# Limited contribution to new infections from HIV-infected men who have sex with men on suppressive antiretroviral therapy

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Stichting HIV Monitoring, NL

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Infectiousness and treatment
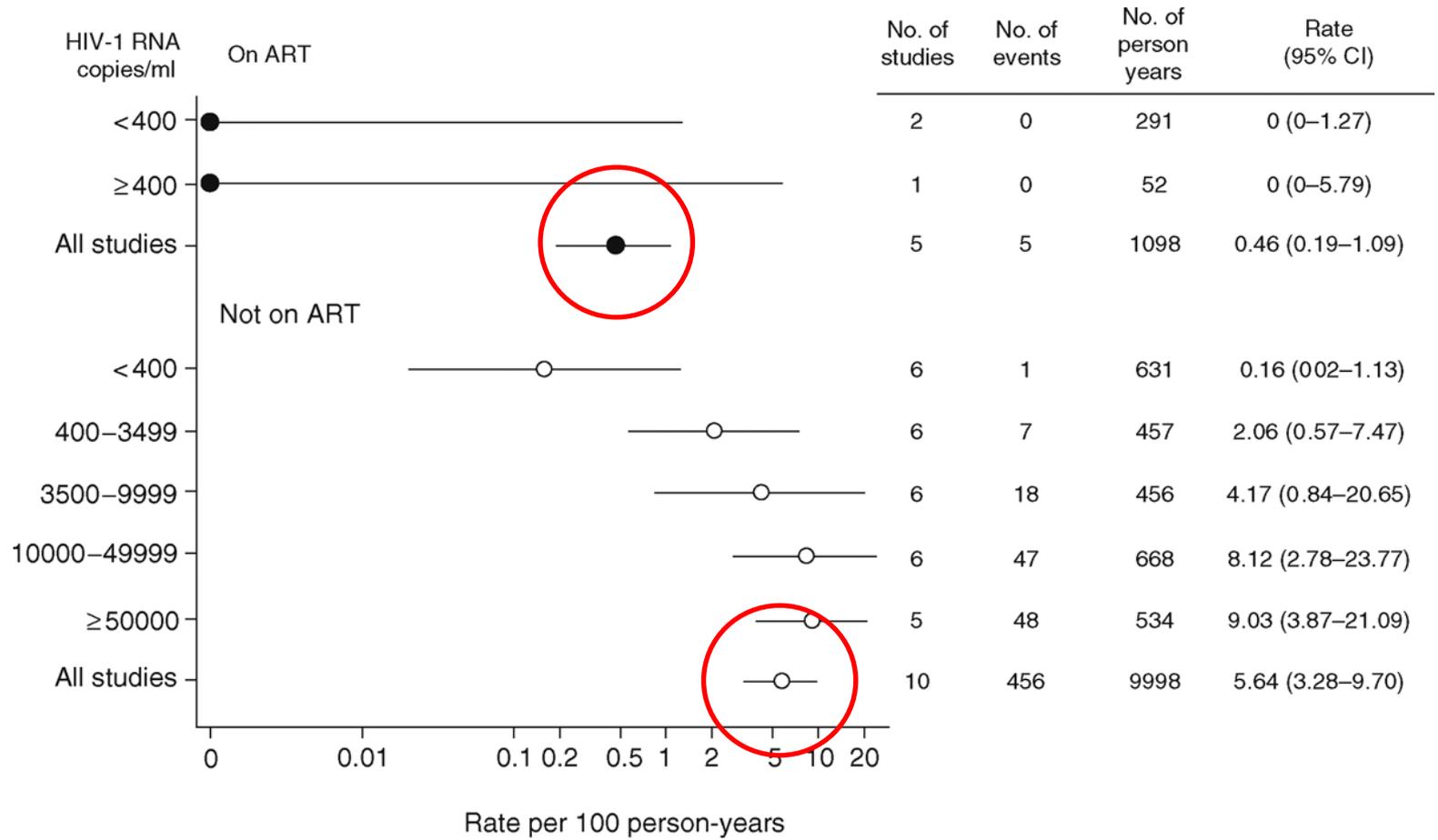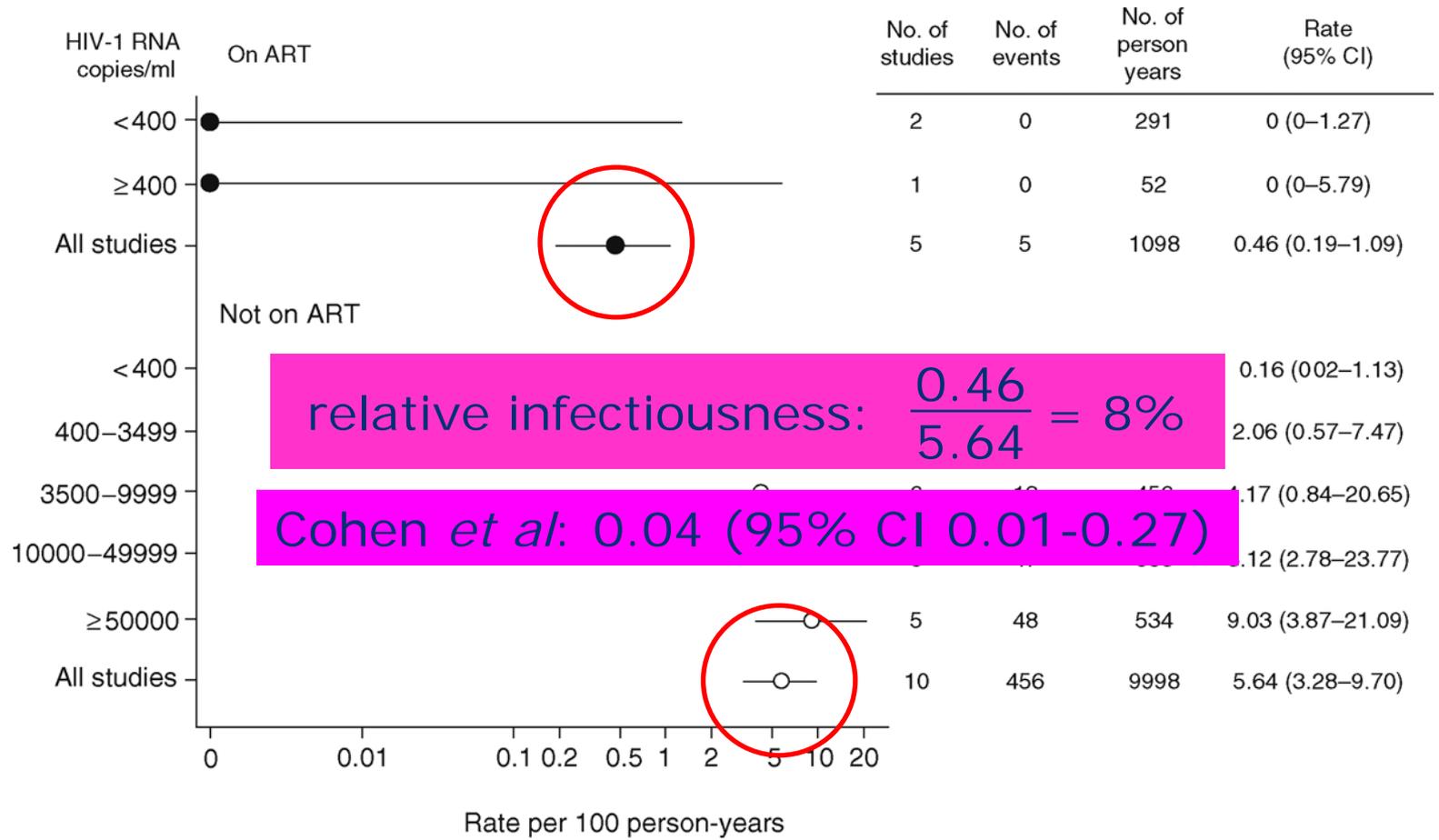
Attia *et al.*, AIDS 2009

Infectiousness and treatment

relative infectiousness: $\dfrac{0.46}{5.64} = 8\%$

Cohen *et al*: 0.04 (95% CI 0.01-0.27)

Attia *et al.*, AIDS 2009

Infectiousness and treatment

Attia *et al.*, AIDS 2009
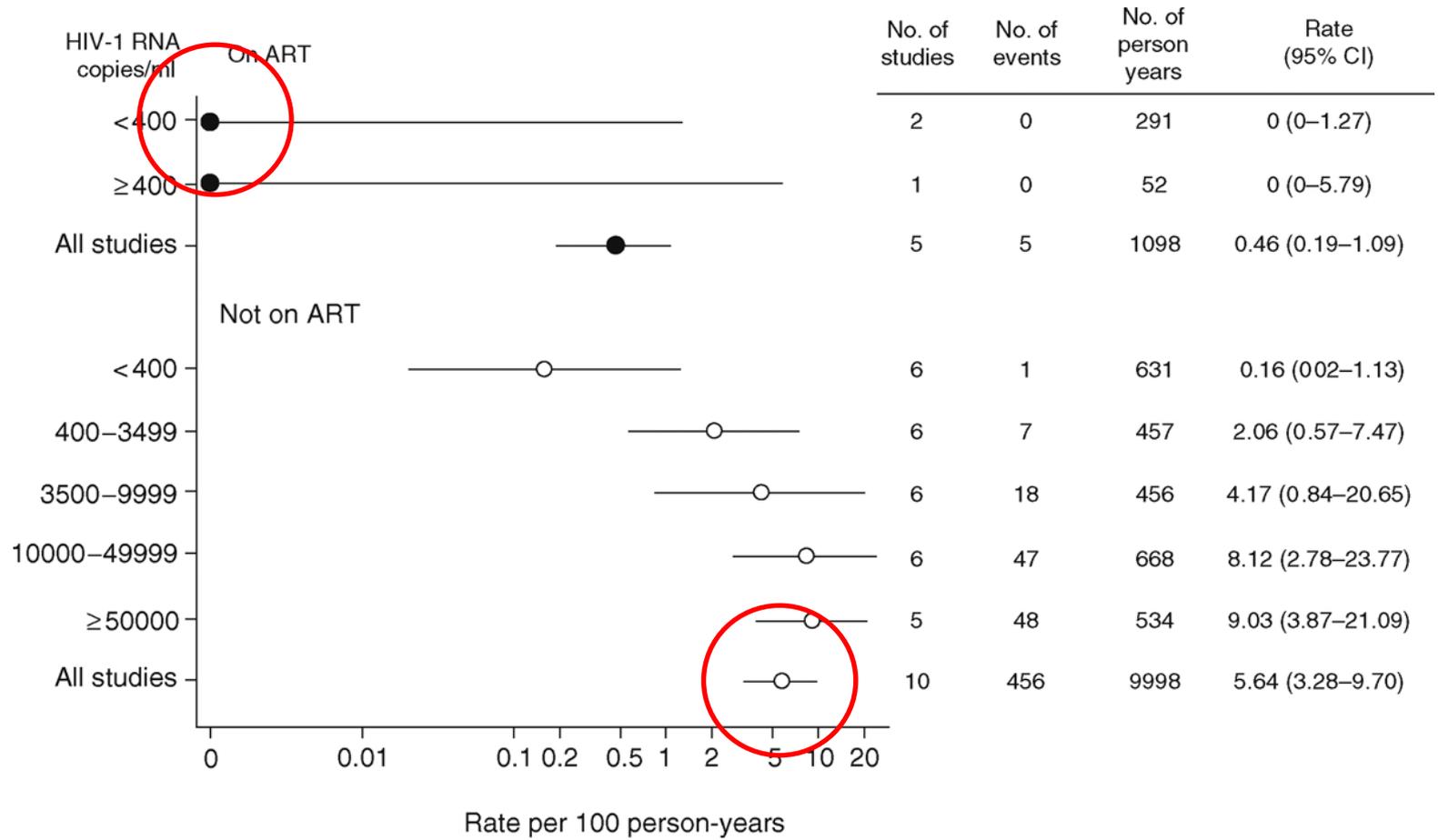
Infectiousness and treatment

Attia *et al.*, AIDS 2009
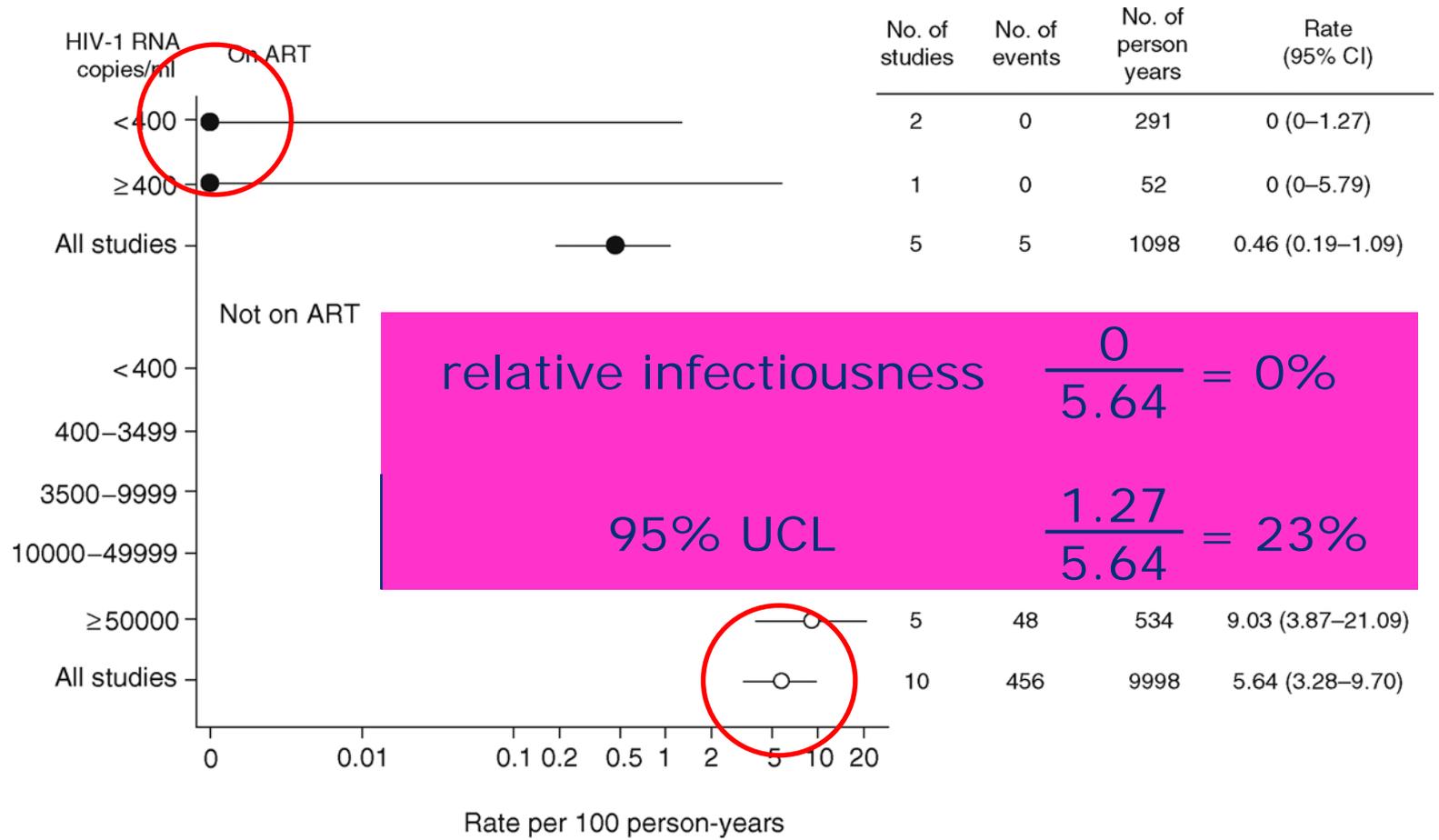
# What is the impact of non-zero probability of transmission during successful treatment on the HIV epidemic amongst MSM?

Transmission model

- Mathematical model explaining observed trends in HIV and AIDS diagnoses since 1980 (Bezemer *et al.*, AIDS 2008; Epidemics 2010).

- Simultaneously estimate changes in
  - transmission rates ("risk behaviour")
  - time from infection to diagnosis

- Infectiousness (probability of transmission correcting for risk behaviour) depends on stage of infection:
  - higher during primary infection and AIDS (Hollingsworth *et al.*, JID 2008)
  - higher for patient unaware of their infection (Marks 2005)
  - high during episodes of viral rebound
  - zero or very low during viral suppression

Contributions to new infections 1

relative infectiousness 0%

2009: 899 infections
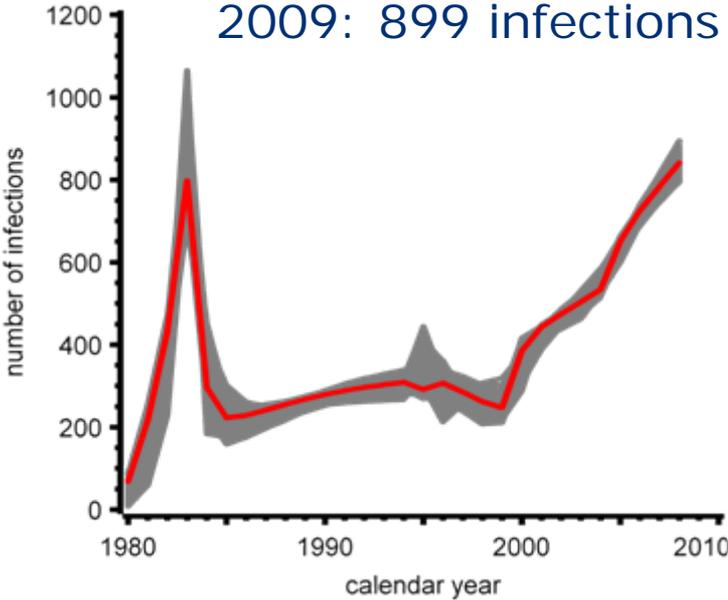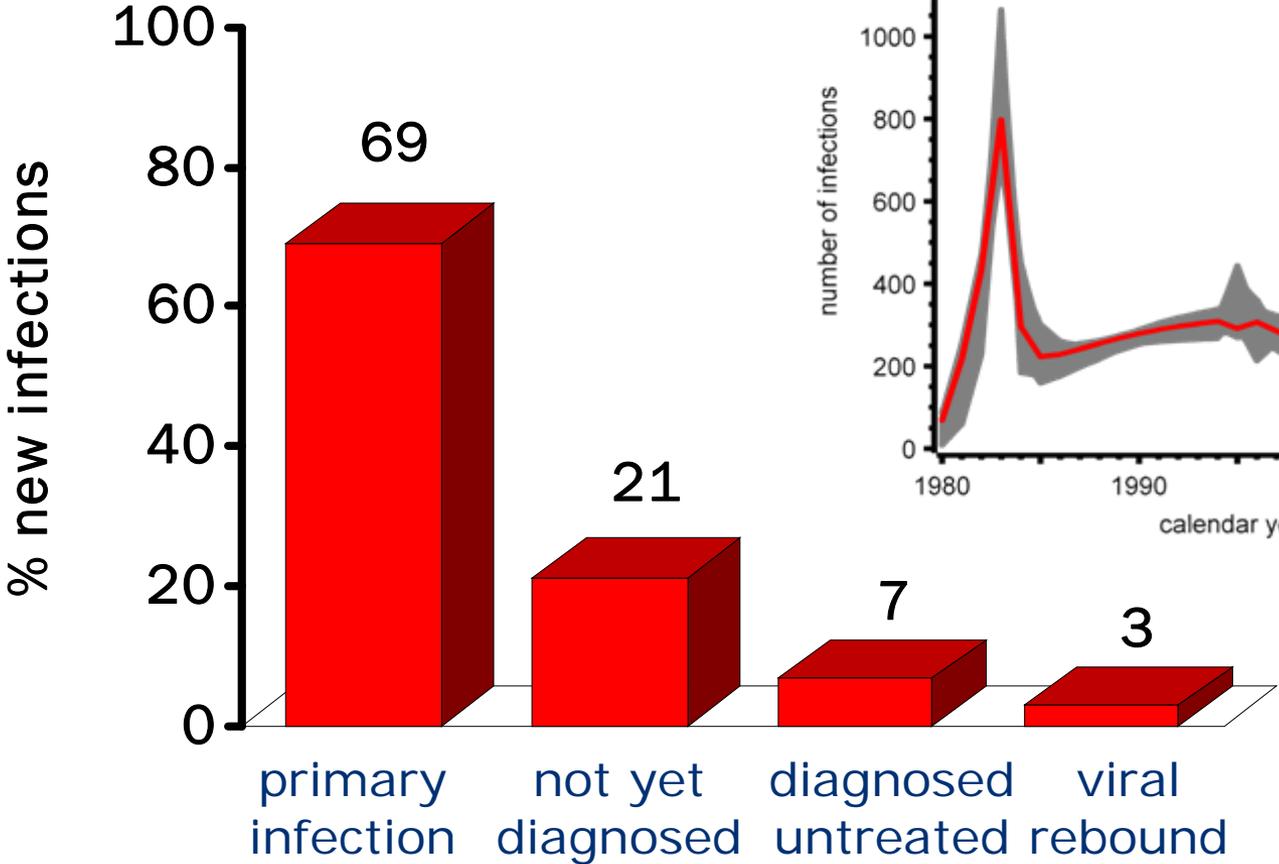
Bezemer *et al*., AIDS 2008; Epidemics 2010 (updated)

Contributions to new infections 2
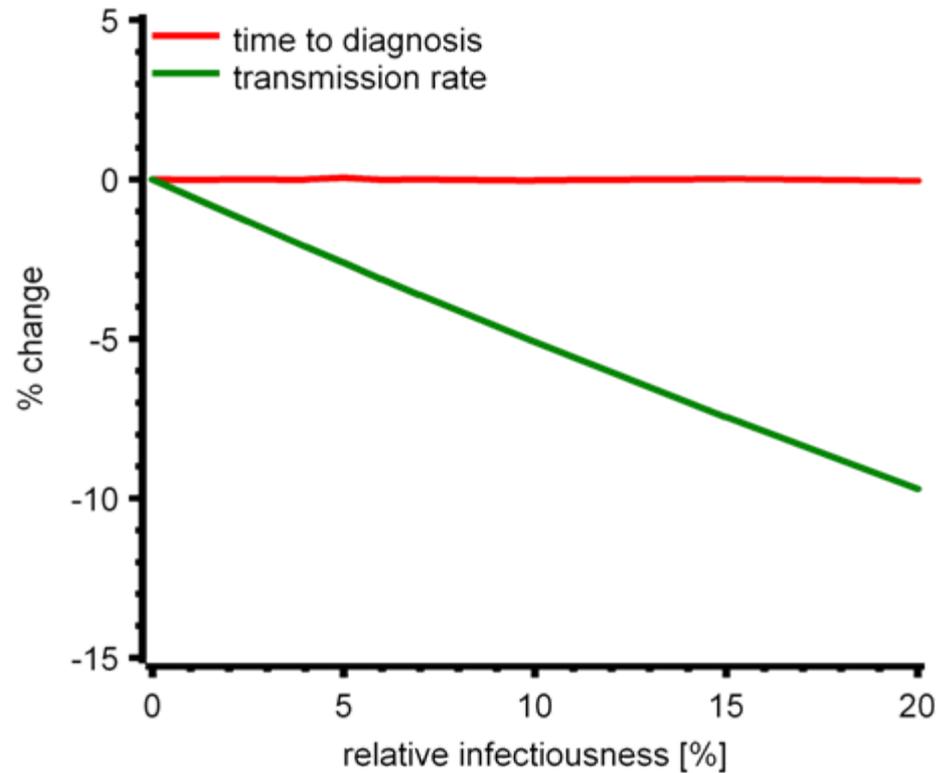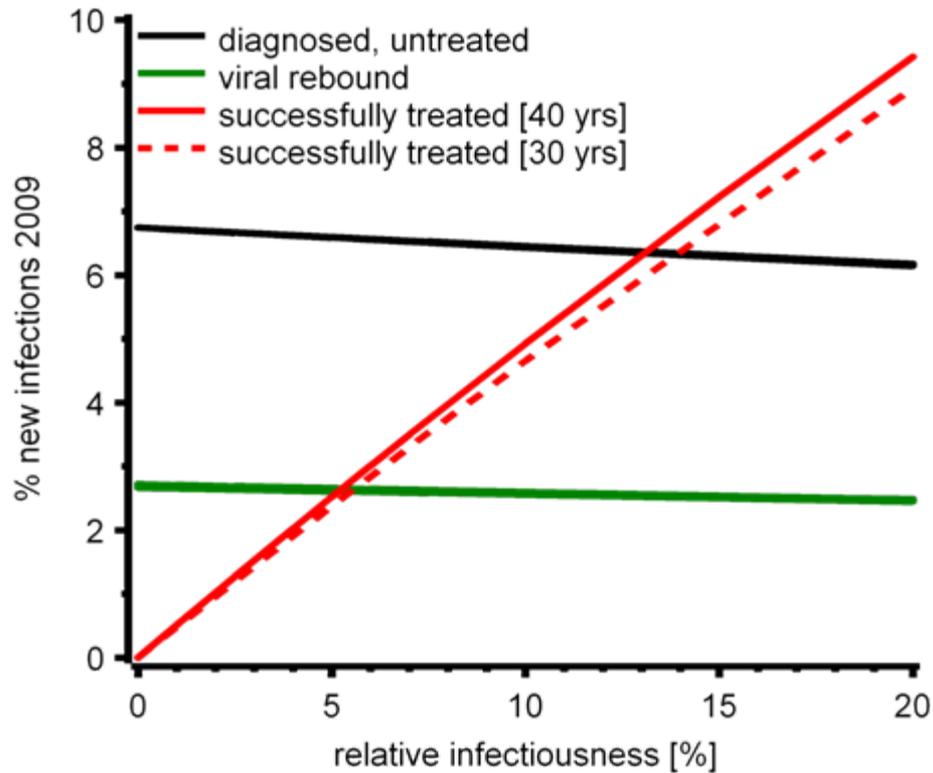
relative infectiousness: infectiousness during suppressive treatment compared to diagnosed but untreated

Controlling the epidemic
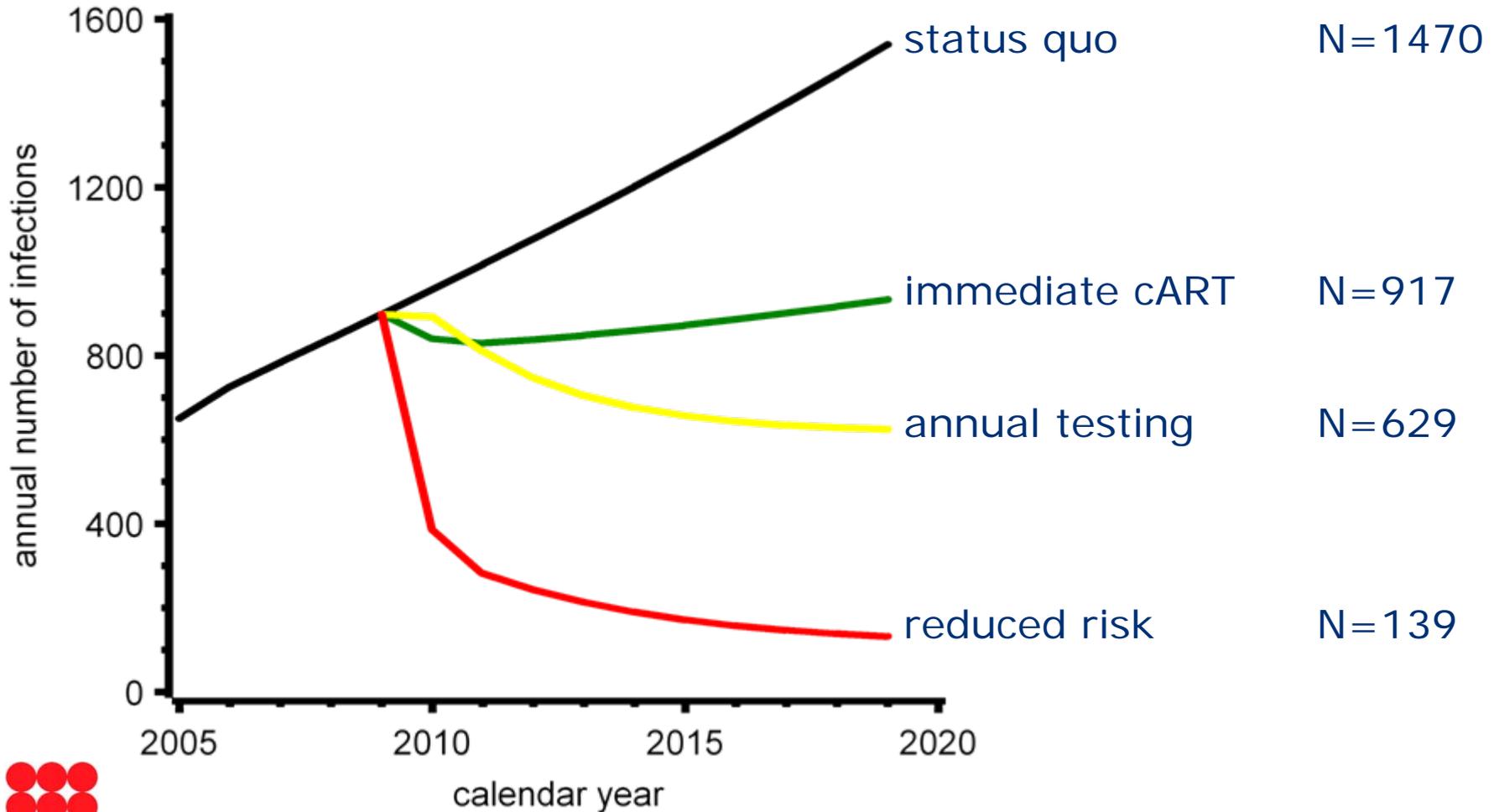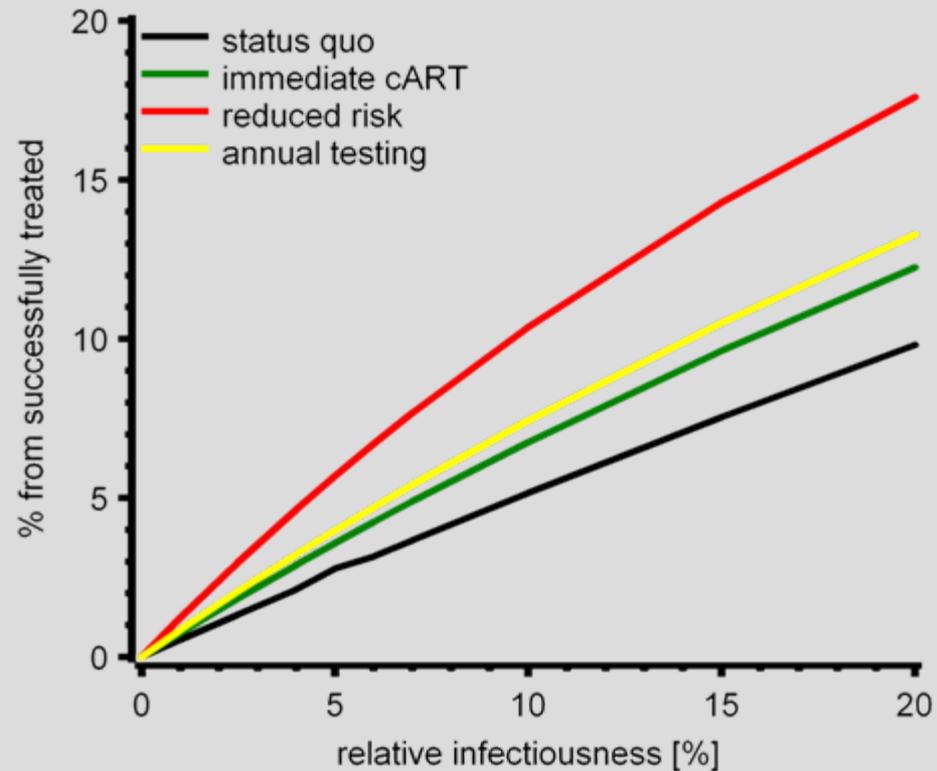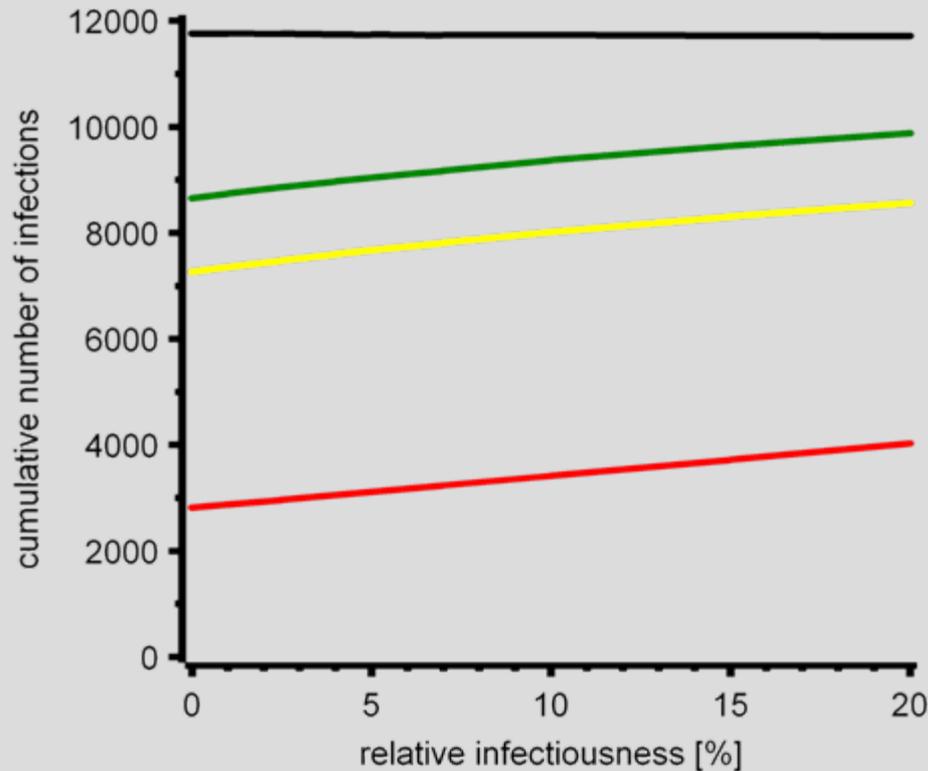
status quo — N=1470
immediate cART — N=917
annual testing — N=629
reduced risk — N=139

Infections 2010 – 2018

relative infectiousness: infectiousness during suppressive treatment compared to diagnosed but untreated
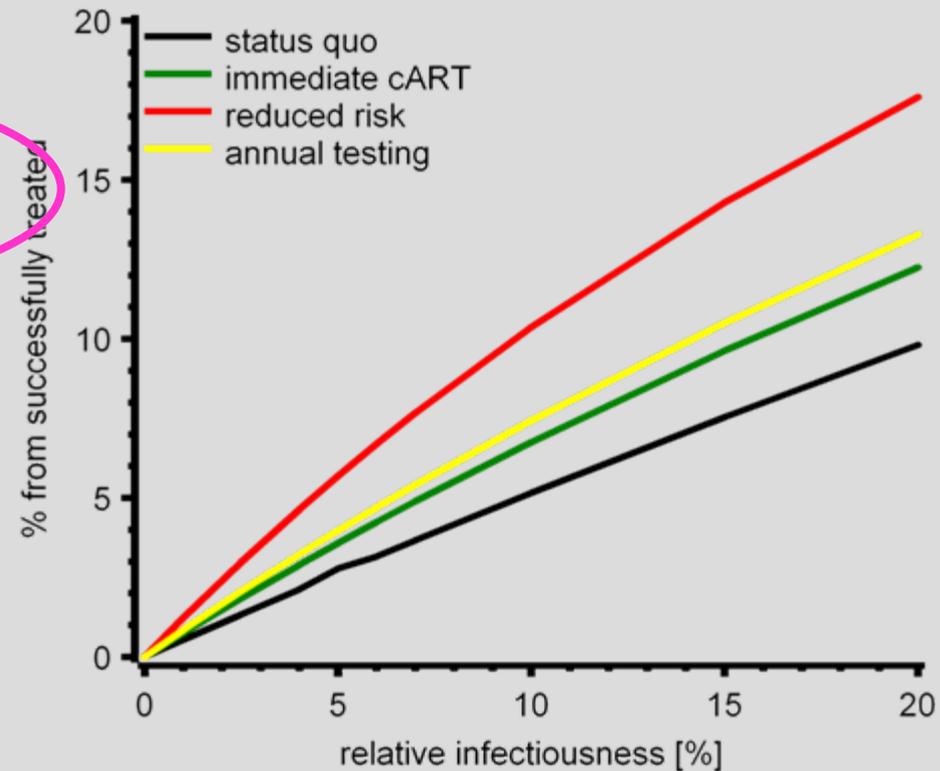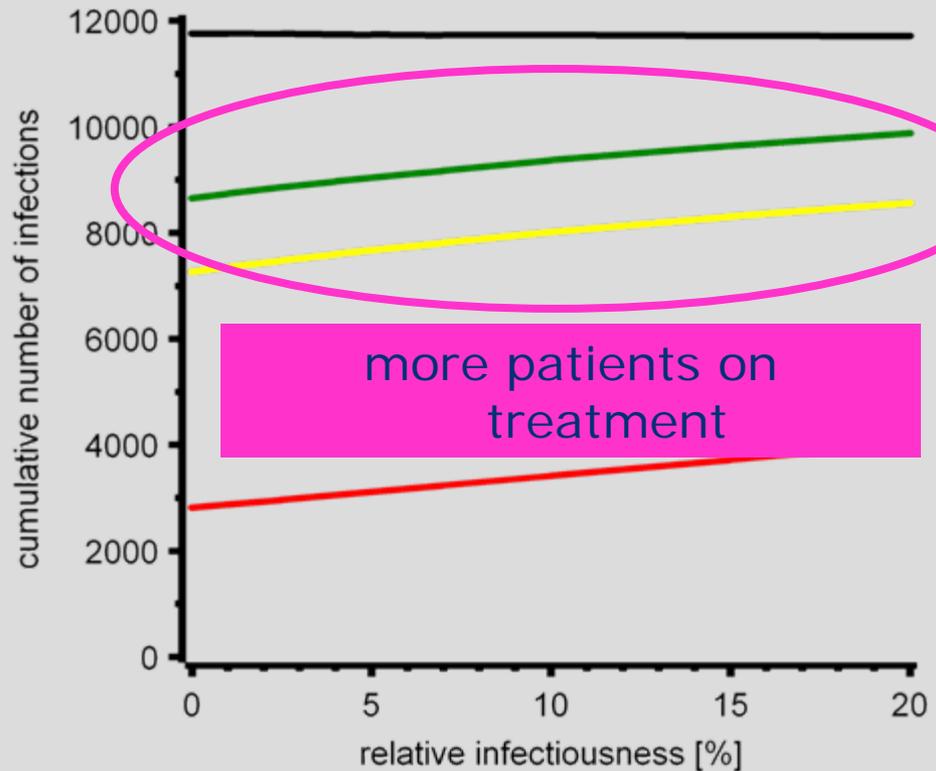
Infections 2010 – 2018

relative infectiousness: infectiousness during suppressive treatment compared to diagnosed but untreated

Infections 2010 – 2018
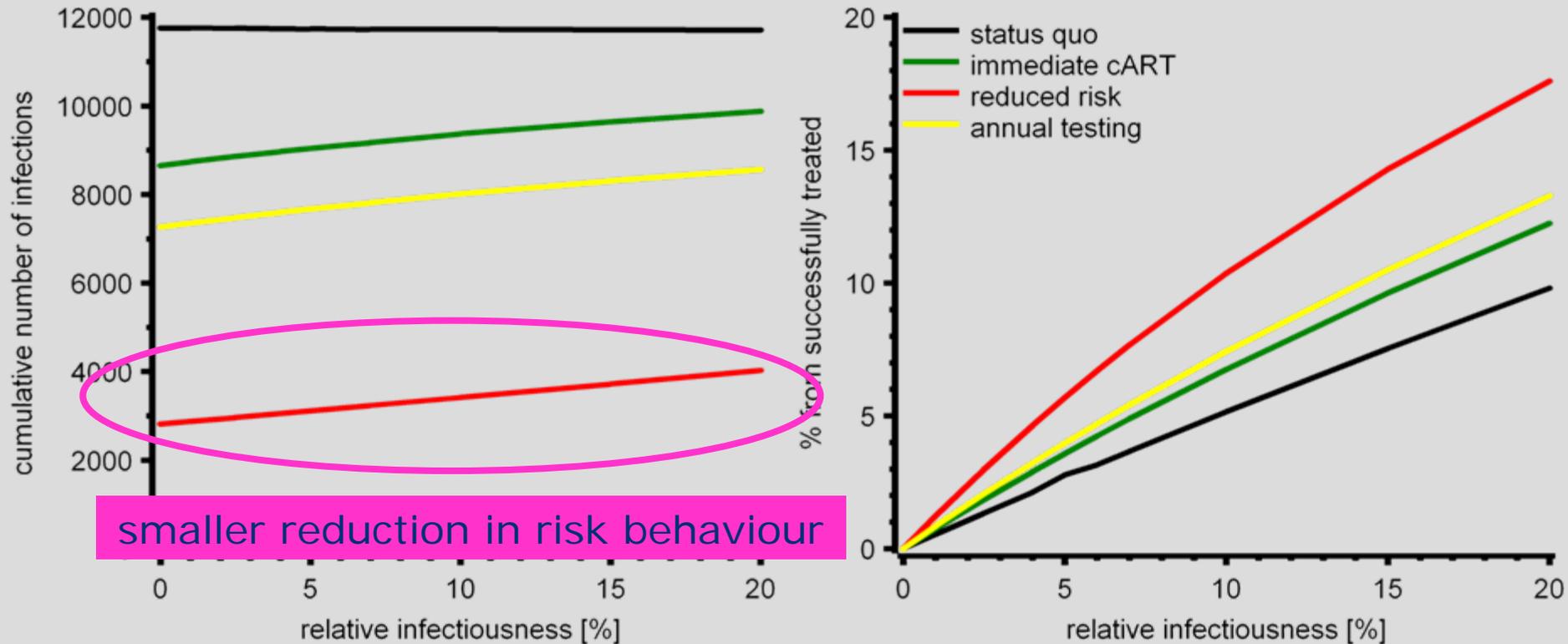
relative infectiousness: infectiousness during suppressive treatment compared to diagnosed but untreated

Summarising…

- The contribution to new infections by patients on suppressive treatment is limited.

- Transmission from treated patients becomes more important in the presence of interventions.

- The risk of transmission may be larger
    - in the presence of other STIs.
    - when perceived protection leads to increased risk behaviour.

Acknowledgements

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