

Table S1. Complete Multivariate multistate Markov model results: CD4 improvement during antiretroviral therapy in British Columbia, Canada: 1996-2011

Covariate	Transition between CD4 strata		
	350-499 to ≥500	200-349 to 350-499	<200 to 200-349
Male (vs. Female)	0.89 (0.82,0.96)	1.00 (0.93,1.07)	0.90 (0.82,0.98)
Current standard of care at baseline (vs. no current standard)	1.30 (1.22,1.38)	1.34 (1.26,1.42)	1.28 (1.18,1.39)
Age at the first ART	1.00 (0.99,1.00)	0.99 (0.99,1.00)	1.00 (0.99,1.00)
Year (vs. 2008-2011) and baseline CD4≥200			
Year <2004	1.11 (1.01,1.22)	1.03 (0.94,1.13)	1.13 (0.97,1.30)
Year 2004-2007	0.98 (0.90,1.07)	0.90 (0.83,0.99)	1.26 (1.09,1.45)
Year (vs. 2008-2011) and baseline CD4<200			
Year <2004	1.36 (1.19,1.54)	1.17 (1.05,1.31)	1.07 (0.94,1.22)
Year 2004-2007	1.17 (1.05,1.31)	1.12 (1.01,1.23)	0.99 (0.88,1.11)
Baseline CD4 <200 (vs. ≥200) for Year<2004	0.79 (0.71,0.87)	0.59 (0.54,0.64)	0.55 (0.50,0.60)
Baseline CD4 <200 (vs. ≥200) for Year 2004-2007	0.77 (0.70,0.85)	0.64 (0.59,0.71)	0.46 (0.4,0.52)
Baseline CD4 <200 (vs. ≥200) for Year 2008-2011	0.65 (0.59,0.71)	0.52 (0.47,0.57)	0.58 (0.50,0.67)
Average AUC pVL	0.95 (0.88,1.03)	0.64 (0.60,0.69)	0.38 (0.35,0.41)
Current therapy (vs. 2nd generation)			
1st generation	0.79 (0.74,0.85)	0.73 (0.68,0.79)	0.78 (0.72,0.86)
Off therapy	0.32 (0.28,0.37)	0.36 (0.33,0.41)	0.46 (0.40,0.52)

Table S2. Complete Multivariate multistate Markov model results: CD4 deterioration during antiretroviral therapy in British Columbia, Canada: 1996-2011

Covariate	Transition between CD4 strata		
	≥500 to 350-499	350-499 to 200-349	200-349 to <200
Male (vs. Female)	0.76 (0.70,0.83)	0.83 (0.76,0.90)	0.79 (0.72,0.86)
Current standard of care at baseline (vs. no current standard)	1.17 (1.10,1.26)	1.11 (1.03,1.19)	1.00 (0.92,1.10)
Age at the first ART	1.01 (1.00,1.01)	1.00 (1.00,1.01)	1.00 (1.00,1.01)
Year (vs. 2008-2011) and baseline CD4≥200			
Year <2004	1.44 (1.29,1.60)	1.31 (1.18,1.46)	1.45 (1.24,1.69)
Year 2004-2007	1.26 (1.14,1.40)	1.16 (1.04,1.29)	1.47 (1.27,1.72)
Year (vs. 2008-2011) and baseline CD4<200			
Year <2004	1.72 (1.47,2.01)	1.31 (1.14,1.51)	1.46 (1.25,1.71)
Year 2004-2007	1.20 (1.05,1.37)	1.20 (1.06,1.36)	1.19 (1.02,1.38)
Baseline CD4 <200 (vs. ≥200) for Year<2004	1.56 (1.37,1.78)	1.05 (0.94,1.17)	1.32 (1.18,1.48)
Baseline CD4 <200 (vs. ≥200) for Year 2004-2007	1.24 (1.09,1.40)	1.09 (0.97,1.22)	1.05 (0.92,1.21)
Baseline CD4 <200 (vs. ≥200) for Year 2008-2011	1.30 (1.17,1.46)	1.05 (0.94,1.18)	1.31 (1.10,1.55)
Average AUC pVL	1.94 (1.79,2.10)	1.63 (1.51,1.74)	1.96 (1.83,2.11)
Current therapy (vs. 2nd generation)			
1st generation	0.80 (0.74,0.88)	0.85 (0.78,0.92)	0.74 (0.67,0.83)
Off therapy	1.36 (1.22,1.51)	1.22 (1.11,1.34)	0.92 (0.82,1.02)

Table S3. Complete Multivariate multistate Markov model results: transitions to mortality during antiretroviral therapy in British Columbia, Canada: 1996-2011

Covariate	Transition between CD4 strata			
	≥500 to Death	350-499 to Death	200-349 to Death	<200 to Death
Male (vs. Female)	0.45 (0.28,0.72)	1.46 (0.59,3.61)	0.73 (0.48,1.10)	1.07 (0.90,1.26)
Current standard of care at baseline (vs. no current standard)	0.86 (0.56,1.34)	1.08 (0.66,1.75)	1.01 (0.68,1.48)	1.02 (0.86,1.21)
Age at the first ART	1.06 (1.04,1.08)	1.05 (1.03,1.07)	1.07 (1.05,1.08)	1.05 (1.04,1.05)
Year (vs. 2008-2011) and baseline CD4≥200				
Year <2004	0.92 (0.49,1.72)	0.74 (0.36,1.51)	0.47 (0.27,0.82)	0.78 (0.57,1.05)
Year 2004-2007	0.95 (0.52,1.72)	1.30 (0.70,2.41)	0.62 (0.36,1.06)	0.92 (0.67,1.26)
Year (vs. 2008-2011) and baseline CD4<200				
Year <2004	1.23 (0.44,3.40)	0.55 (0.14,2.17)	0.59 (0.28,1.25)	1.29 (0.95,1.75)
Year 2004-2007	0.75 (0.28,2.05)	1.15 (0.43,3.12)	0.99 (0.53,1.86)	1.76 (1.33,2.34)
Baseline CD4 <200 (vs. ≥200) for Year<2004	1.53 (0.64,3.64)	0.45 (0.14,1.41)	0.75 (0.42,1.31)	1.00 (0.84,1.19)
Baseline CD4 <200 (vs. ≥200) for Year 2004-2007	0.91 (0.35,2.36)	0.53 (0.24,1.18)	0.95 (0.51,1.75)	1.15 (0.90,1.47)
Baseline CD4 <200 (vs. ≥200) for Year 2008-2011	1.14 (0.59,2.20)	0.60 (0.26,1.37)	0.59 (0.34,1.03)	0.60 (0.42,0.86)
Average AUC pVL	2.37 (1.47,3.81)	1.38 (0.77,2.48)	3.02 (2.25,4.07)	3.39 (3.06,3.75)
Current therapy (vs. 2nd generation)				
1st generation	1.07 (0.63,1.80)	1.66 (0.97,2.85)	1.43 (0.91,2.22)	0.83 (0.69,1.01)
Off therapy	1.86 (0.98,3.54)	1.63 (0.81,3.28)	0.65 (0.38,1.11)	1.16 (0.98,1.37)