Supplementary Information File

Effects of population based screening for Chlamydia infections in the Netherlands limited by declining participation rates

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Table S1: Important parameter values for the sexual network, and all parameter values for Chlamydia transmission used in the simulations. Parameters relating to the sexual network on the national level are taken from [1] (which lists all parameters used in detail, and includes the simulation code). Furthermore, all parameters that differ between the sexual network model on the national and the urban level are listed here. Incubation time and the duration of infection for untreated Chlamydia were taken from [2,3], and the fraction of asymptomatic infections was estimated by an expert panel of dutch GPs and STI center coordinators.

Population size:	50,000 individuals age 13-64, uniformly distributed
Mean duration of partnership short-term medium-term long-term	13⅓ days 200 days 5882 days (16.1 years)
Model timestep Sexual network model – partner formation process Ct transmission model	4 days 1 day

Number of partnerships:
On the national level:
        moderate men – moderate women
        core men – core women
        core men – moderate women
        moderate men – core women
 	
On the urban level:
        moderate men – moderate women
        core men – core women
        core men – moderate women
        moderate men – core women
	
	35.5%
	0.3%
	3.3%
	1%
	
	34%
	2%
	3%
	2%

Fraction of the population that will have a period of core-group behaviour during their life: On the national level On the urban level	 5% women, 7% women 12% women, 12% men

Onset of sexual availability (OSA)
On the national level
On the urban level
        Women
        Men
	
	13 years + Gamma (k=1.2, theta=0.2) years
	
	13 years + Gamma (k=1.2, theta=0.2) years
	13 years + Gamma (k=1.2, theta=0.24) years

Onset of core-group behaviour (OC) On the national level On the urban level	 See Schmid & Kretzschmar, 2012 Idem to national level.
Duration of core-group behavior (DC) On the national level On the urban level	 See Schmid & Kretzschmar, 2012 Idem to national level.

Maximum number of concurrent partnerships, for core-group individuals (i.e. 'maximum capacity')
On the national level
        Women
        Men
 	
On the urban level
        Women
        Men
	
	3 + DC / (0.14 * OC)
	3 + DC / (0.28 * OC)
	
	2 + DC / (0.08 * OC)
	2 + DC / (0.16 * OC)

***Chlamydia* Infection**
Incubation time
Fraction asymptomatic
        Women
        Men
Mean duration untreated *Ct*
	
	14 days
	
	70%
	50%
	433 days

Transmission rate *Chlamydia* Main model High treatment failure scenario	 0.765% per day and per relationship. 0.75% per day and per relationship.

Figure S1: Effect of CSI on population prevalence of asymptomatic Chlamydia infections in men (solid lines) and women (dashed lines) for the baseline scenario, CSI screening and screening with a higher treatment failure rate of 8% (A) on national level and (B) in urbanized areas. In order to keep the baseline Chlamydia prevalence in the high treatment failure scenario at the same level as the baseline Chlamydia prevalence of the main model, the daily transmission chance of Chlamydia was reduced from 0.00765 to 0.0075.
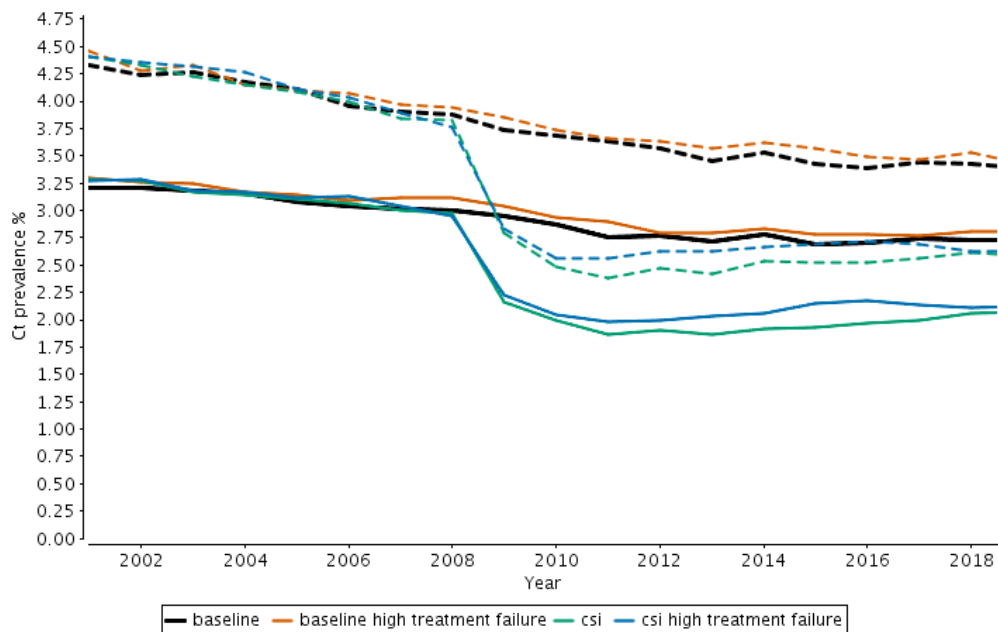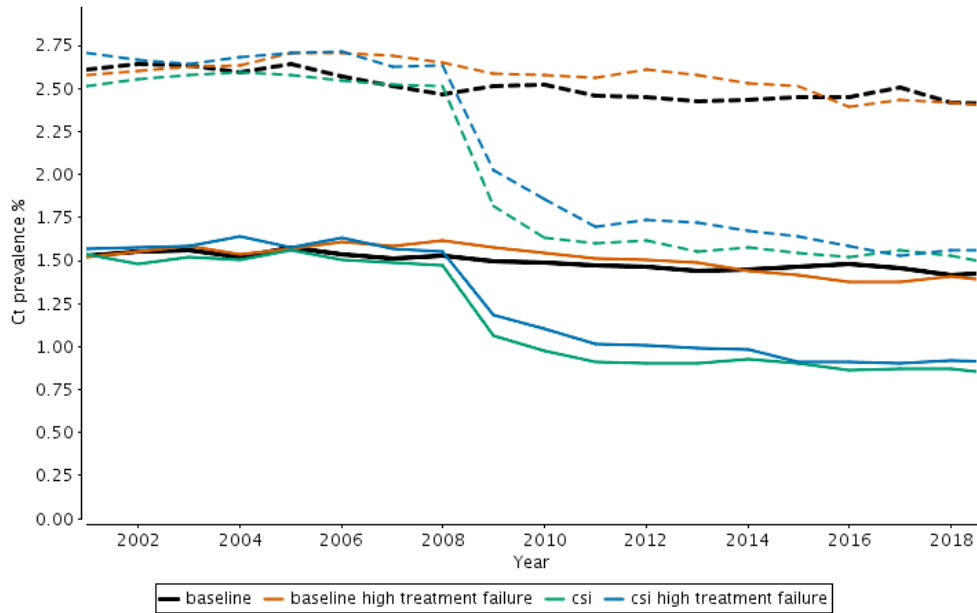
References

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2. Althaus CL, Turner KM, Schmid BV, Heijne JC, Kretzschmar M, et al. (2012) Transmission of Chlamydia trachomatis through sexual partnerships: a comparison between three individual-based models and empirical data. J R Soc Interface 9: 136-146.
3. Althaus CL, Heijne JC, Roellin A, Low N (2010) Transmission dynamics of Chlamydia trachomatis affect the impact of screening programmes. Epidemics 2: 123–131.