

**Supplementary Material for:
The future of a partially effective HIV vaccine: assessing limitations at the
population level**

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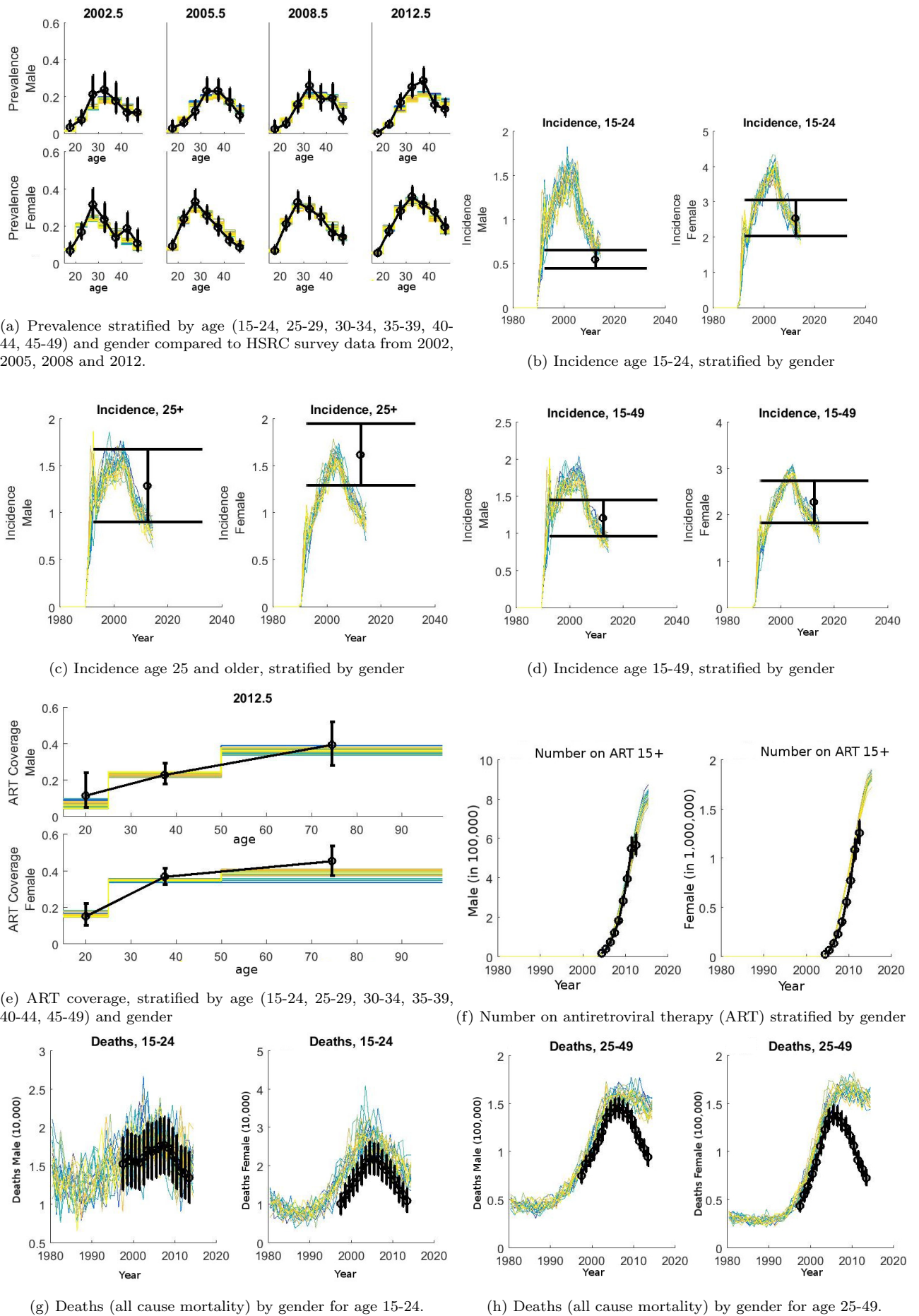


Fig. 1: Results of model calibration (trajectories in colors) to incidence, prevalence, ART coverage and all-cause mortality estimates [? ? ? ? ? ?] for South Africa (black).

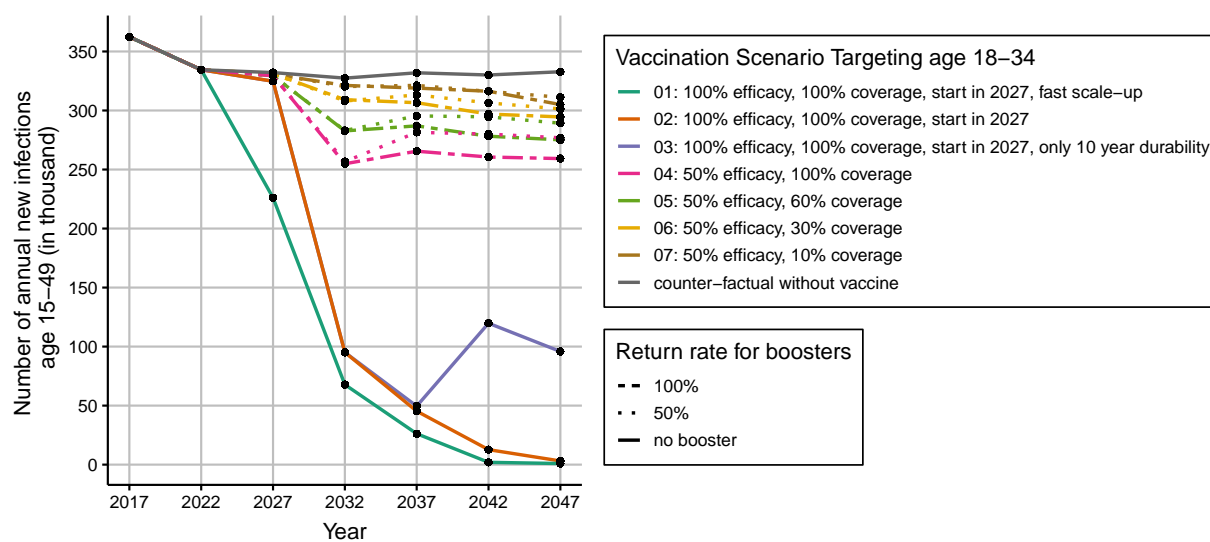


Fig. 2: Number of annual new infections (in thousand) under different vaccination scenarios. Note: the rise in annual new infection between 2037 and 2042 for scenario 3 stems from the fact that in 2037 vaccine efficacy is abruptly set to zero for those having received the vaccine ten year before during catch-up vaccination and that this cannot be compensated by cohort vaccination introduced in 2032. Similar conclusions hold for scenarios 4–7 where partial and waning efficacy for catch-up vaccines expires after five years, if booster vaccination is not maintained.

Parameter modified during model calibration	Parameter value (95% CI)
Base_Infectivity	0.000852 (0.00082-0.000885)
TRANSITORY_Formation_Rate_Constant	0.000911 (0.000872-0.000951)
INFORMAL_Formation_Rate_Constant	0.000744 (0.000703-0.000787)
MARITAL_Formation_Rate_Constant	6.1e-05 (5.9e-05-6.3e-05)
Male_To_Female_Relative_Infectivity_Multipliers	4.506283 (4.433338-4.574492)
Defaults_TRANSITORY_Condom_Usage_Probability_Mid	2006.163945 (2005.883396-2006.444411)
Defaults_TRANSITORY_Condom_Usage_Probability_Rate	2.428776 (2.297637-2.554955)
Defaults_TRANSITORY_Condom_Usage_Probability_Max	0.620835 (0.600207-0.641391)
Defaults_INFORMAL_Condom_Usage_Probability_Mid	1997.618152 (1996.72279-1998.576731)
Defaults_INFORMAL_Condom_Usage_Probability_Rate	0.779877 (0.663685-0.899579)
Defaults_INFORMAL_Condom_Usage_Probability_Max	0.345952 (0.328258-0.363927)
Defaults_MARITAL_Condom_Usage_Probability_Mid	1999.249259 (1998.546359-2000.029841)
Defaults_MARITAL_Condom_Usage_Probability_Rate	2.668629 (2.61344-2.721196)
Defaults_MARITAL_Condom_Usage_Probability_Max	0.242031 (0.231149-0.251669)
Initial_Distribution_Risk3	0.227233 (0.216862-0.237837)
Weighting_Matrix_RowMale_ColumnFemale_RiskAssortivity	0.352385 (0.312122-0.389567)
TRANSITORY_LOW_Prob_Extra_Relationship_Male	0.361095 (0.347754-0.375162)
TRANSITORY_MEDIUM_Prob_Extra_Relationship_Male	0.740209 (0.720398-0.759972)
TRANSITORY_LOW_Prob_Extra_Relationship_Female	0.162258 (0.151891-0.17433)
TRANSITORY_MEDIUM_Prob_Extra_Relationship_Female	0.445975 (0.419467-0.474465)
INFORMAL_LOW_Prob_Extra_Relationship_Male	0.422101 (0.399975-0.446544)
INFORMAL_LOW_Prob_Extra_Relationship_Female	0.134696 (0.120834-0.148558)
TRANSITORY_LOW_Max_Simultaneous_Relationships_Male	1.708727 (1.679571-1.737707)
TRANSITORY_LOW_Max_Simultaneous_Relationships_Female	1.211347 (1.157796-1.262011)
INFORMAL_LOW_Max_Simultaneous_Relationships_Male	1.211347 (1.161407-1.263891)
INFORMAL_LOW_Max_Simultaneous_Relationships_Female	0.44122 (0.430161-0.452414)
INFORMAL_MEDIUM_Prob_Extra_Relationship_Male	0.172667 (0.157184-0.189508)
INFORMAL_MEDIUM_Prob_Extra_Relationship_Female	2.610953 (2.543659-2.68037)
TRANSITORY_MEDIUM_Max_Simultaneous_Relationships_Male	2.610953 (2.541772-2.682377)
TRANSITORY_MEDIUM_Max_Simultaneous_Relationships_Female	1.571329 (1.462857-1.67974)
INFORMAL_MEDIUM_Max_Simultaneous_Relationships_Male	1.571329 (1.462112-1.685857)
INFORMAL_MEDIUM_Max_Simultaneous_Relationships_Female	0.945246 (0.930262-0.961531)
MARITAL_MEDIUM_Max_Simultaneous_Relationships_Male	0.945246 (0.930657-0.962727)
MARITAL_MEDIUM_Max_Simultaneous_Relationships_Female	

Table 1: Model parameters used during calibration process. We used the 50 best simulations to calculate the average and boot-strapped 95% confidence intervals. We refer to extensive online documentation (<http://idmod.org/docs/hiv/parameter-overview.html>) for further information on model parameters.

References

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