Notation	Parameter	Value
	Age progression rate [a]	
α_1	Group 1 [18-27]	$1/9/365 \; day^{-1}$
α_2	Group 2 [27-33]	$1/6/365 \; day^{-1}$
α_3	Group 3 [33-40]	$1/7/365 \; day^{-1}$
α_4	Group 4 [40-80.5]	$1/40.5/365 \; day^{-1}$
	Stage progression rate [b]	
γ_1	Stage 1 (early HIV infection)	$1/0.5/365 \; day^{-1}$
γ_2	Stage 2 (CD4 > 500 cells/mm3)	$1/3.32/365 \; day^{-1}$
γ_3	Stage 3 (350 < CD4 $\leq$ 500 cells/mm3)	$1/2.7/365 \; day^{-1}$
γ_4	Stage 4 (200 < CD4 $\leq$ 350 cells/mm3)	$1/5.5/365 \; day^{-1}$
γ_5	Stage 5 (CD4 $\leq$ 200 cells/mm3)	$1/5.06/365 \; day^{-1}$
	Fraction of individuals transitioning from [b]	
π_1	Stage 1 to stage 2	0.76
π_2	Stage 1 to stage 3	0.19
π_3	Stage 1 to stage 4	0.05
π_4	Stage 1 to stage 5	0
a	Age assortativity factor	0.5
p	Proportion of individuals in low-risk group	0.8
m	Per lineage rate of migration to source compartment	$1/50/365 \; day^{-1}$
g	Rate of growth of source compartment	$1/3/365 \; day^{-1}$
s	Initial size of source compartment	1000
i	Incidence scaling factor for London MSM [c]	0.03
	Diagnosis rate	
d_{85}	Fixed rate prior to 1985	$1/10 \; year^{-1}$
μ_d	Maximum value of logistic function after 1985 [c]	$1/3 \; year^{-1}$
k_d	Steepness of logistic function after 1985 [c]	$1/7 \; year^{-1}$
	Treatment rate	
t_{95}	Fixed rate prior to 1995	0
μ_t	Maximum value of logistic function after 1995	1
k_t	Steepness of logistic function after 1995	0.5
e	Treatment effectiveness	0.95
	Transmission weight conferred to individuals in	
w_{s1}	Stage 1	1
w_{s2} to w_{s4}	Stages 2 to 4	0.1
w_{s5}	Stage 5	0.3
w_{a1} to w_{a4}	Age groups 1 to 4	1
w_{c1}	Care status 1 (undiagnosed)	1
w_{c2}	Care status 2 (diagnosed and untreated)	0.5
w_{c3}	Care status 3 (diagnosed and treated)	0.05
w_{r1}	Risk status 1 (low risk)	1
w_{r2}	Risk status 2 (high risk)	10

[a] From quartiles of age of MSM diagnosed in London available in UKDRDB

[b] From Cori et al. AIDS 2015

[c] Initial value later calibrated to retrieve observed number of diagnosed cases from surveillance data