

HIV transmission risk through condomless sex if the HIV positive partner is on suppressive ART: PARTNER study

Alison Rodger, Valentina Cambiano, Tina Bruun, Pietro Vernazza , Simon Collins, Vicente Estrada, Jan Van Lunzen, Giulio Maria Corbelli, Anna Maria Geretti, David Asboe, Pompeyo Viciano, Felix Gutiérrez, Christian Pradier, Katarina Westling, Rainer Weber, Hansjakob Furrer, Jan Prins , Jan Gerstoft, Andrew Phillips and Jens Lundgren for the PARTNER Study Group

CROI, Boston, March 3 to March 6, 2014



Disclosure slide

Dr Alison Rodger has no financial relationships with commercial entities to disclose

Background

- Critical to understand the absolute risk of sexual transmission of HIV through condomless sex (CL) for a person on ART with undetectable plasma VL
- Taking all studies in serodifferent couples to date, condomless sex is reported for only 330¹ cumulative couple-years of follow up (CYFU)
- There is no direct evidence at all for anal sex in men who have sex with men

1. *Rodger et al. Antivir Ther. 2013;18(3):285-7*

PARTNER Study

The PARTNER study is an observational multi-centre study of HIV serodifferent couples in which the positive partner is on ART, taking place in 75 European sites

Aim

To evaluate the risk of within-couple HIV transmission (HT and MSM) during periods where condoms are not used consistently and the HIV positive partner is on suppressive ART



Study Procedures

- Informed consent included
 - Information on the need for consistent condom use (emphasized at each study contact)
 - Explicit reference to the fact that HIV negative partners knew their partner is HIV positive and there is a transmission risk
- 6 monthly self completed confidential risk behaviour questionnaire and clinical data including HIV viral load (for +ve partner) and HIV test (for -ve partner)

Study Procedures

- Eligible CYFU:
 - condomless sex
 - not using PEP or PrEP
 - latest HIV VL <200 copies (within max past 12 m)
- Overall 1,110 couples were recruited by 1st Nov 2013, of which 767 couples contributed 894 eligible CYFU
- Reasons couples provide no eligible CYFU: no follow-up visit (71%), no HIV test (5%), PEP/PrEP (3%), no CL sex reported (3%), VL>200 (16%)
- We report the rate of phylogenetically linked transmissions during eligible follow up

Sequencing Methods

- HIV-1 pol and env sequences were obtained from plasma and PBMCs by population sequencing
- Maximum likelihood trees were constructed using PhyML (1000 bootstrap replicates generated using FastTree approximate maximum likelihood tool)
- Criteria for clustering was <0.015 nucleotide substitutions per site pairwise genetic distance and $>99\%$ bootstrap support

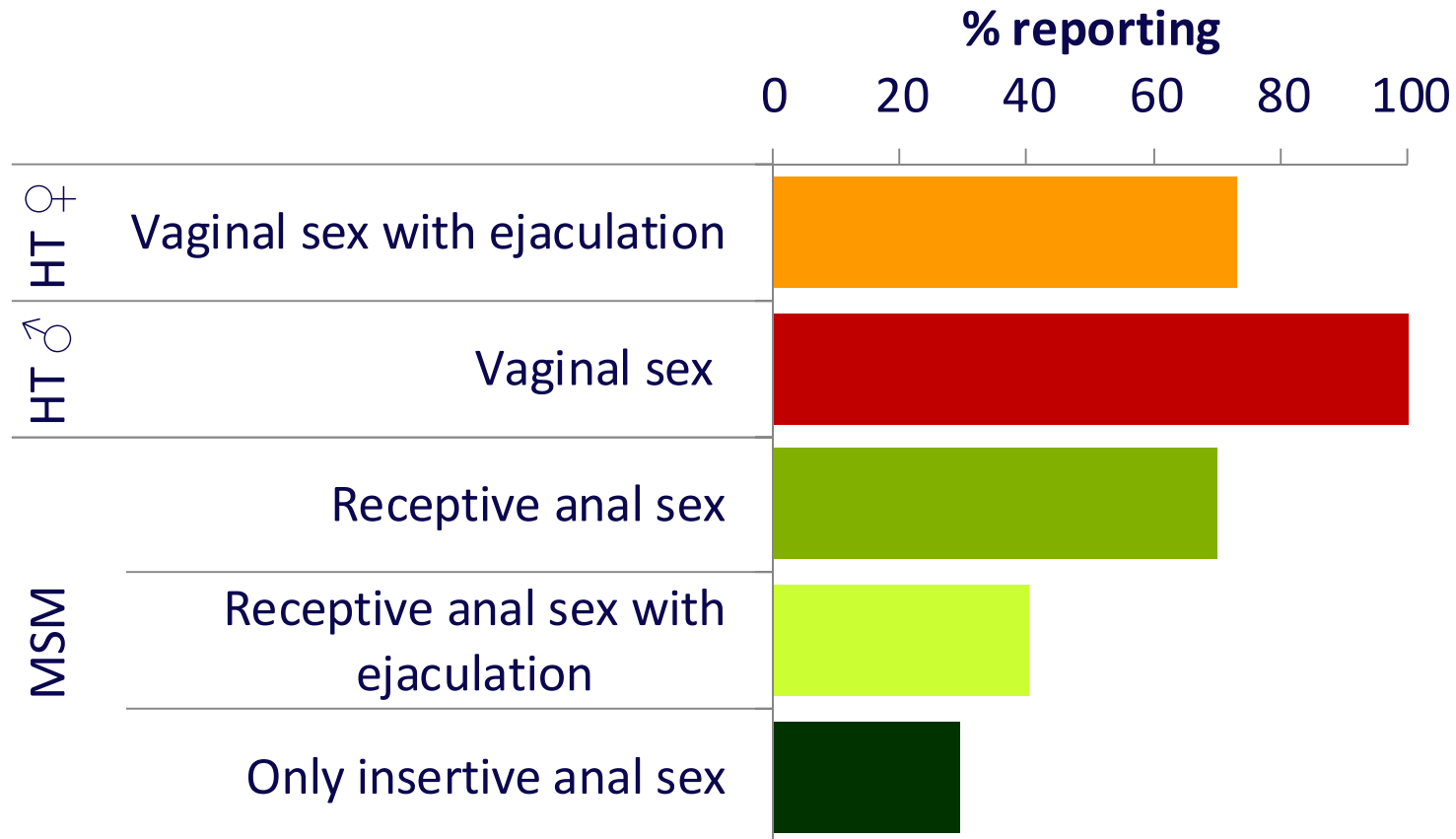
HIV negative partners: Characteristics

	MSM couples (n=282)	Heterosexual couples (n=445)	
		M -ve (n=245)	W -ve (n=240)
At study entry			
Age, median (IQR)	40 (32-47)	45 (37-50)	40 (34-46)
Yrs CL sex, median (IQR)	1.5 (0.5-3.5)	2.7 (0.6-6.9)	3.5 (0.7-10.6)
During follow up			
Years in the study, median (IQR)	1.1 (0.7-1.9)	1.5 (1.0-2.0)	1.5 (0.9-2.0)
Diagnosed with STI, %	16%	5%	6%
CL sex with other partners, %	34%	3%	4%
CL sex acts/year, median (IQR)	43 (18-79)	37 (14-77)	38 (14-71)
Estimated total number CL sex acts	16,400	14,000	14,000

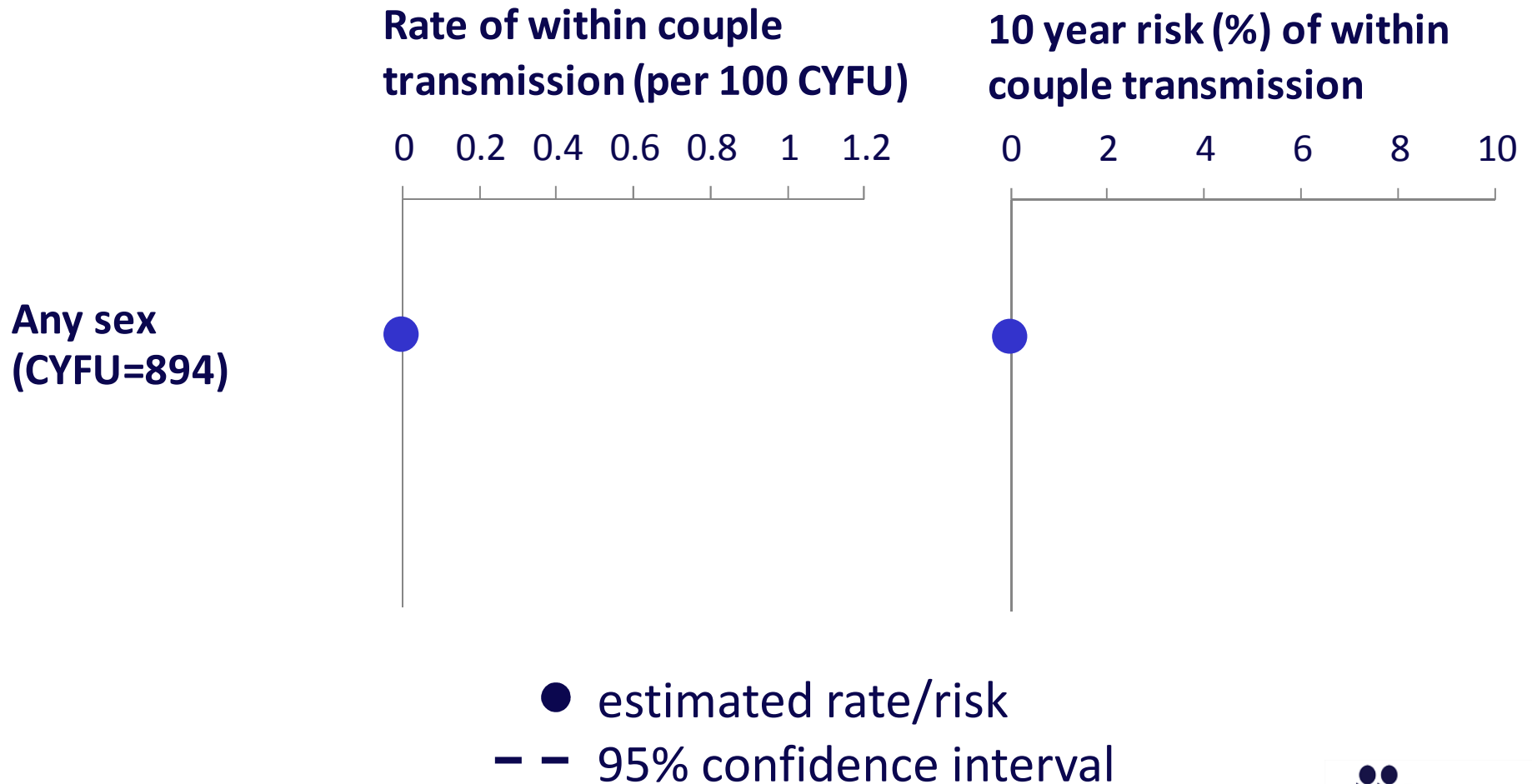
HIV positive partners: Characteristics

	MSM couples (n=282)	Heterosexual couples (n=445)	
		W +ve (n=245)	M +ve (n=240)
At study entry			
Age, median (IQR)	42 (36-47)	40 (34-46)	45 (40-49)
Years on ART, median (IQR)	5 (2-11)	7 (3-14)	10 (4-15)
Self-reported adherence $\geq 90\%$, %	97%	94%	94%
Self report undetectable VL, %	94%	86%	85%
CD4 > 350 cells/mm ³ , %	90%	88%	84%
During follow-up			
Having missed ART for more than 4 consecutive days, %	2%	7%	4%
Diagnosed with STI, %	16%	4%	5%

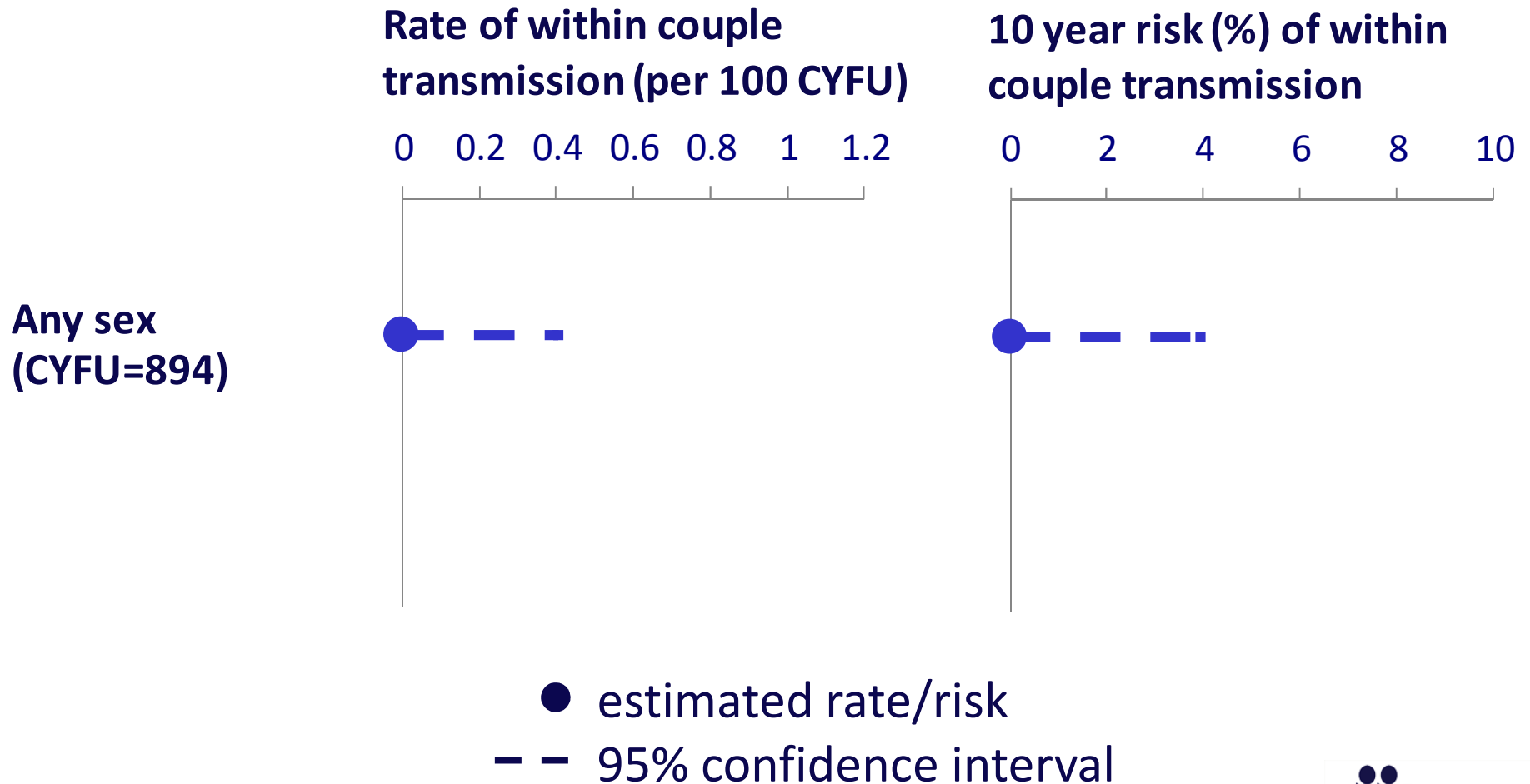
HIV-ve partners reporting condomless penetrative sex during eligible CYFU



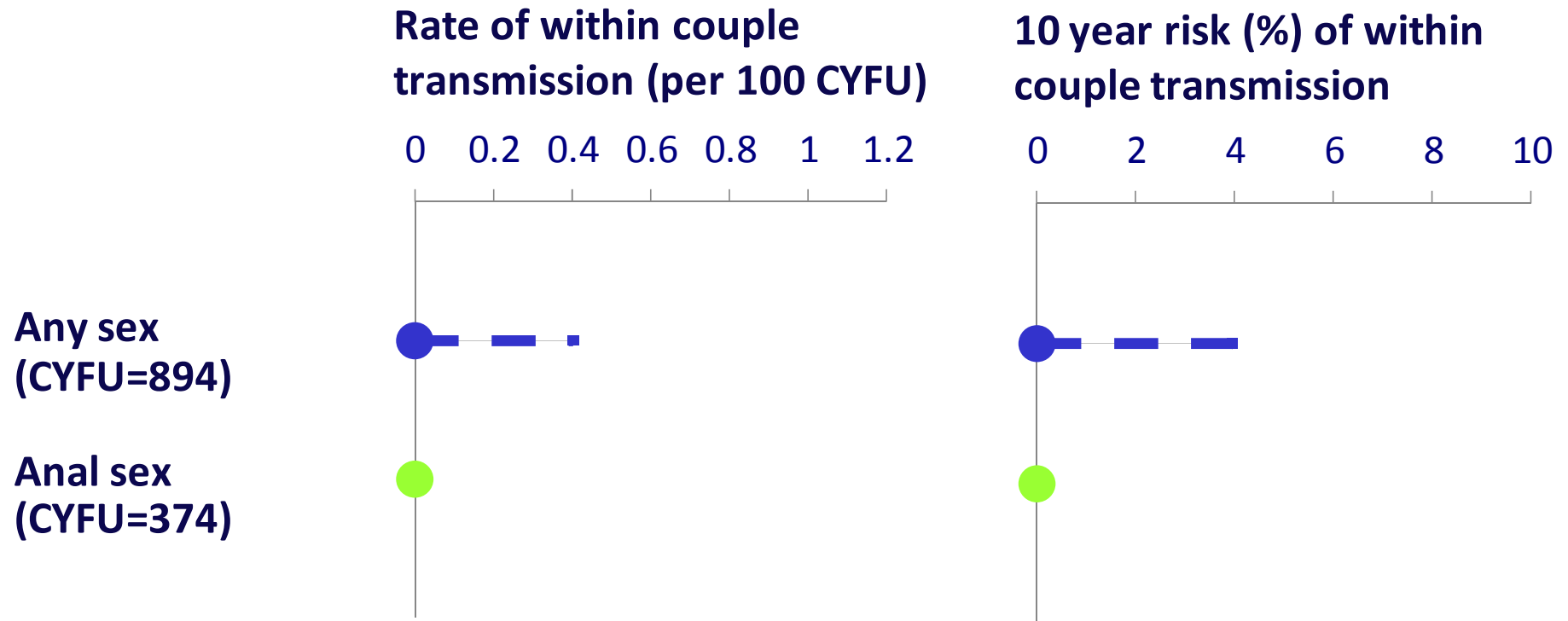
Rate of HIV transmission according to sexual behaviour reported by the negative partner



Rate of HIV transmission according to sexual behaviour reported by the negative partner

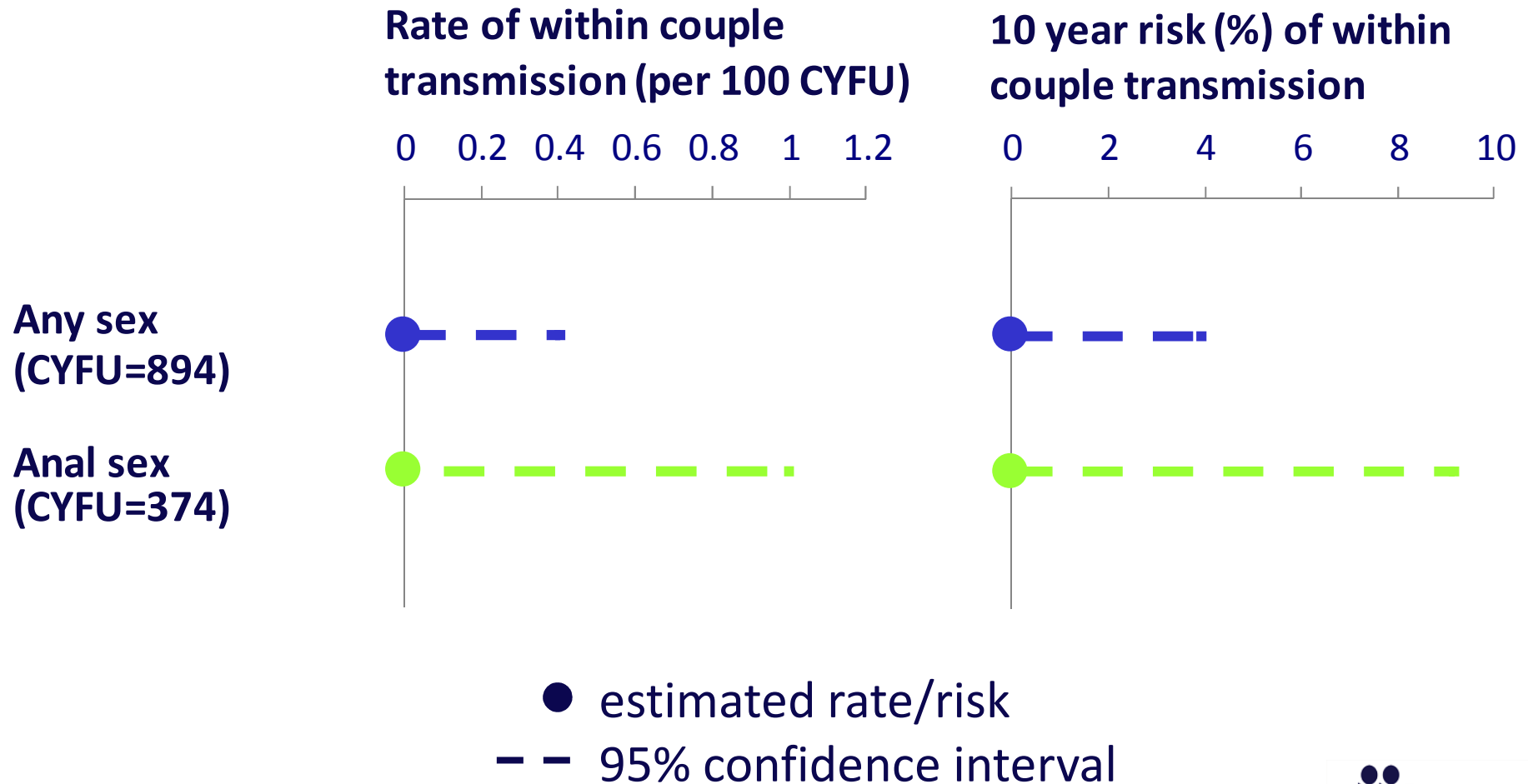


Rate of HIV transmission according to sexual behaviour reported by the negative partner

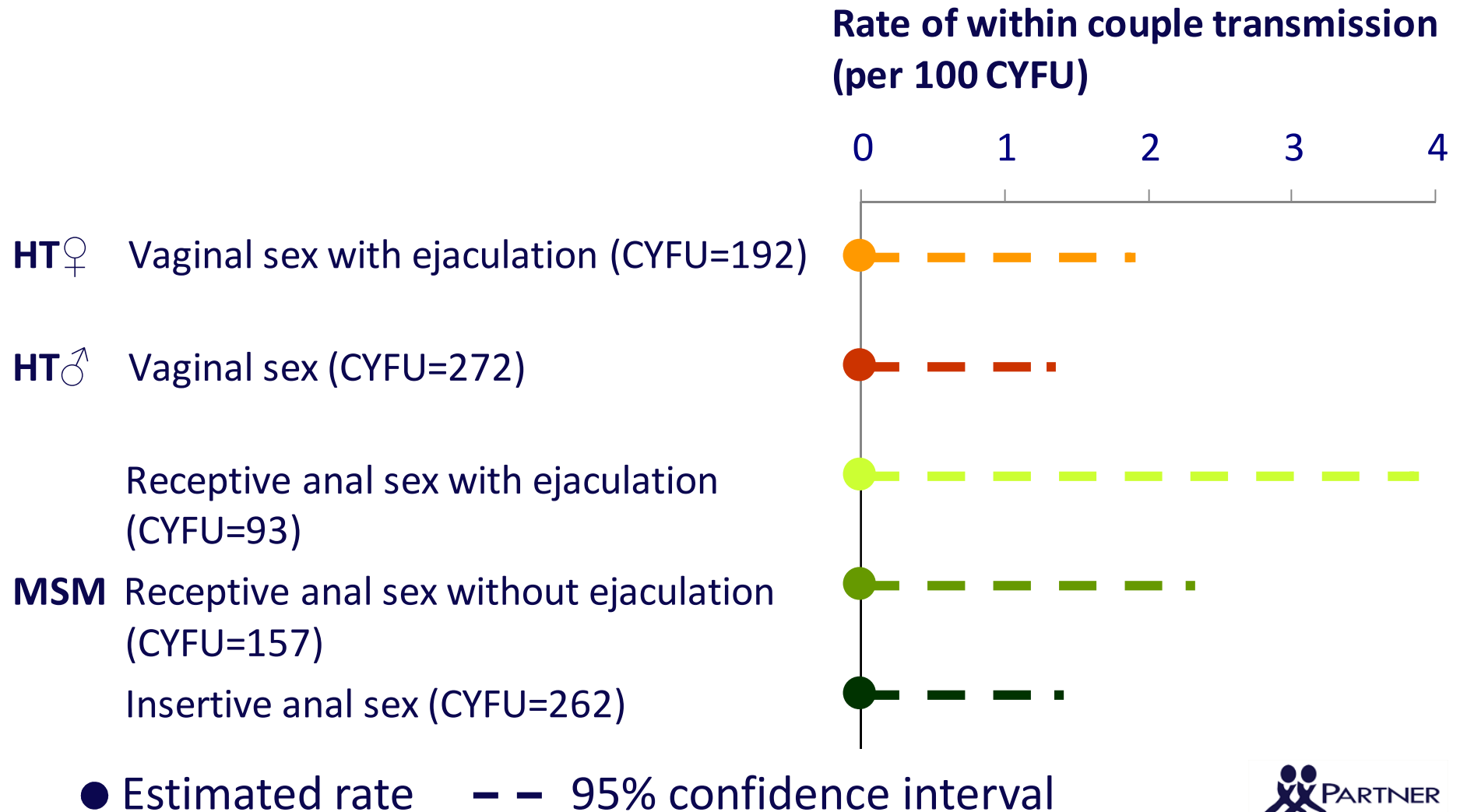


● estimated rate/risk
— 95% confidence interval

Rate of HIV transmission according to sexual behaviour reported by the negative partner



Rate of HIV transmission according to sexual behaviour reported by the negative partner



Conclusions

- Interim results after 894 eligible CYFU report an overall HIV transmission rate of zero through condomless sex with a plasma VL < 200 copies/mL on ART, despite a significant number of sexual acts.
- However uncertainty over the upper limit of risk remains, particularly over receptive anal sex with ejaculation
- Additional follow-up in MSM is needed through PARTNER2 (2014-2017) to provide more precise estimates for transmission risk to inform policy and also individual choice on condom use

Acknowledgments

Thank you to all PARTNER study participants

PARTNER sites

Spain : Hospital Virgen del Rocío, Sevilla, Pompeyo Viciano. Hospital Universitario de Elche, Felix Gutiérrez. Hosp. Universitari Germans Trias i Pujol, Bardalona, Bonaventura Clotet. Hospital La Paz, Madrid, José María Peña. Hospital Universitario San Carlos, Madrid, Vicente Perez Estrada. Hospital Universitario Reina Sofia De Cordoba, Antonio Rivero. Hospital Clínico Universitario de Santiago de Compostela, Antonio Antela. Hospital Clínic de Barcelona, Barcelona, Jose M. Gatell Artigas. Centro Sanitario Sandoval, Madrid, Jorge Del Romero Guerrero. Hospital Ramon y Cajal, Madrid, Fernando Dronda. Hospital Carlos III, Madrid, Vincente Soriano.

United Kingdom: Chelsea & Westminster, London: David Asboe. Dean Street Clinic, London: Nneka Nwokolo. Mortimer Market Centre, London: Richard Gilson. Southmead Hospital, Bristol: Mark Gompels. Coventry and Warwickshire Hospital: Sris Allan. King's College Hospital: Michael Brady. Brighton and Sussex: Martin Fisher. Leicester Royal Infirmary: Jyoti Dhar. Newham : Rebecca O'Connell. Birmingham Heartlands : David White. St Thomas's Hospital, London: Julie Fox. St Mary's Hospital, London: Sarah Fidler,.Bradford: Phillip Stanley, Earnsdale Clinic, Redhill: Usha Natarajan. Northampton: Mohamed Ghanem. North Middlesex University Hospital, London : Jonathan Ainsworth. North Manchester General Hospital: Ed Wilkins. St James's, Leeds: Jane Minton. Hastings: Harish Patel. Whipps Cross Hospital, London: Monica Lascar.

Germany: University Clinic, Hamburg Eppendorf: Jan van Lunzen. University Hospital, Cologne Gerd Fätkenheuer. Praxis Driesener Straße, Berlin Ivanka Krznic. Medizinische Poliklinik, Munich, Johannes Bogner. Universitäts-Hautklinik, Bochum, Norbert H. Brockmeyer. ICH Study Center, Hamburg, Hans-Jürgen Stellbrink. Gemeinschaftspraxis Jessen-Jessen-Stein, Berlin, Heiko Jessen. University Hospital, Bonn, Jürgen Rockstroh.

Switzerland: University Hospital Zürich, Rainer Weber. University Hospital Bern, Hansjakob Furrer. University Hospital Basel, Marcel Stoeckle, Kantonsspital, St. Gallen, Pietro Vernazza. Ospedale Regionale Di Lugano, Enso Bernasconi.

Denmark: Rigshospitalet, Copenhagen, Jan Gerstoft. Hvidovre Universitets Hospital, Lars Mathiesen. Aarhus universitetshospital, Skejby Lars Oestergaard. Odense Universitetshospital, Svend Stenvang.

Finland: Helsinki University Central Hospital, Matti Ristola.

Sweden: Karolinska University Hospital Huddinge, Stockholm, Katarina Westling. Södersjukhuset, Venhälsan, Stockholm, Anders Blaxhult.

Ireland: St. James' Hospital, Dublin Gráinne Cortney.

Belgium: CHU Saint-Pierre, Bruxelles , Nathan Clumeck. University Ziekenhuis, Gent, Lino Vandekerckhove

The Netherlands: AMC. Amsterdam, Jan Prins. OLVG, Amsterdam, Kees Brinkman. Medisch Centrum Jan van Goyen, Amsterdam, Dominique Verhagen. DC Klinieken, Amsterdam, Arne van Eeden.

France: Hopital de l' Archet 1, Nice, Christian Pradier. CHU Hotel-Dieu, Nantes, Francois Raffi. Hopital Tenon, Paris, Gilles Pialoux. "190", Paris, Michel Ohayon. AIDES, Vincent COQUELIN.

Austria: Medical University of Vienna, Armin Rieger. Medical University Innsbruck, Robert Zangerle. FA für Dermatologie/Venerologie, Linz, Maria Geit

Italy: San Paolo Hospital, Milna, Terease Bini. Ospedale Spallanzani, Roma Adriana Ammassari. Malattie Infettive Università di Catania, Maurizio Celesia. Università degli Studi di Modena Cristina Mussini. Universitaria San Martino, Genova, Antonio Di Biagio.

Portugal: Hospital Santa Maria, Lisabon, Nuno Janerio.

The PARTNER study presents independent research commissioned by the National Institute for Health Research (NIHR) under its Programme Grants for Applied Research funding scheme (RP-PG-0608-10142) . The views expressed in this presentation are those of the authors and not necessarily those of the NHS, NIHR or the Department of Health

