**Epidemiology and Infection**

Current levels of gonorrhoea screening in MSM in Belgium have little effect on prevalence: a modelling study
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**Supplementary Material**

BOX S1: STERGMs

STERGMs model a network of sexual relationships by modelling the log odds of a relationship forming (formation model) and the log odds of a relationship persisting (dissolution model) as a function of network statistics. We used STERGMs to model both a network of main partners and a network of casual partners. The formation model for the network of main partners includes the total number of main relationships and the number of times a subject without a casual partner appears in a main relationship as network statistics. The formation model for the network of casual partners includes the total number of casual relationships, the number of times a subject with a single main partner appears in a casual relationship and the number of times a subject with more than one main partner appears in a casual relationship as network statistics. We assume completely homogeneous dissolution which corresponds to a dissolution model with only a term for number of relationships. The corresponding coefficient is not estimated but fixed at the mean relationship duration.

On top of these dynamic networks, epidemic processes are simulated. Standard the R package statnet [[1](#_ENREF_1)] assumes a single infection status per subject. The epidemic is simulated based on the act rate per relationship, the transmission probability per act and the recovery rate for infected subjects.

TABLE S2: Parameters

|  |  |
| --- | --- |
| Model parameter(s) | Source(s) and value(s) |
| Initial NG prevalence (%) | Pharynx: 3.4Urethra: 1.5Rectum: 3.7 [[2](#_ENREF_2)] |
| Duration of infection untreated (days) | Pharynx: 84 [[3](#_ENREF_3)]Urethra: 120 [[4](#_ENREF_4), [5](#_ENREF_5)]Rectum: 120 [[6](#_ENREF_6), [7](#_ENREF_7)] |
| Duration of infection at urethra, pharynx and rectum if symptomatic and treated (days) | 13 days [[3](#_ENREF_3), [8](#_ENREF_8), [9](#_ENREF_9)] |
| Momentary (cross-sectional) degree distribution for men in Steady partnerships and non steady partners |

|  |  |
| --- | --- |
|  | Sex with casual partner in last day |
| Main Partner | No | Yes |  |
| None | 1.636 | 279 | 1.915 |
| Row % | 85.43 | 14.57 | 100 |
| Col % | 50.67 | 44.71 | 49.7 |
|  |  |  |  |
| Steady relationship with >1 partner | 91 | 39 | 130 |
| Row % | 70 | 30 | 100 |
| Col % | 2.82 | 6.25 | 3.37 |
|  |  |  |  |
| Steady relationship with one partner | 1.502 | 306 | 1.808 |
| Row % | 83.08 | 16.92 | 100 |
| Col % | 46.52 | 49.04 | 46.92 |
|  |  |  |  |
| Total | 3.229 | 624 | 3.853 |

 |

TABLE S3: Act rate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Oral Sex (Fellatio) | Rimming | Unprotected Anal Sex | Protected Anal Sex | % |
| Receptive | Insert | Insertive | Receptive | Insertive | Receptive | Insertive | Receptive |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.89 |
| 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2.36 |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0.47 |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.71 |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.71 |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0.24 |
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.47 |
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.47 |
| 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0.24 |
| 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0.24 |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0.24 |
| 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0.24 |
| 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.24 |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.24 |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.09 |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.24 |
| 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1.65 |
| 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.24 |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0.24 |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0.71 |
| 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0.24 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1.42 |
| 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0.24 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0.47 |
| 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0.24 |
| 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0.24 |
| 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0.47 |
| 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0.24 |
| 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0.24 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.57 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.18 |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0.24 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0.24 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.24 |
| 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.24 |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0.71 |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.24 |
| 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0.24 |
| 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0.24 |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1.18 |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.47 |
| 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0.47 |
| 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0.71 |
| 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0.24 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 15.13 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.78 |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 4.49 |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0.95 |
| 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1.89 |
| 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0.95 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0.24 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0.71 |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0.71 |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0.24 |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0.24 |
| 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0.24 |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0.47 |
| 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1.89 |
| 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 2.60 |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0.71 |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0.47 |
| 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0.47 |
| 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1.18 |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0.24 |
| 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0.47 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0.24 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0.24 |
| 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2.60 |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2.13 |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0.24 |
| 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0.24 |
| 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0.47 |
| 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0.71 |
| 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1.42 |
| 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0.95 |
| 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0.71 |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0.24 |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 2.60 |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1.65 |
| 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1.65 |
| 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 2.36 |
| 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0.95 |
| 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0.24 |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0.24 |
| 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0.47 |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0.71 |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0.47 |
| 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1.42 |
| 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0.71 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.47 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.95 |

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