**Supplementary material 4: Sensitivity analysis**

We assessed the sensitivity of results to two key structural assumptions for which there is limited a priori support. That the higher PID rate lasts for two years, and that the ratio of this higher rate to the lower rate is the same as the ratio of the CT re-infection rate to the first infection rate. Note that these assumptions are very highly related. For example if the higher rate were assumed to only act for 1 year results would be almost identical to the two year model with the value of . Likewise, doubling  would have a very similar effect to increasing this period to 4 years. As such we perform a single deterministic sensitivity analysis on the parameter  by generating results with this parameter halved, doubled, and the extreme case where it’s assumed to equal one (i.e the two rates are equal). In each case the calibration constant  is calculated as for the primary analysis.

Results of the effect of changing  on the distribution of PID are shown in Table WA4.1. The proportion of women who have had 1 PID reduces or increases by between 10% and 20% depending on age when  is doubled or halved respectively. In women with 2 PID episodes the change in proportion is between around 0% and 40%, and the change in proportion in the 3+ PID state is between 30% and 70%. In the extreme case where  is assumed to equal 1 the proportions with 1 PID increases by between 25% and 40%. The proportion falls by between 10% and 75% in women with 2 PIDs and by between 30% and 100% in women with 3+ PIDs. Similar magnitudes of effect would be observed for models 2 and 3.

**Table S4.1**. Sensitivity analysis of numbers of episodes from the Markov model. Posterior mean % in each category (95% credible intervals)

1. PID rate ratio  halved

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Age | 0 PID  episodes | 1 PID  episodes | 2 PID  episodes | 3+ PID  Episodes |
| All PID |  |  |  |  |
| 16-19 | 95.3 (93.7,96.5) | 4.45 (3.30,5.85) | 0.28 (0.12,0.55) | 0.01 (0.00,0.04) |
| 20-24 | 85.6 (81.1,89.3) | 12.3 (9.47,15.4) | 1.88 (0.95,3.26) | 0.28 (0.07,0.76) |
| 25-34 | 73.3 (65.2,80.2) | 20.6 (16.4,25.1) | 4.85 (2.66,7.82) | 1.21 (0.35,3.01) |
| 35-44 | 63.9 (54.1,72.3) | 26.1 (21.8,30.3) | 7.65 (4.59,11.5) | 2.37 (0.82,0.54) |

1. PID rate ratio  doubled

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Age | 0 PID  Episodes | 1 PID  episodes | 2 PID  episodes | 3+ PID  Episodes |
| All PID |  |  |  |  |
| 16-19 | 96.3 (95.0,97.3) | 3.12 (2.36,4.04) | 0.55 (0.26,0.99) | 0.07 (0.02,0.20) |
| 20-24 | 88.5 (84.8,91.5) | 7.71 (5.89,9.82) | 2.60 (1.50,3.89) | 1.21 (0.33,2.98) |
| 25-34 | 78.4 (71.4,84.1) | 12.9 (9.67,16.3) | 5.20 (3.25,7.27) | 3.57 (1.05,8.48) |
| 35-44 | 70.3 (61.8,77.6) | 17.0 (13.1,21.0) | 7.26 (4.82,9.71) | 5.41 (1.75,12.3) |

1. PID rate ratio 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Age | 0 PID  episodes | 1 PID  Episodes | 2 PID  Episodes | 3+ PID  Episodes |
| All PID |  |  |  |  |
| 16-19 | 94.9 (93.2,96.3) | 4.99 (3.66,6.62) | 0.11 (0.06,0.19) | 0.00 (0.00,0.00) |
| 20-24 | 84.6 (79.8,88.6) | 14.2 (10.8,18.2) | 1.11 (0.60,1.88) | 0.06 (0.02,0.12) |
| 25-34 | 71.7 (63.1,78.9) | 23.9 (18.8,29.3) | 3.94 (2.13,6.54) | 0.46 (0.16,1.04) |
| 35-44 | 61.8 (51.7,70.6) | 29.9 (24.7,34.6) | 7.12 (4.17,11.1) | 1.26 (0.49,2.65) |