**Supplementary material 1: Model specification**

We use an 8-state discrete time homogenous Markov structure to describe the distribution of PID and salpingitis with 1-year cycles. Progression through the model is governed by the transition probabilities ; The probability that a woman in age group  moves from state  to state  in a single year.

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These are the elements of the transition probability matrix  and are functions of the transition rates as shown below:



where and  are the incidence rates of episodes of PID/salpingitis in women in the general population in age group  who have, and have not, had an episode of PID/salpingitis within the last 2 years.

The functional form of and  depends on which of the models is being used:

*Model 1:*



*Model 2:*



Where  is the overall PID incidence rate in England.  is a simple calibration coefficient (calculated through trial and error) interpreted as the ratio of PID incidence in women who have not had a PID in the last 2 years to the incidence of PID in all women. And  is the proportion of Clinical PID episodes that are salpingitis

*Model Outputs*

These are simple recursive functions of the starting state distribution, the transition probabilities and the proportion of PID episodes that are symptomatic.

Let be the state occupancy proportion for j for women aged a. It follows that:



where .

 and  can then be obtained from the state occupancy proportions and the proportions diagnosed:



and



where  is the proportion of episodes that are diagnosed.