Opportunities for HIV prevention among men having sex with men in the Netherlands

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Disclosure of speaker's interests

No conflict of interest

Study objectives

- **Reconstruct and characterize transmission events amongst MSM**

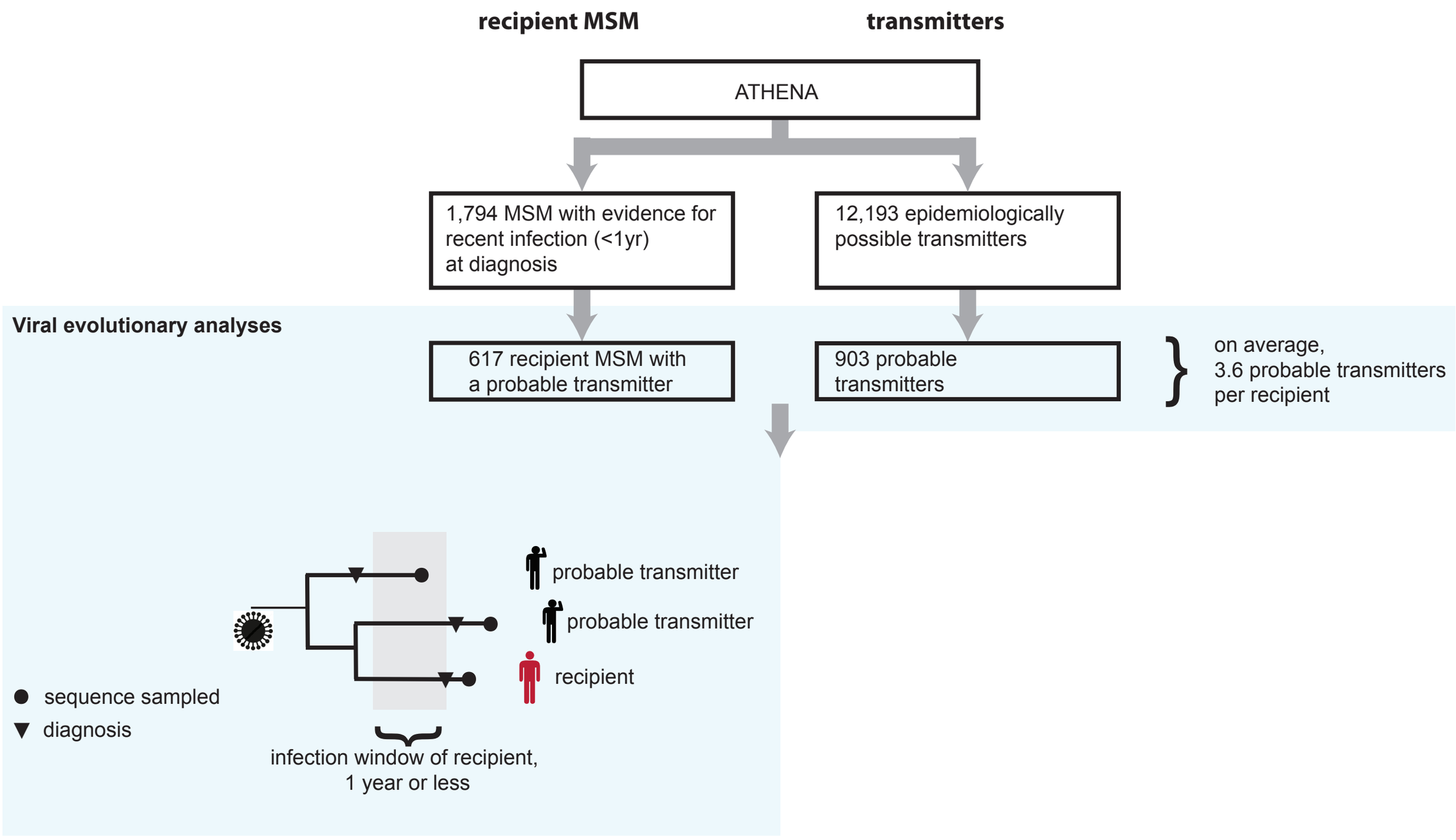
  (through molecular epidemiological analyses)

- **Evaluate the proportion of past, phylogenetically likely transmissions that could have been averted through**

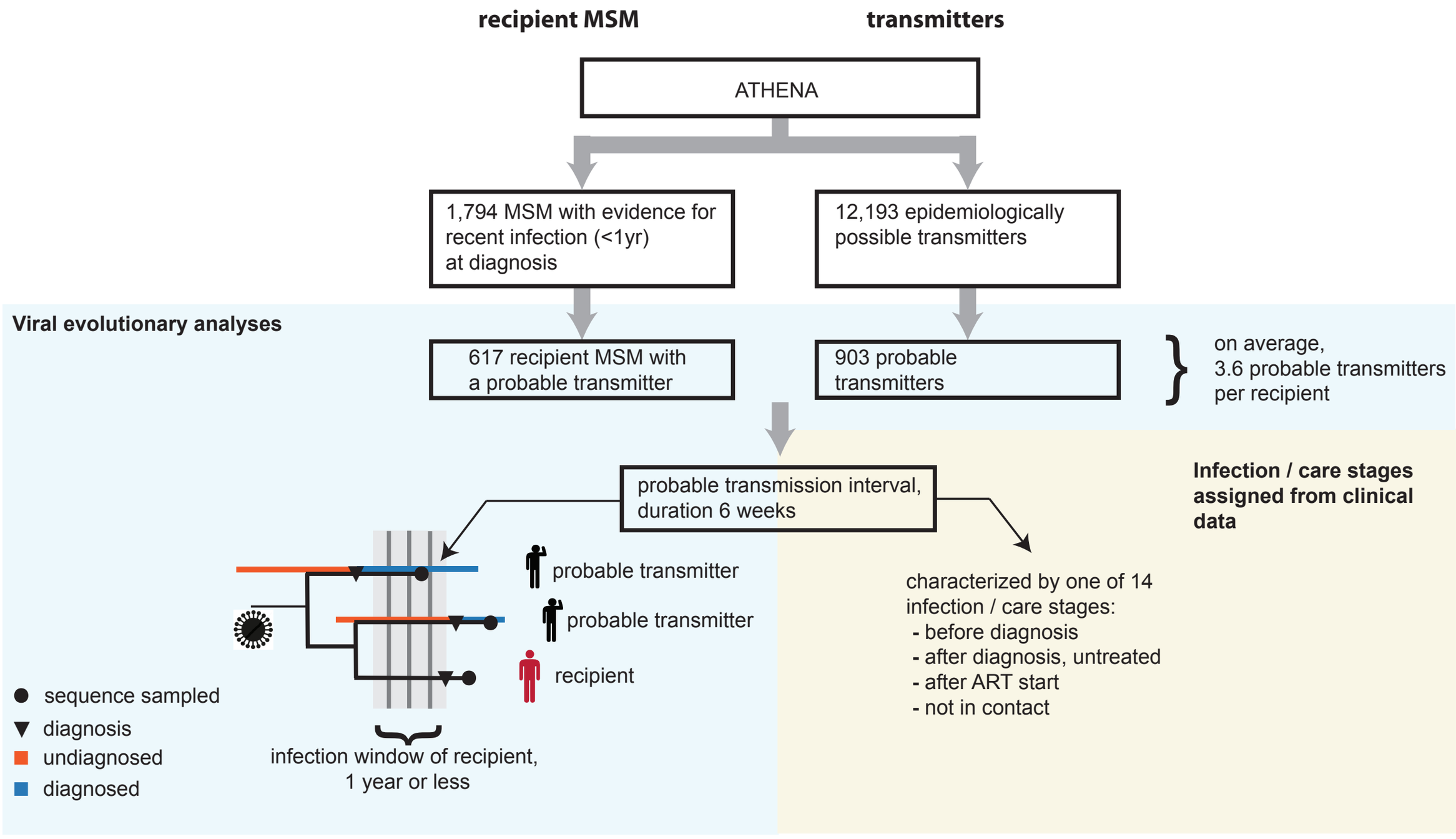
  - ART irrespective of CD4 count to those testing pos (test-and-immediate ART)
  - uptake of PrEP by those testing negative (test-and-PrEP)
  - or those aged <30 years at time of testing (targeted test-and-PrEP)
  - increased annual testing

  (in counterfactual model scenarios)

Reconstructing MSM transmission events



Reconstructing MSM transmission events



Counterfactual prevention models

- In hypothetical prevention scenarios, we reallocated transmitters to less infectious stages.

- The probability that a recipient was infected is 1. In the hypothetical scenarios, this infection probability is < 1.

- Averaging across recipients, we obtained the proportion of transmissions that could have been averted in this cohort.

Findings

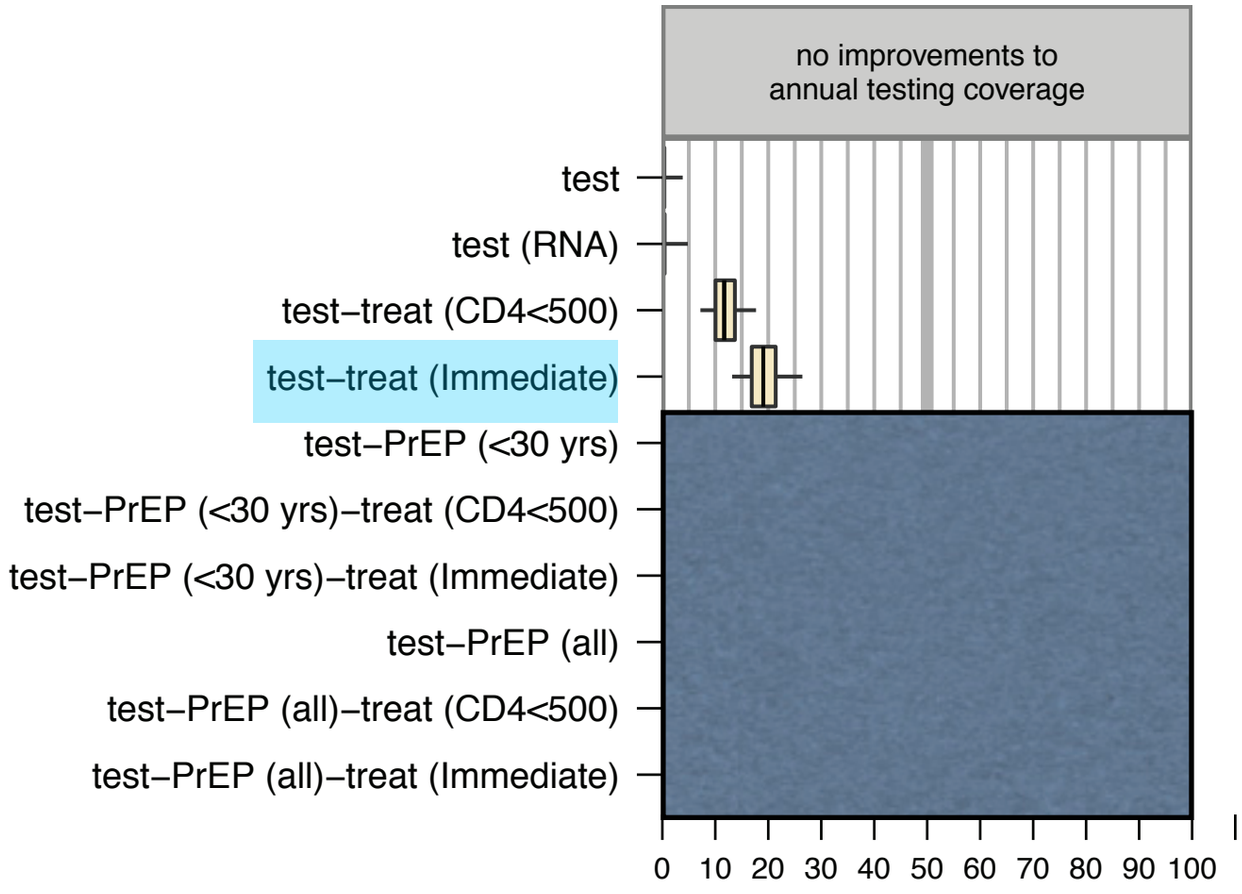
Test-and-immediate ART

Model assumes:

- ART taken up by all at diagnosis
- immediate suppression of virus

Interpretation:

- ART is highly effective in preventing new transmissions amongst MSM.
- Given past ART expansion, immediate ART could have averted 19% of the reconstructed transmission events



HIV infections amongst MSM in the transmission cohort that could have been averted in 08/07 – 10/12 (%)

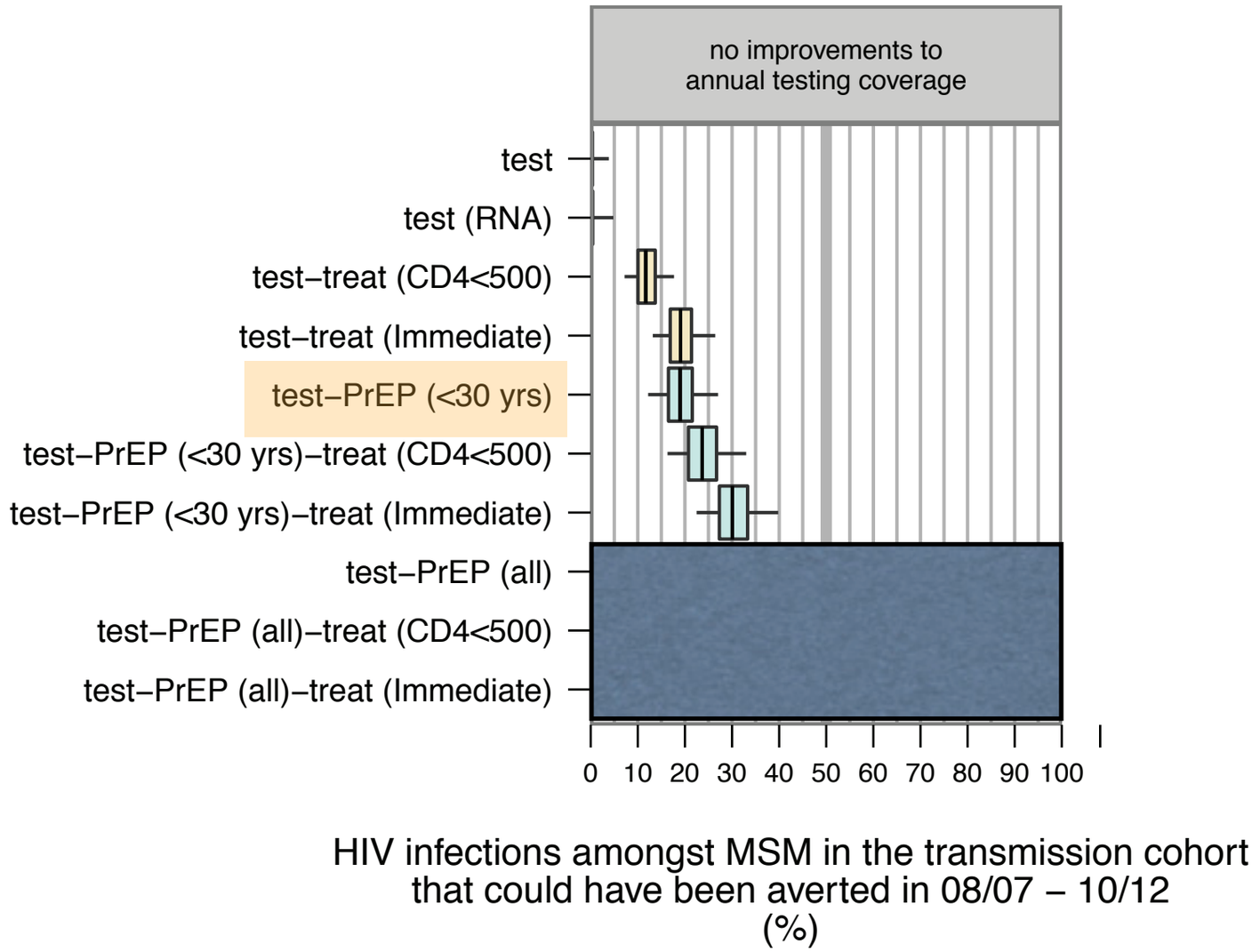
Targeted test-and-PrEP

Model assumes:

- uptake of PrEP by 50% of all men testing negative (<30y), immediately after test
- efficacy as in PROUD trial

Interpretation:

- Because of frequent early transmissions amongst MSM, targeted test-and-PrEP would have been at least as effective as test-and-immediate ART.
- Without more testing, immediate ART and targeted test-PrEP could not have prevented more than 30% of all reconstructed transmissions



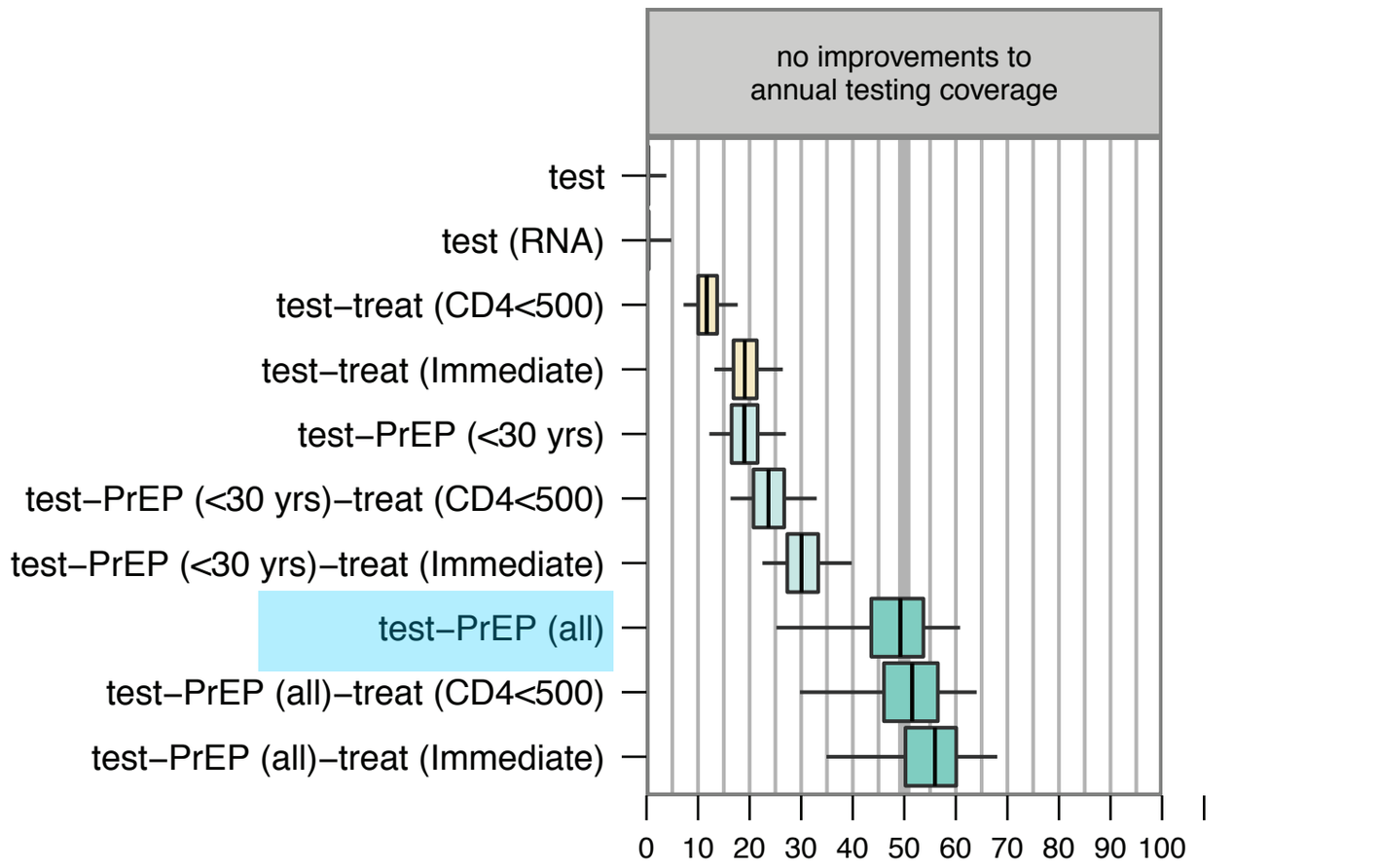
Test-and-PrEP

Model assumes:

- uptake of PrEP by 50% of all men testing negative

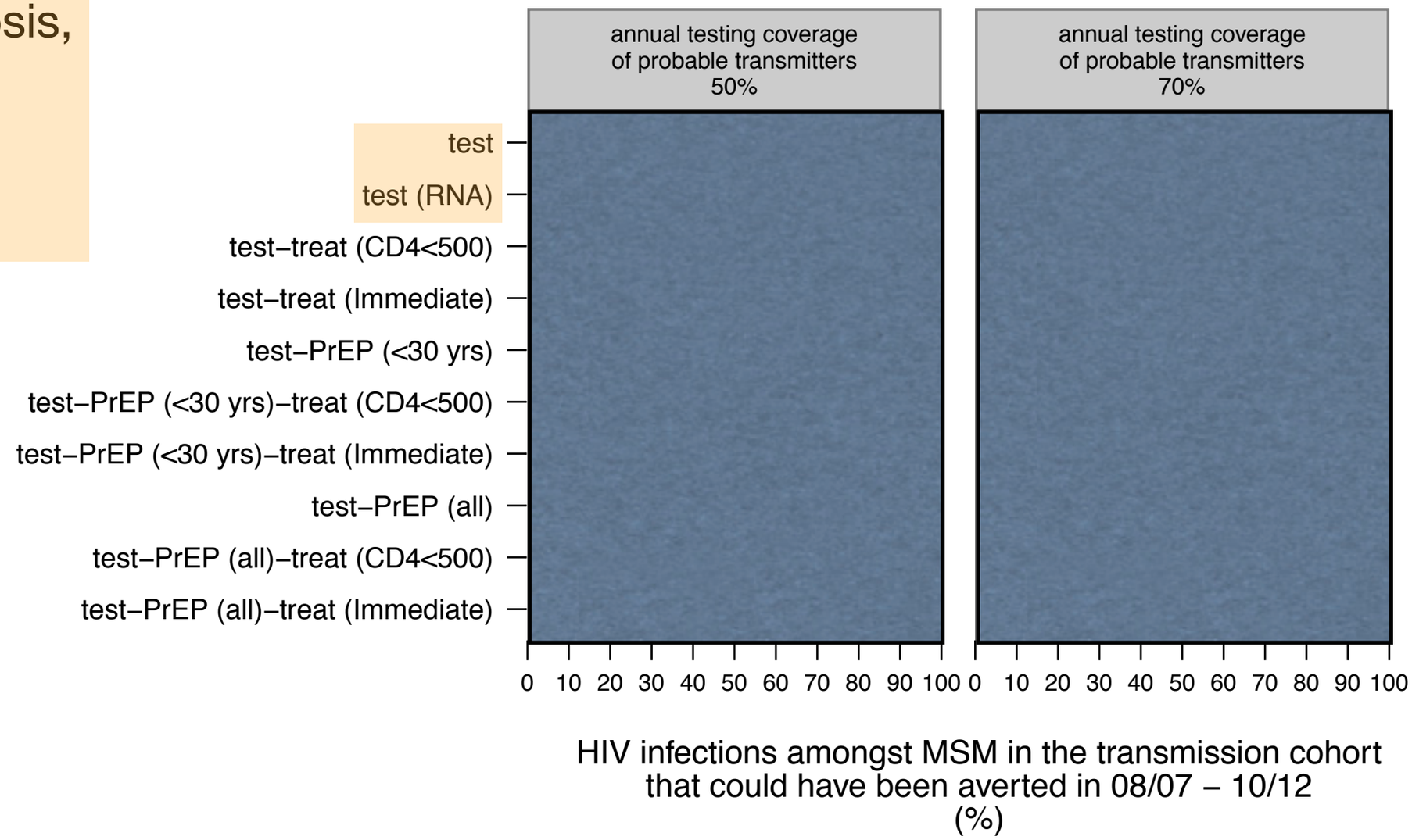
Interpretation:

- 2016 WHO guidelines only recommend PrEP in populations with > 3% incidence/year



In combination with increased testing

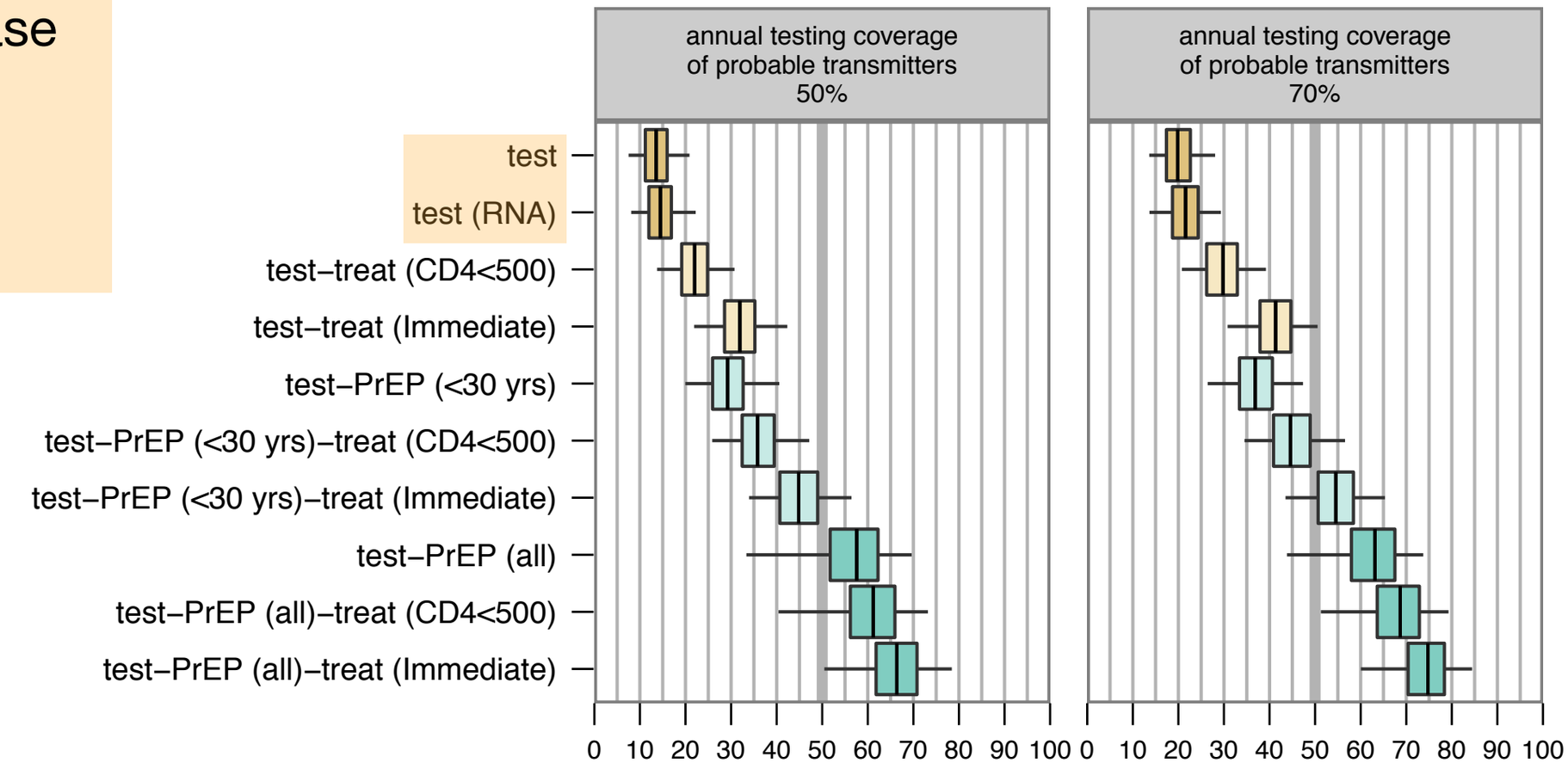
- In 2008/07-2010/12:
  17% of likely transmitters had a last negative test in the 12 months prior to diagnosis, compared to 27% of diagnosed MSM.



In combination with increased testing

Model assumes:

- 50% annual testing scenario corresponds to 50%/17% = 3-fold increase in annual testing



Interpretation:

- Half of all reconstructed transmissions could have been averted with immediate ART + targeted test-and-PreP, but only if more than 50% of all likely transmitters test annually

Strengths

- Predictions based on past transmission events
- Exceptionally detailed HIV monitoring in the Netherlands enables exceptionally detailed characterization of past transmissions

Limitations

- Study based on only 617 transmissions that could be characterized. Most important limiting factor is availability of HIV sequences.
- Predictions based on transmissions up to December 2010 (due to sharp decrease in sequence availability thereafter).

Conclusions

within the limits of available sequence data:

- Lack of substantial reductions in incidence amongst Dutch MSM is not a result of ineffective ART or inadequate retention in care.

- New infections amongst MSM are challenging to prevent due to frequent early transmission and continued low testing uptake of men at risk of onward transmission.

- Increased annual testing and uptake of PrEP by men at high risk of infection have a key role to send the HIV epidemic amongst MSM into a decisive decline.

Thank you

Study team

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