



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

The impact of COVID-19 and associated measures on STI transmission: chlamydia & gonorrhoea among MSM

5.1.2e

*National Institute of Public Health &
Environment (RIVM)*

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Background

Some of the “side-effects” of COVID-19 pandemic:

- Restrictive measures aiming to reduce COVID-19 transmission
- Perceived threat of COVID-19 & fear to contract COVID-19
- Personnel, facilities, materials devoted to COVID-19 care

- Resulting in:
 - Reductions in numbers of sex partners & sex contacts
→*Reduced STI transmission*
 - Major disruption in STI care: STI consultations reduced by 80% in Apr 2020, by 20% in Sept 2020
→*Increased STI transmission*

Aim: *To assess whether the indirect effects of the COVID-19 pandemic have led to reduced or increased STI transmission, using a mathematical model.*



Methods

- Model
 - Pair-formation model with two types of casual partners
 - Transmission of *C. trachomatis* (CT) & *N. gonorrhoeae* (NG)
- CT & NG:
 - Anogenital infections, symptomatic or asymptomatic
 - After natural recovery or treatment, again susceptible
- Partnerships:
 - Main, one-time casual, short-term casual
 - Different sex frequency & condom use per type of partner
- Low-activity and high-activity MSM:
 - Different numbers of partners, sex frequency, testing rates



Methods: Time periods

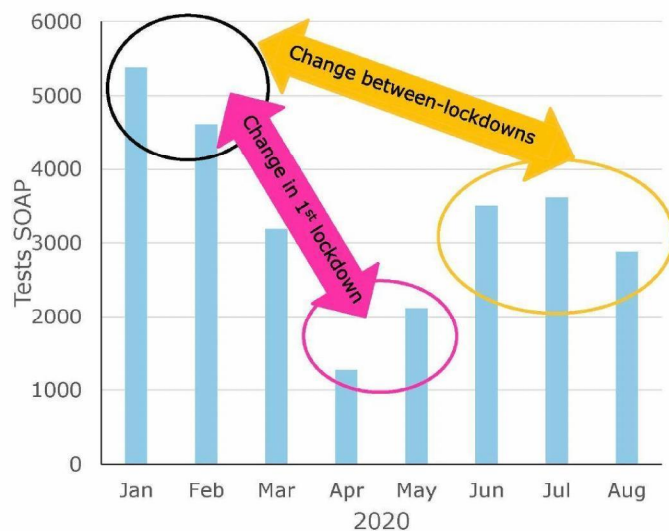
Time periods in the model based on course of COVID-19 pandemic, the related measures in the Netherlands, and how these affected sex behavior & testing:

- Before COVID-19 (until mid-March 2020)
- During COVID-19 pandemic (mid March 2020 - end Aug 2021)
 - 1st lockdown: mid March – end May 2020
 - Between-lockdowns: June – mid Oct 2020
 - 2nd lockdown: mid Oct 2020 – end Feb 2021
 - After-lockdowns: Mar – Aug 2021
- After COVID-19 (from September 2021 onwards)
 - Hypothesized levels of sex behavior & testing “returned” to levels before COVID-19

Changes in sexual behavior & testing with magnitude similar to strictness of measures



Methods: Changes in STI testing



Decline in testing:

MSM with symptoms:

50%, during 1st lockdown;
 10%, between-lockdowns;
 20%, during 2nd lockdown;
 10%, post-lockdown.

MSM without symptoms:

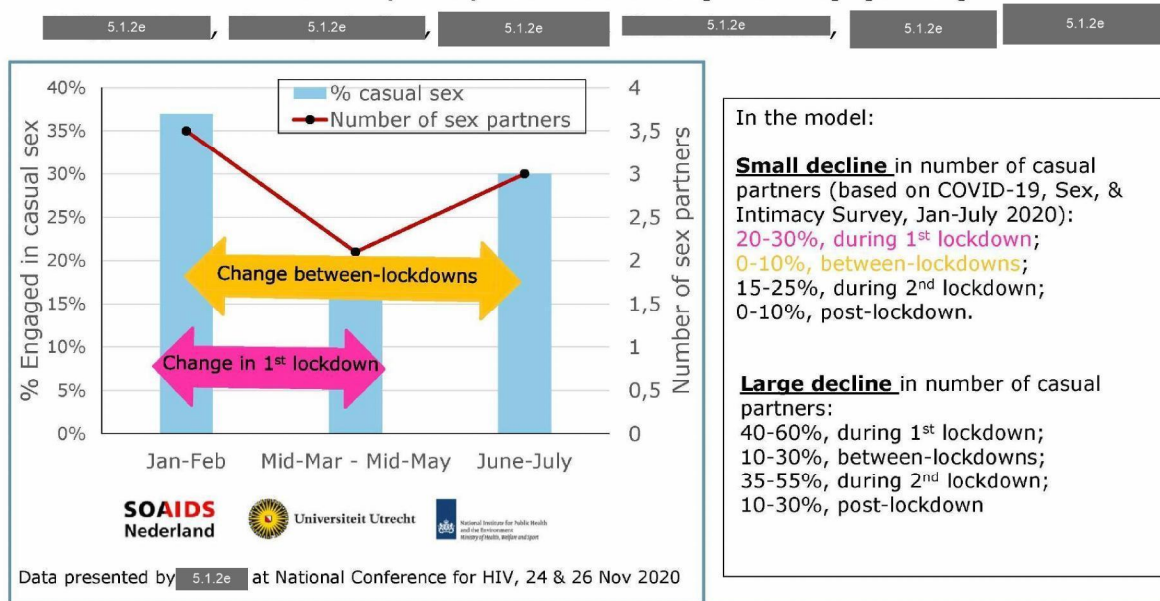
80%, during 1st lockdown;
 35%, between-lockdowns;
 50%, during 2nd lockdown;
 20%, post-lockdown.

Number of tests from National database of STI clinics in the Netherlands (SOAP); personal communication with 5.1.2e (RIVM).



Methods: changes in numbers of casual partners

COVID-19, Sex, and Intimacy Survey (CSIS)





Methods: changes relating to main partnerships

Parameter	Change in parameter, compared to its value before COVID-19			
	1 st lockdown	Between- lockdowns	2 nd lockdown	Post- lockdown
	13 Mar – 31 May 2020	1 Jun – 13 Oct 2020	14 Oct 2020 – 28 Feb 2021	1 Mar – 31 Aug 2021
Sex frequency between main partners	+25%	+10%	+20%	+10%
Number new main partners per month	-75%	-10%	-70%	-10%



Methods

Percentage change in prevalence in a specific year

$$= 100*[F(t)-C(t)]/F(t), \text{ where}$$

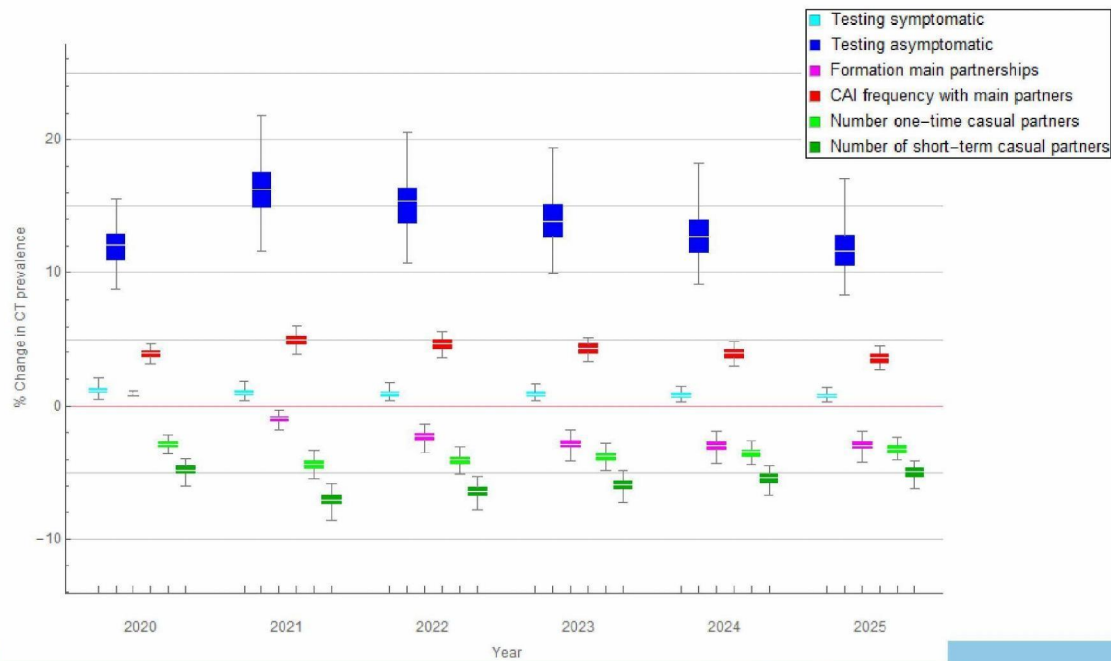
F(t)=prevalence at
the end of year t,
without COVID-19

C(t)=prevalence at
the end of year t,
with COVID-19

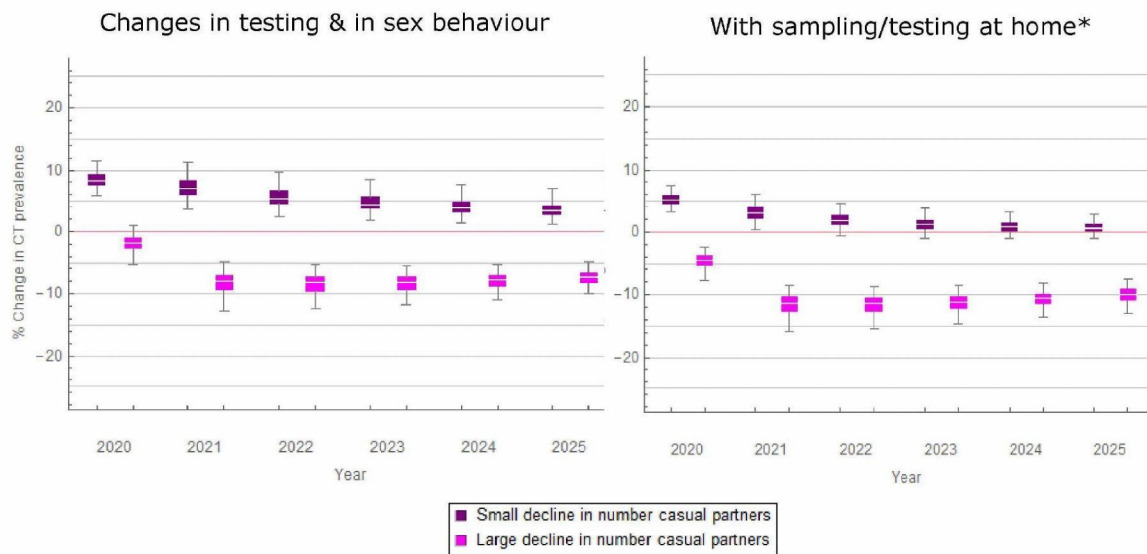


Results: chlamydia

Impact of individual changes on chlamydia prevalence

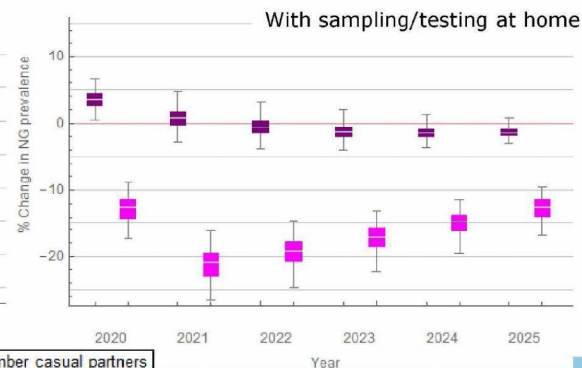
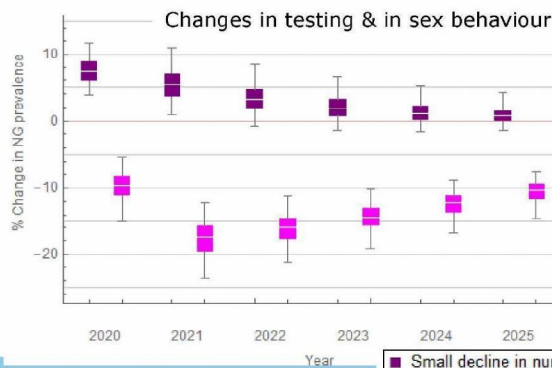
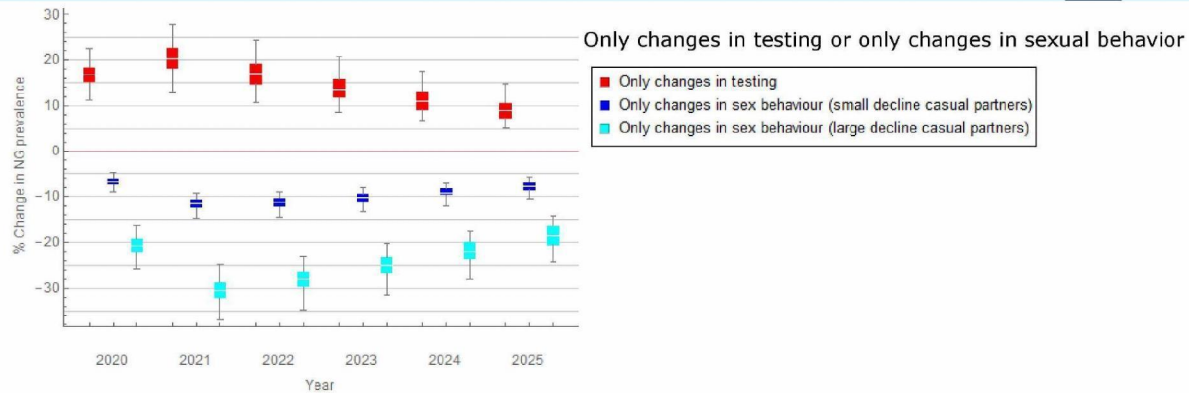


Results: chlamydia



* A quarter of the tests not carried out at STI clinics or GPs were carried out elsewhere (home sampling/testing)

Results: gonorrhoea

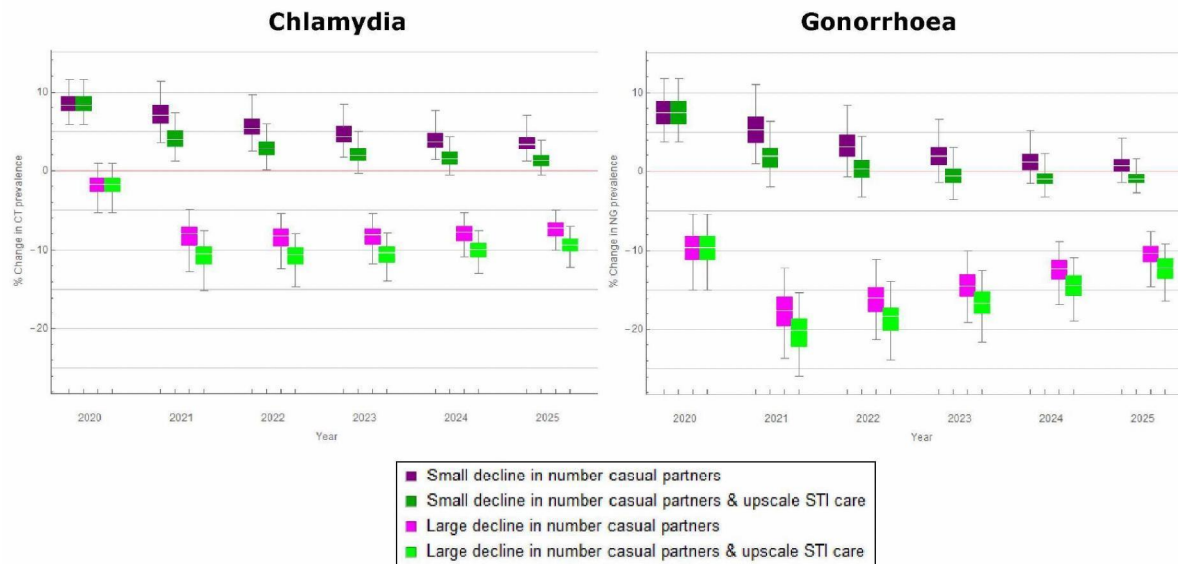


Results



Upscale STI care in March 2021

STI testing rates after March 1, 2021 are as before COVID-19

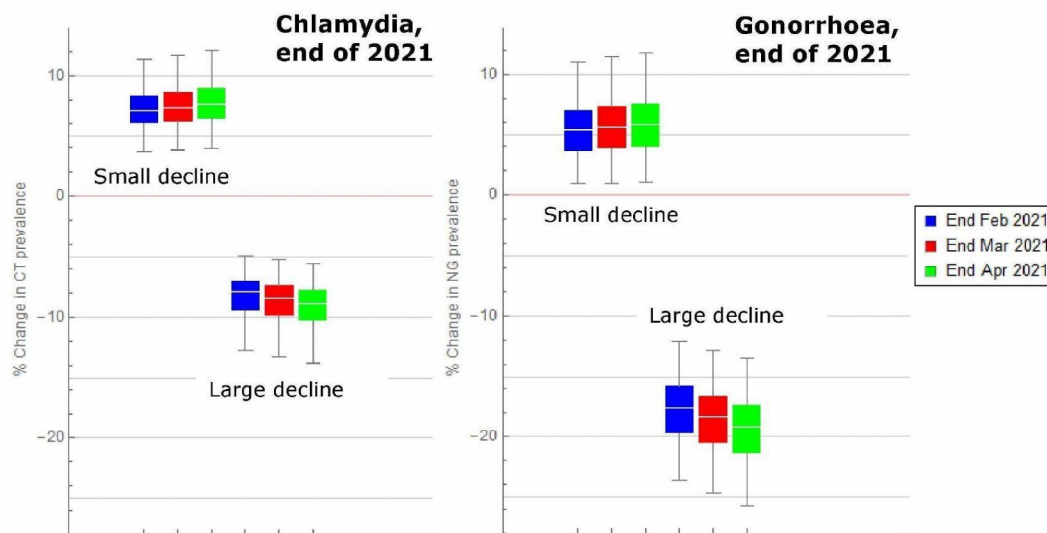


Results



Extension of 2nd lockdown

Assuming 2nd lockdown extended until end of February, March or April 2021





Discussion

- Seasonality in sexual behavior may explain part of the difference in number of casual partners in data Mar-Jul 2020 vs. Jan-Feb 2020
- Unknown:
 - No data for sexual behavior and STI testing after August 2020
 - No data relating to formation and dissolution of main partnerships or sex frequency within main relationships.
 - Unknown when the 2nd lockdown will end
 - Unknown whether & when sexual behaviors and testing will return to levels similar to those before COVID-19 pandemic
- Age or other medical factors indicating high risk for COVID-19 complications were not taken into consideration.



Conclusions

- Decrease in number of casual partner:
 - Small -> increase in CT and NG prevalence
 - Large -> decrease in CT and NG prevalence
 - Changes in prevalence at least 4 years after end of COVID-19 measures
- If home-testing replaced some of the tests that were not carried out at healthcare facilities, the increase in CT & NG prevalence may be reversed 2-3 years after the end of the measures
- Upscaling STI care from March 1, 2021 (to levels as before COVID-19) can limit the increases in prevalence



Acknowledgements

RIVM

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Thank you