copies/mL^a.

| | Total Cohort (n=82) | Sequence Available (n=70) | No Sequence (n=12) | p-value |
|--|------------------------|------------------------------|-----------------------|---------|
| Continuous Covariates: median (range) | | | | |
| Age | 38.84 (18.64, 69.84) | 39.07 (18.64, 63.8) | 38.22 (21, 69.84) | 0.995 |
| Years on 1st line | 3.30 (0.74, 8.67) | 3.34 (0.74, 8.67) | 3.05 (1.17, 7.02) | 0.475 |
| Years on 2nd line | 1.29 (0.46, 7.24) | 1.36 (0.46, 7.24) | 1.23 (0.59, 5.38) | 0.995 |
| CD4 Count (cells/ μ L) | 171.5 (8, 855) | 170.5 (8, 855) | 210 (69, 748) | 0.352 |
| CD4 Percent | 14 (1, 35) | 13.5 (1, 35) | 16 (6, 24) | 0.490 |
| VL (Log ₁₀ Copies/mL) | 3.73 (3.01, 6.53) | 3.95 (3.01, 6.53) | 3.13 (3.04, 3.76) | <0.001 |
| Categorical Covariates: number, % | | | | |
| Male | 36, 44% | 30, 43% | 6, 50% | 0.756 |
| WHO Stage 1 | 12, 15% | 11, 16% | 1, 8% | 0.223 |
| WHO Stage 2 | 9, 11% | 8, 11% | 1, 8% | - |
| WHO Stage 3 | 50, 61% | 44, 63% | 6, 50% | - |
| WHO Stage 4 | 11, 13% | 7, 10% | 4, 33% | - |
| TB Treatment on 2nd Line | 12, 15% | 10, 14% | 2, 17% | 1.000 |
| Incomplete 1-month adherence | 4, 5% | 4, 6% | 0, 0% | 1.000 |
| Incomplete 7-day adherence | 6, 7% | 5, 7% | 1, 8% | 0.626 |
| TI on 1st Line | 13, 16% | 11, 16% | 2, 17% | 1.000 |
| TI on 2nd Line | 4, 5% | 4, 6% | 0, 0% | 1.000 |
| TI between 1st and 2nd Line | 6, 7% | 5, 7% | 1, 8% | 1.000 |
| Unique ARV Regimen | 5, 6% | 5, 7% | 0, 0% | 1.000 |
| >One First-Line Regimen | 28, 34% | 22, 31% | 6, 50% | 0.343 |
| >One 2 nd -Line Regimen | 19, 23% | 16, 23% | 3, 25% | 0.362 |
| Previous Pregnancies | 26, 57% | 21, 52% | 5, 83% | 0.212 |

Footnote: ^a Measures presented as *median (range)* for continuous and *n, %* for categorical measures. P-values are from Wilcoxon Rank Sum for continuous measures and Fisher exact tests for categorical measures. Abbreviations: ARV, antiretroviral; TB, tuberculosis; TI, treatment interruption; VL, viral load; WHO, World Health Organization.

Supplementary Figure 1. Drug Resistance Mutations Prevalence upon 2nd-Line Failure According to Viral Load Threshold.

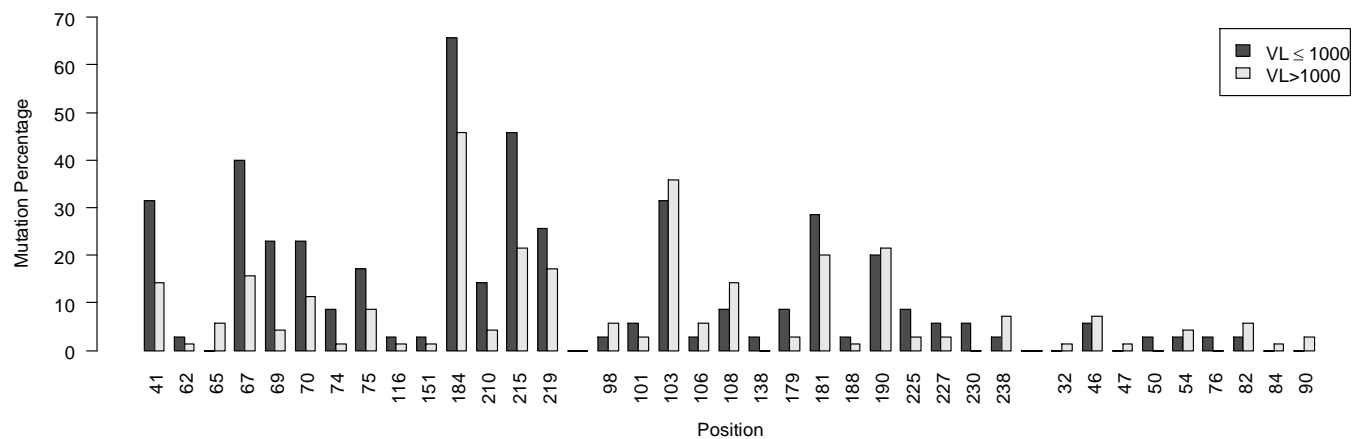


Figure Legend

Supplementary Figure 1: The figure presents frequencies of mutations (Y axis) at positions associated with resistance to NRTIs (left mutation block, X axis); NNRTIs (middle block) and PIs (right block), in patients with VL>1,000 copies/mL (gray) and VL≤1,000 copies/mL (black).