Towards to Amsterdam Cohort Studies 30th year: the unique story of HIV and its risk groups

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Aims

Overall aims Amsterdam Cohort Studies (ACS)
- To investigate the epidemiology, psychosocial determinants, course of infection, and pathogenesis of HIV infection, *and of BBI and STI other than HIV*, and to evaluate the effects of interventions

Today's aim
- To present findings on trends in the HIV epidemic and its relationship with risk behaviour, coinfections. and interventions, placed in historical perspective
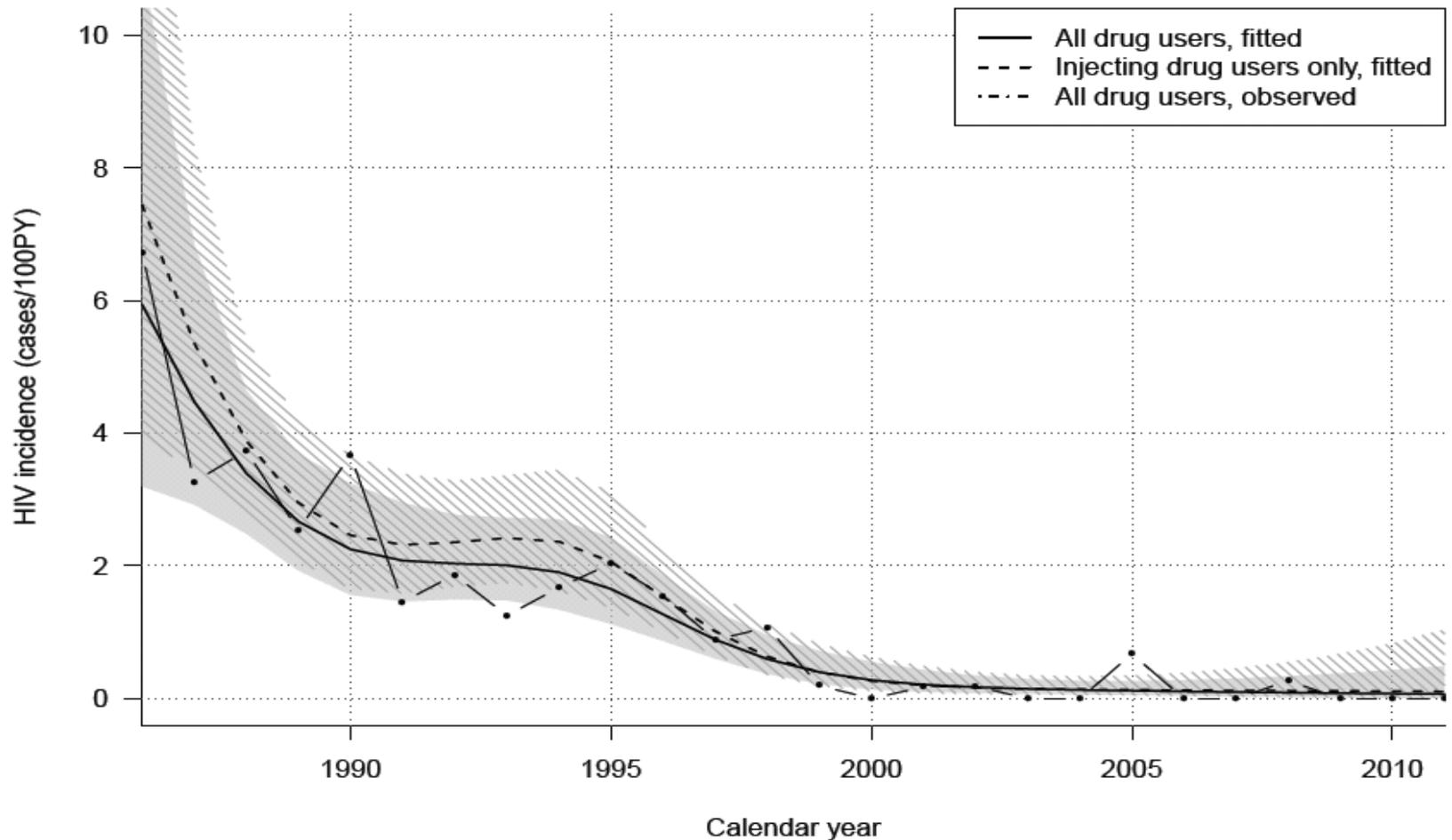
Characteristics of **HIV negative drug users,** participating in the ACS

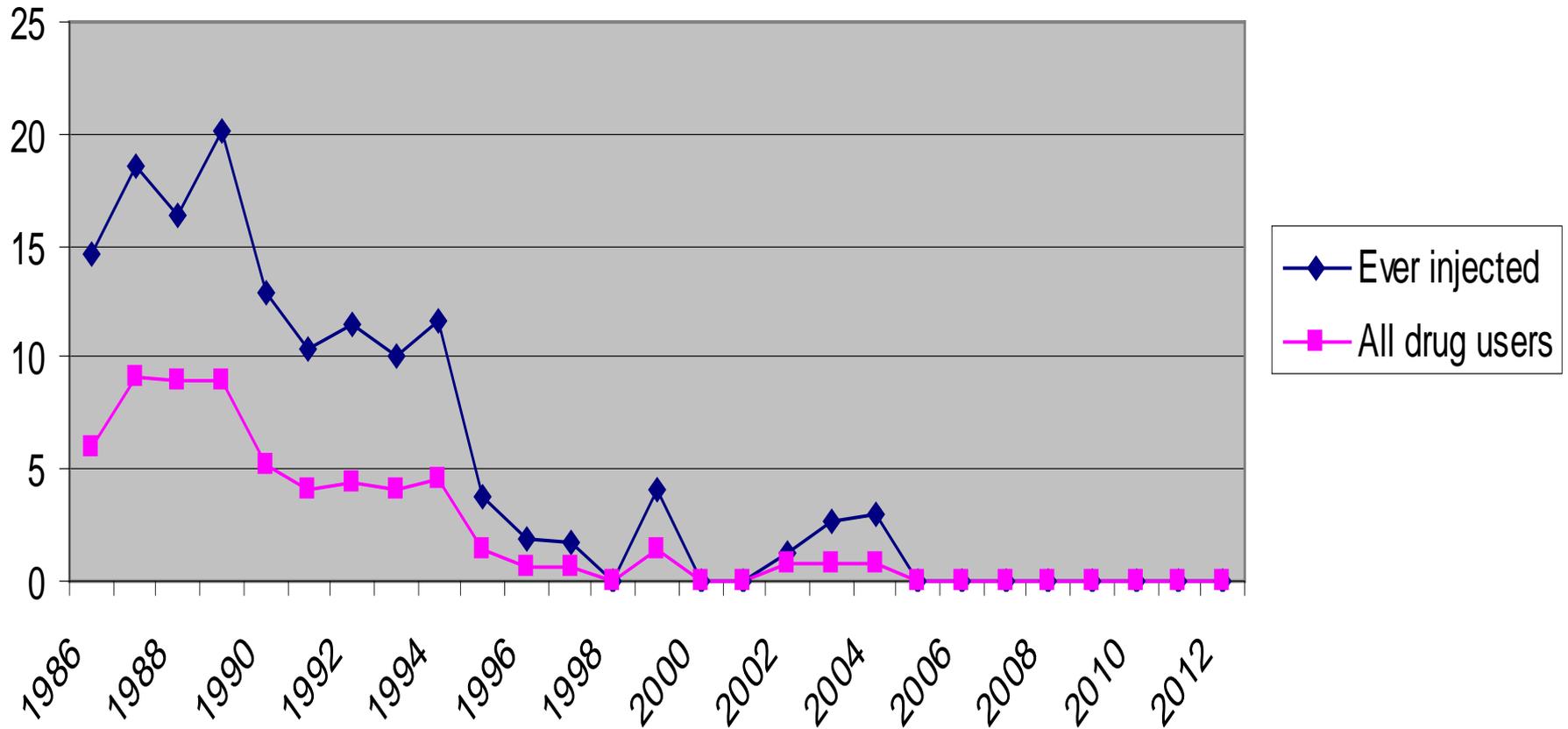|	ACS 1985-1989 *Van den Hoek, AIDS 1988,* **n=414**	ACS 2006-2012 Van Santen, in progress 2013 **n=450**
Female sex	48%	31%
Mean age	28 (SD 5)	43 (SD 8)
Dutch nationality	79%	83%
Ever injecting	79%	61%
Recent injecting	65%	30%
Borrowed needles (among injectors)	61%	8%

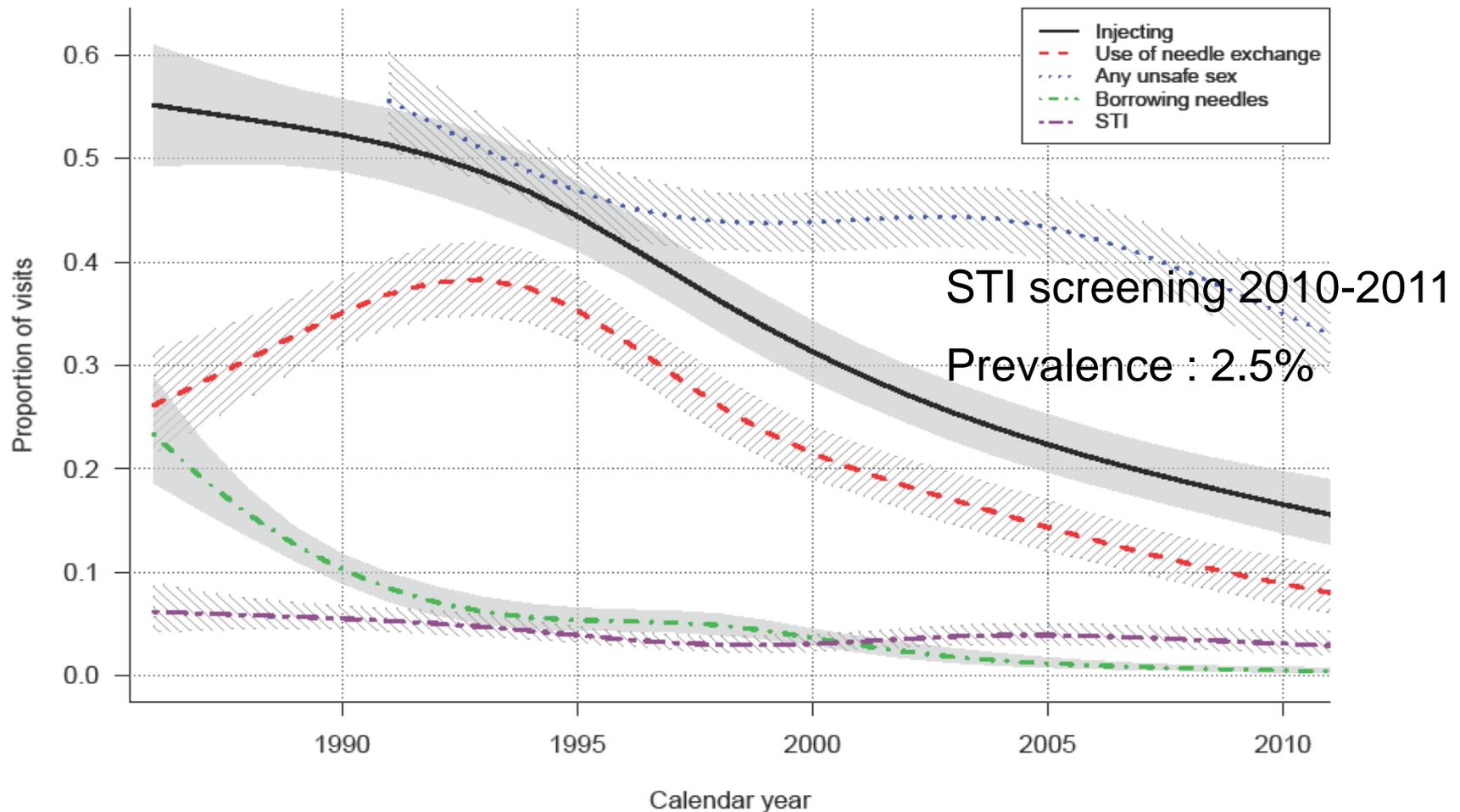# HIV incidence in the ACS among drug users, 1984-2011

HCV incidence DU/100py

# Trends in self-reported injecting and sexual risk behaviour among DU, ACS

STI screening 2010-2011

Prevalence : 2.5%

v.d. Knaap, Grady et al, Plos One 2013

Effect of harm reduction participation on HIV and HCV incidence: ACS among drug users

	HIV			HCV		
	IRR	95% CI	p value	IRR	95% CI	p value
No harm reduction	1		<0.001	1		<0.001
Incomplete harm reduction	0.87	(0.50-1.52)		1.17	(0.59-2.31)	
Full harm reduction	0.43	(0.21-0.87)		0.36	(0.13-1.03)	
-Limited dependence	0.046	(0.006-0.35)		0.044	(0.006-0.35)	
-No dependence	0.20	(0.078-0.50)		0.13	(0.044-0.40)	

Adjusted for injection duration, HIV status steady partner (for HIV only)
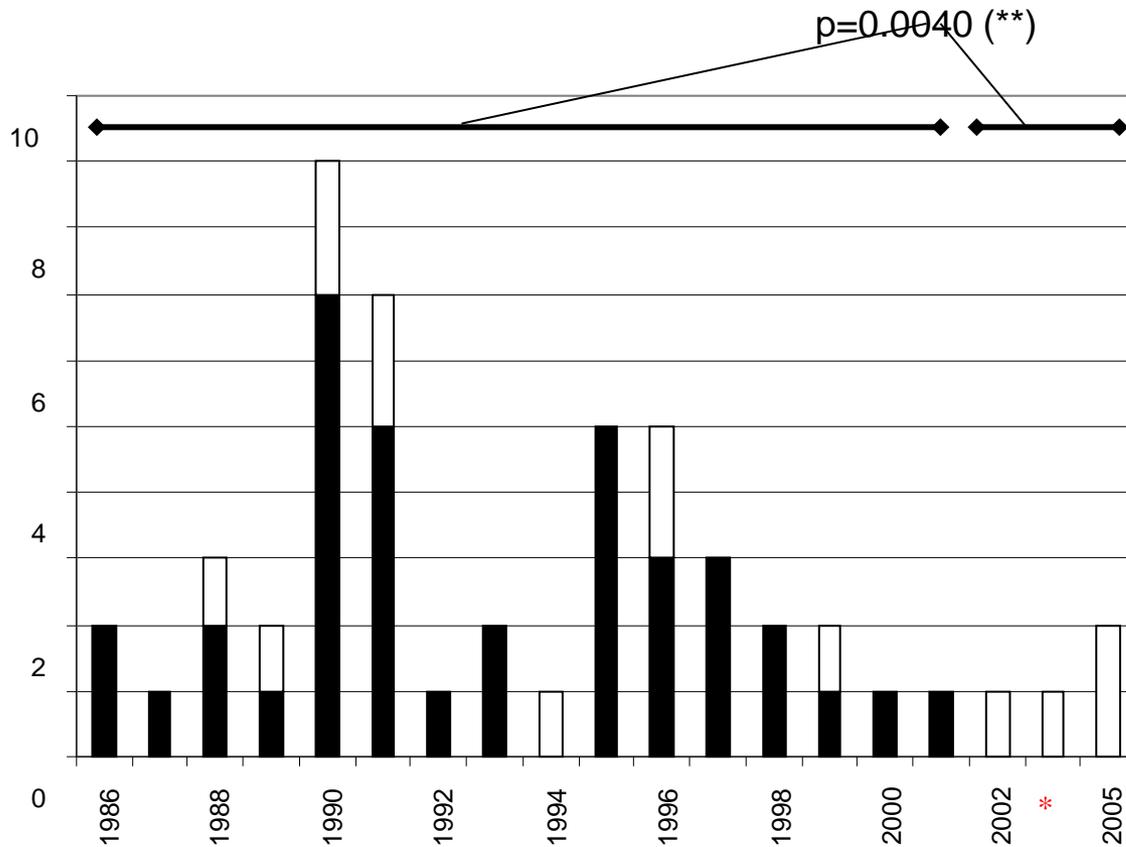
v.d. Berg et al, Addiction 2007

Number of needles exchanged in Amsterdam 1984-2012
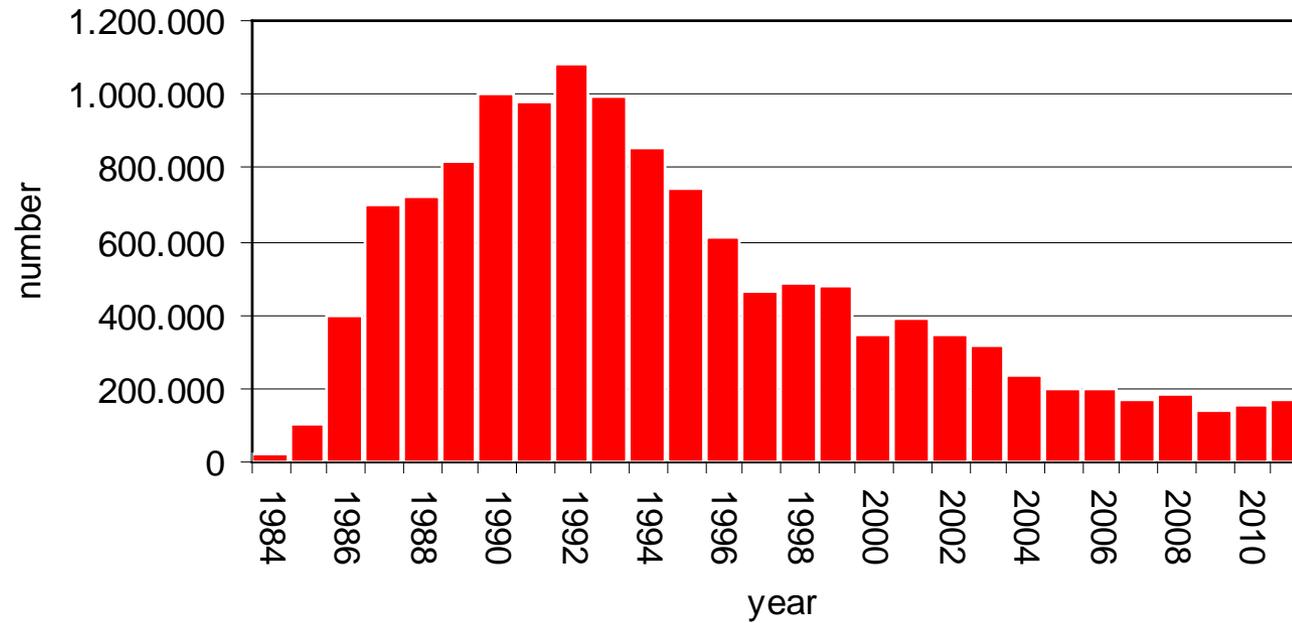
HIV-1 strains specific (black) and non-specific (white) for drug users, seroconverters ACS

Lukashov at al. JAIDS 2013

HIV and HCV spread model based on ACS data

HCV incidence
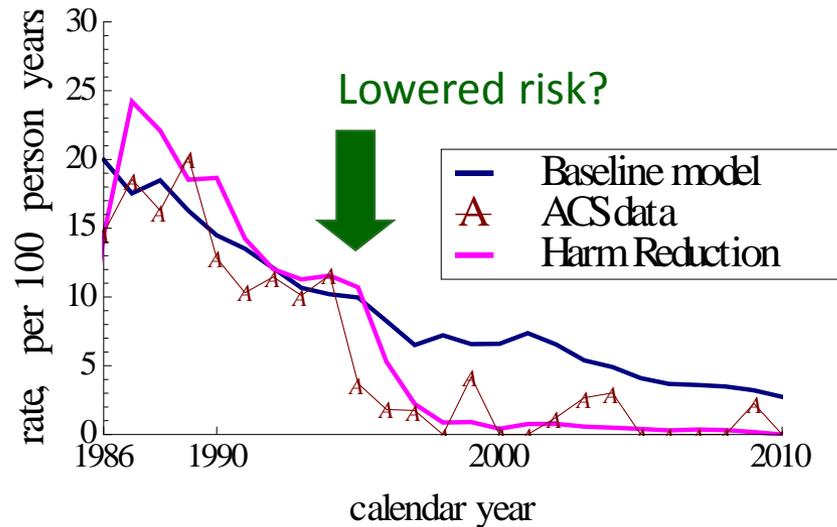
Main trends in HIV and HCV incidence among Amsterdam DU were reproduced assuming no harm reduction effects

Assuming harm reduction measures had led to a strong decrease in risk behaviour over time improved the model

Universitair Medisch Centrum Utrecht

de Vos et al, Addiction 2013

Characteristics of **HIV negative MSM** participating in the ACS

|	**1984-1985** *Van Griensven et al, Am J Èpid 1987* **n=508**	**2007-2011** *Van den Boom et al , JAIDS 2013* **n=649**
Mean age	35	35 (SD 9)
Dutch nationality	?	91%
High educational level	most	71%
Median lifetime No. of partners	300	105 (IQR 50-400)
Median No. of sexual partners last 6 months	10	5 (IQR 2-11)

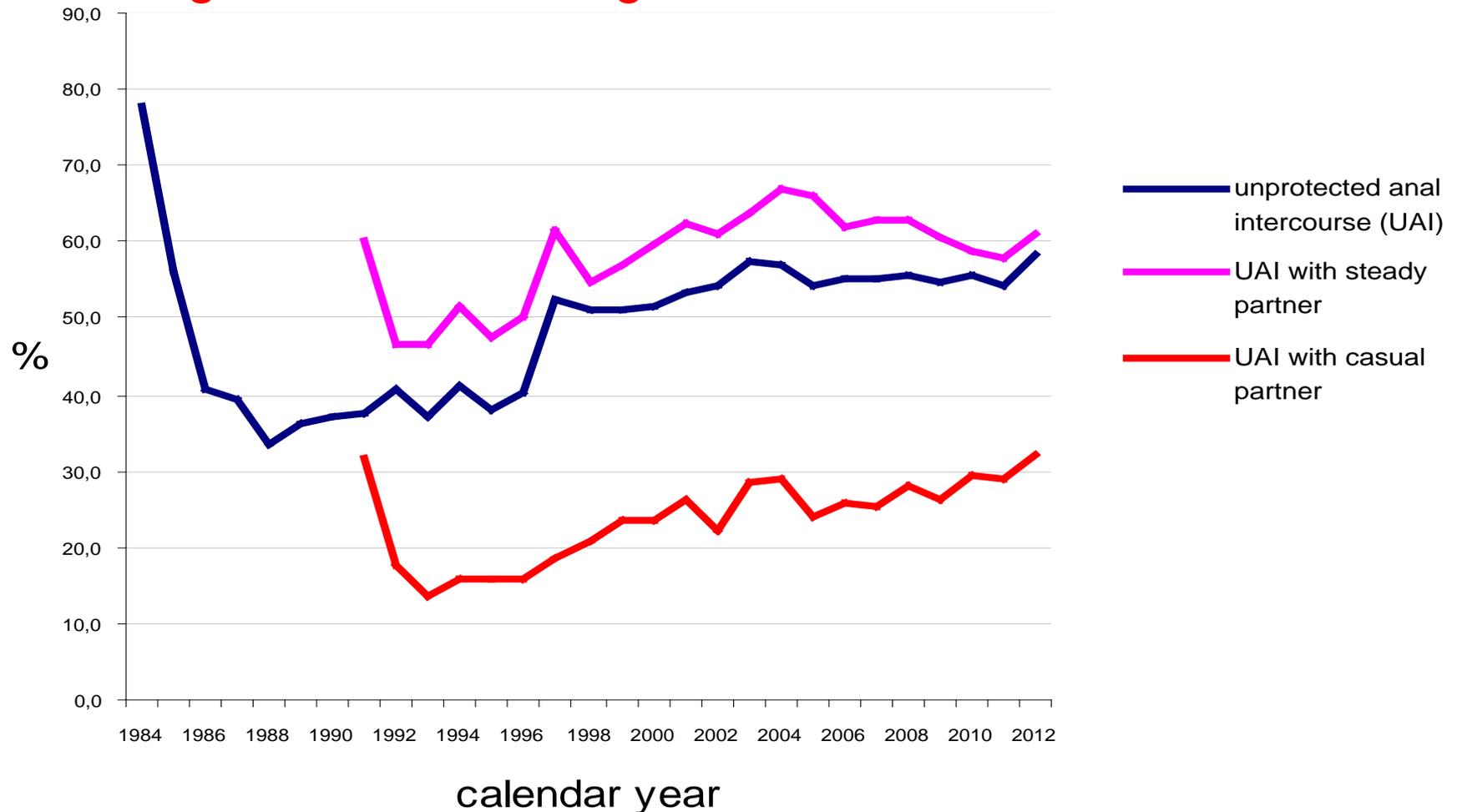# HIV incidence in the ACS among MSM for different ages

Jansen et al, AIDS 2011
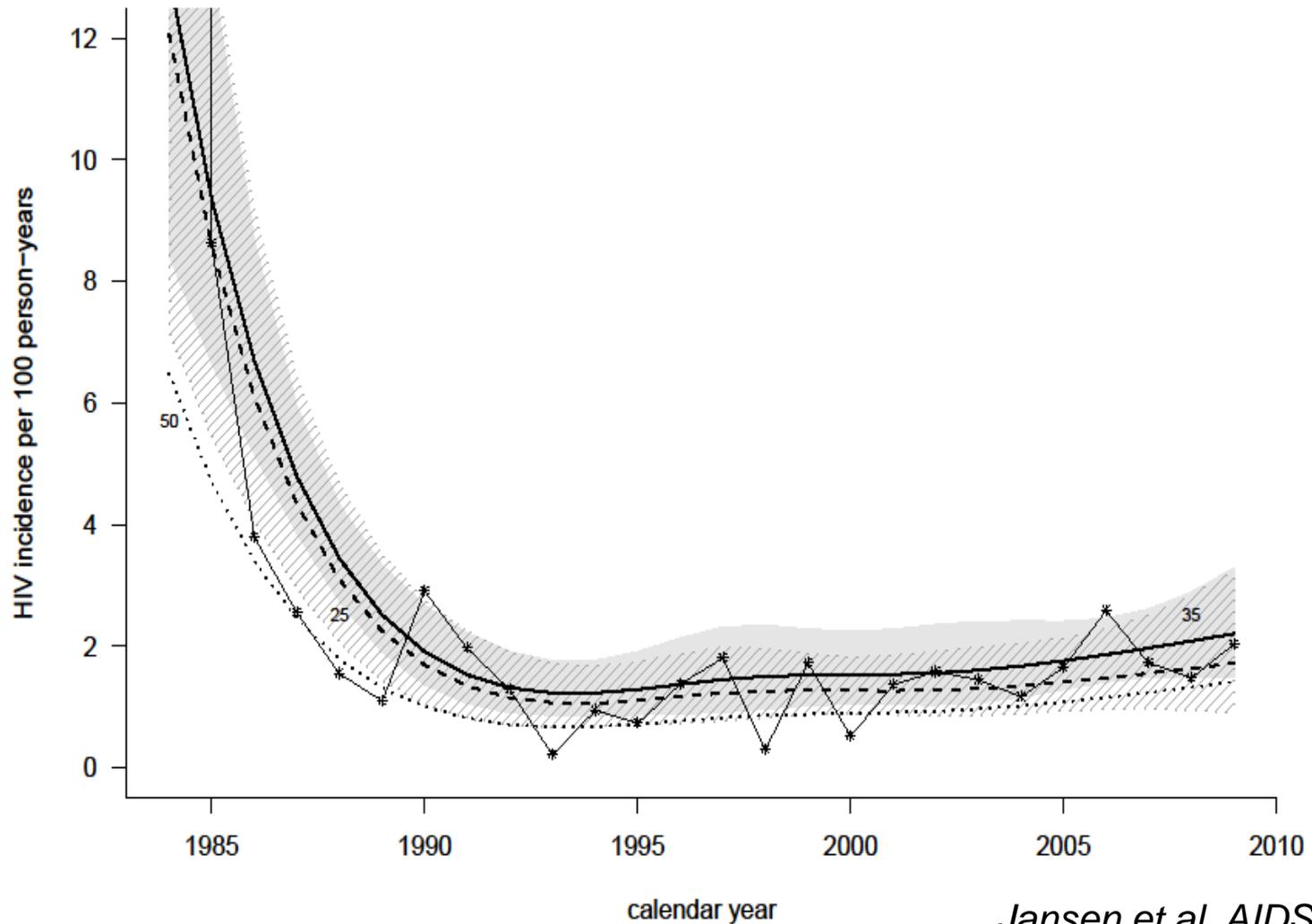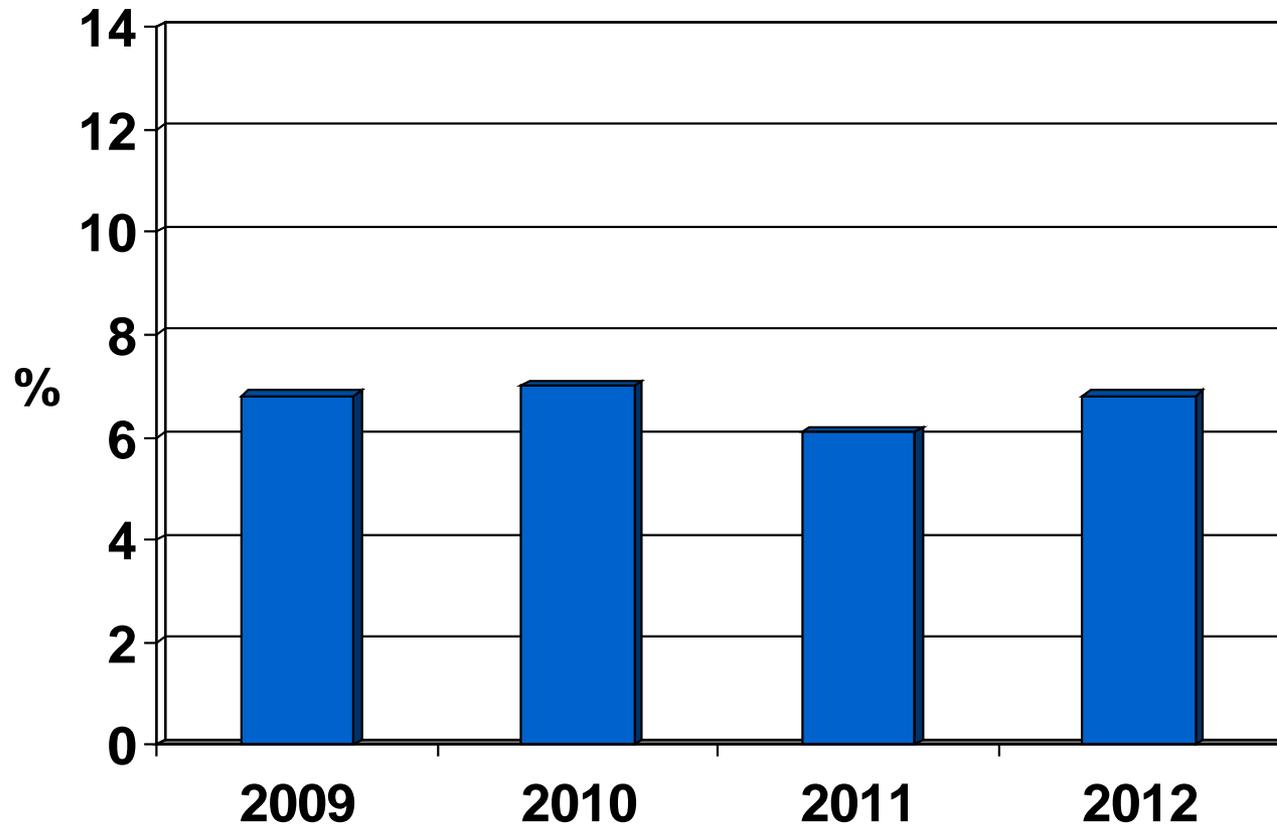
Observed HIV incidence in the ACS among MSM, 1984-2012
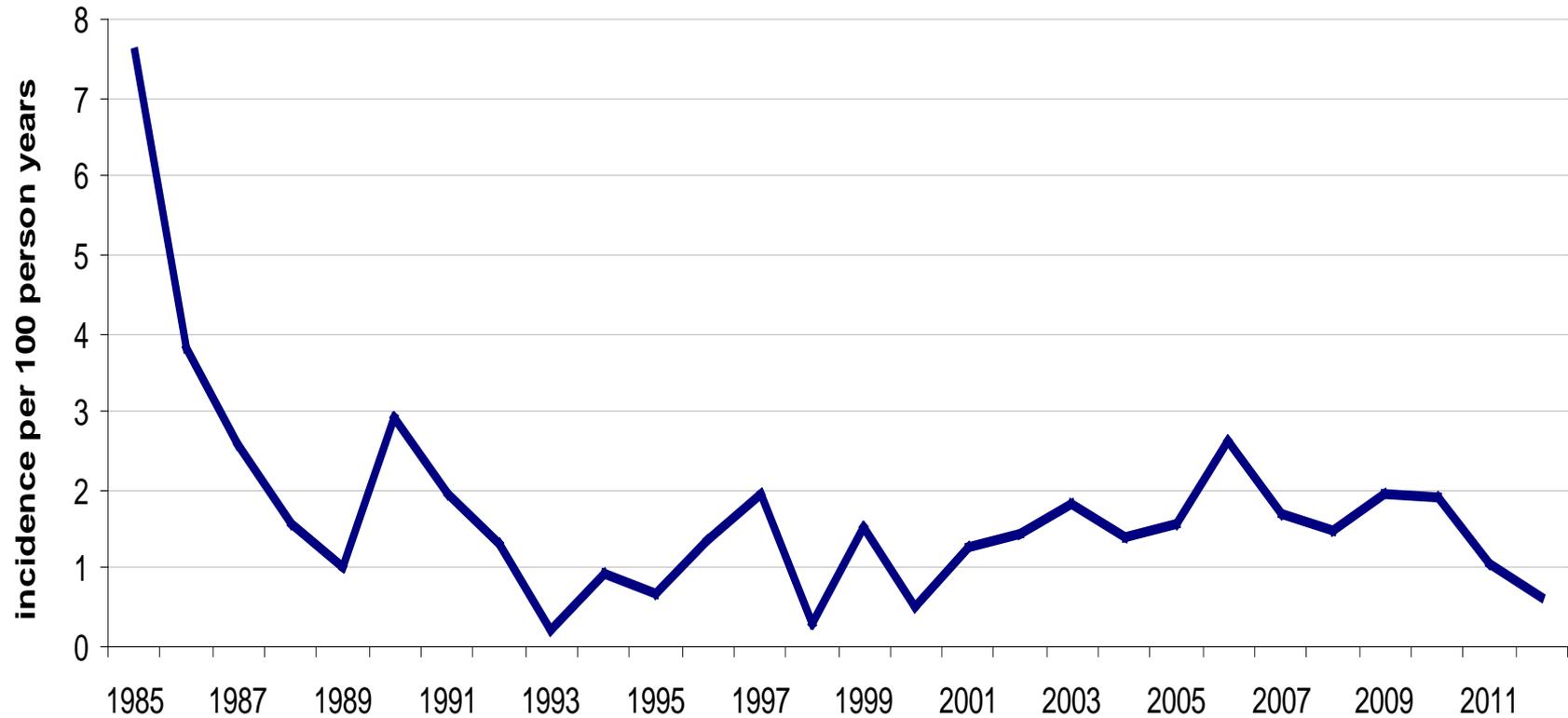
Sexual risk behaviour in the preceding 6 months among HIV negative MSM having anal sex, ACS, 1984-2012

STI diagnosis among HIV negative MSM, ACS, 2008-2012

MSM still at high risk for STI, but not accompanied by increase in HIV incidence

Possible reasons:

- cART use (widely available since 1996), resulting in lower viral loads and a reduced transmission risk per sexual act

- Behavioral factors: Risk reduction strategies among MSM
  - Serosorting
  - Viral sorting
  - Strategic positioning

Risk reduction strategy 1: Serosorting

The practise of engaging in unprotected anal intercourse with a partner of the same HIV-serostatus

Is serosorting with causal partners (CP) effective in reducing the risk of HIV?

Sexual (risk) behaviour:	ORadj	p
UAI	1	0.027
Serosorting	0.46 (0.13-1.59)	
Consistent condom use	0.37 (0.18-0.77)	

Serosorting not as effective as condom use!

van den Boom et al., JAIDS 2013

Changes in risk behaviour from pre to post HIV seroconversion

Time<0 HIV negative follow-uo

Tim≥0 HIV positive follow--up
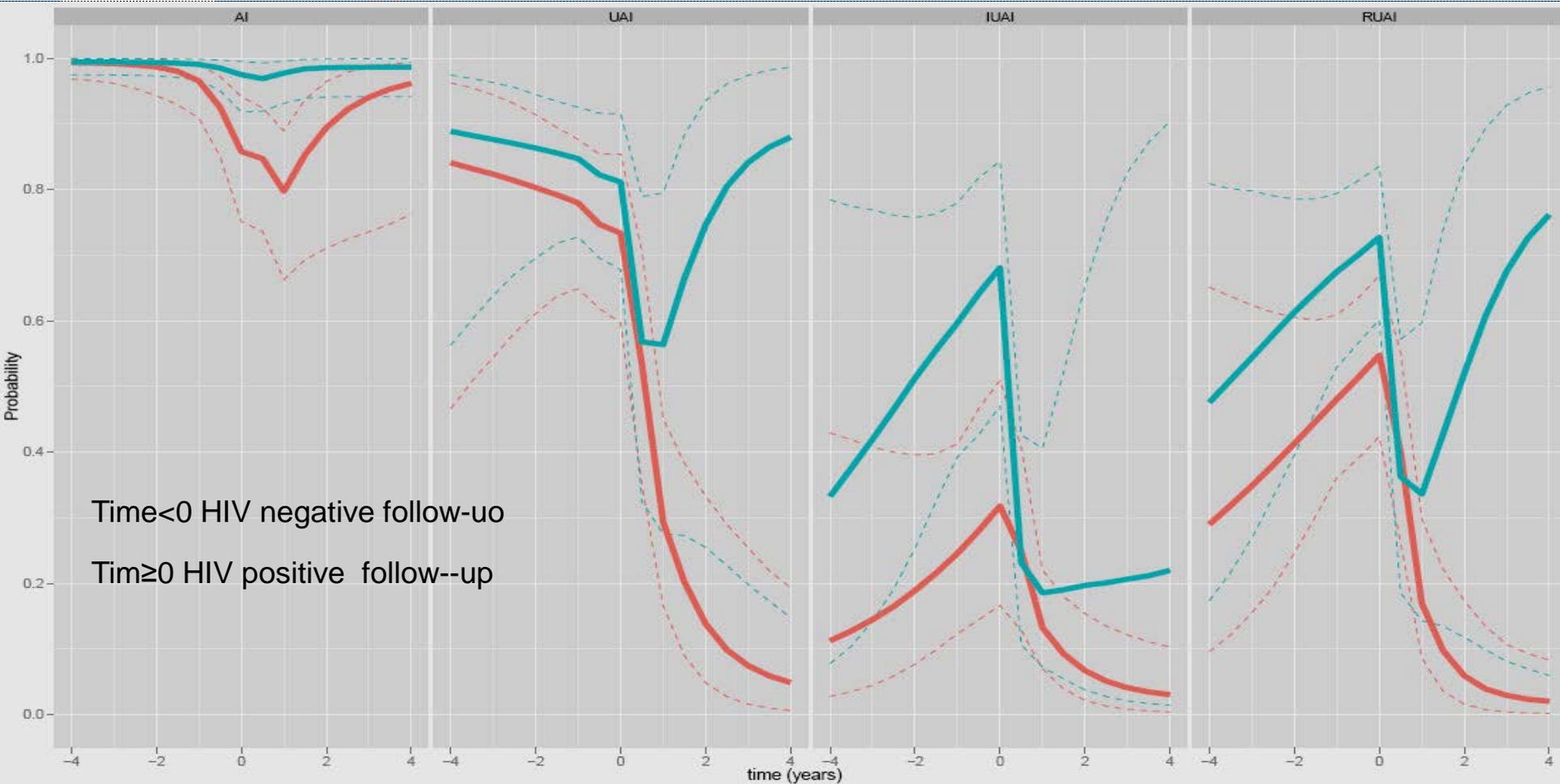
Probabilities of engaging in anal intercourse (**AI**), unprotected AI (**UAI**), insertive UAI (**IUAI**) and receptive UAI (**RUAI**) both in the pre-cART (red lines) and cART (blue lines) eras, HIV seroconverters, ACS.

Heijman et al, AIDS 2012
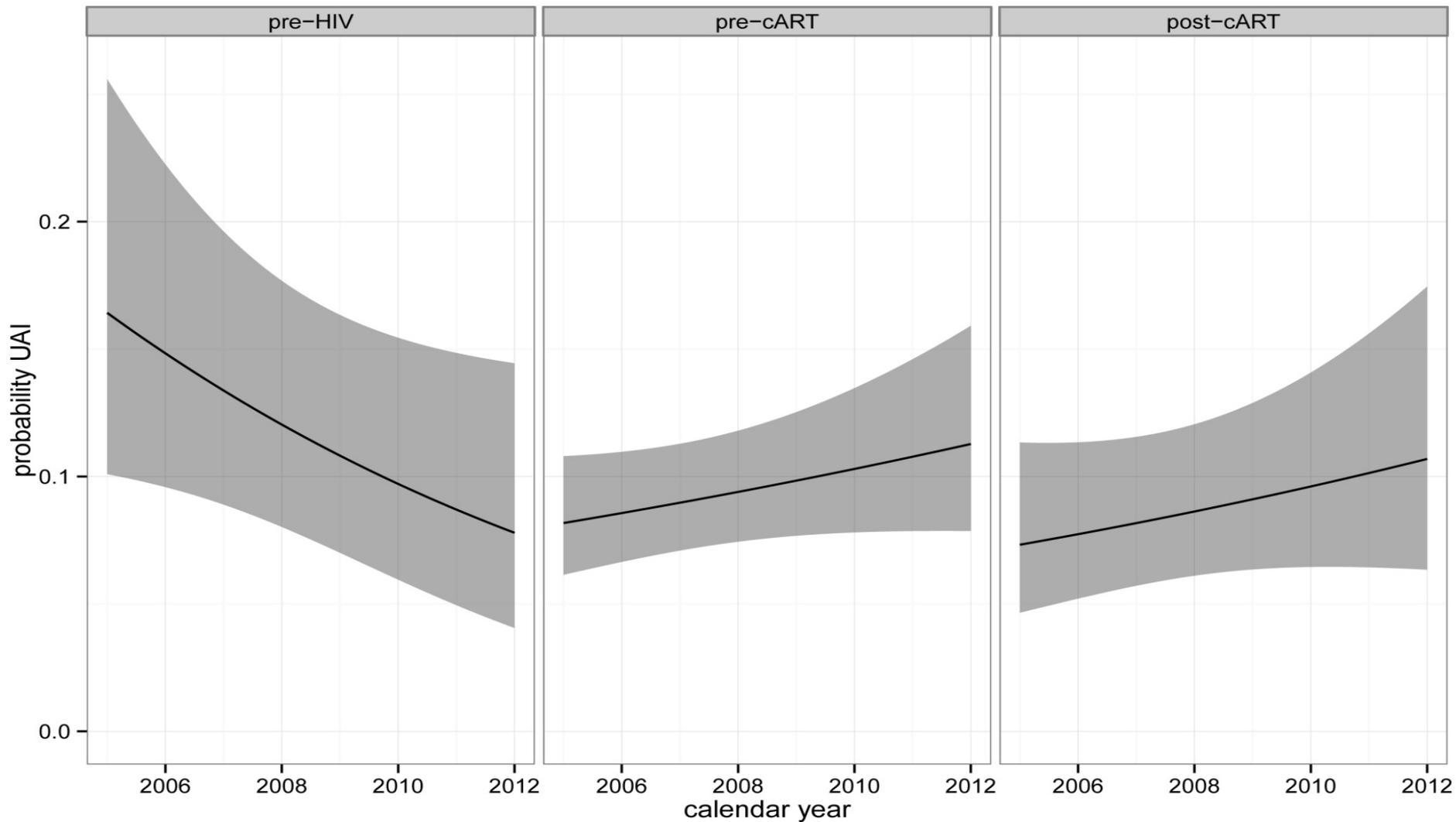
Probability of engaging in UAI, stratified for **period of sexual onset**, distinguishing between the **pre-HIV, pre-cART** and **cART generations**

Moller et al, presentation AIDS impact 2013

Biomedical HIV prevention
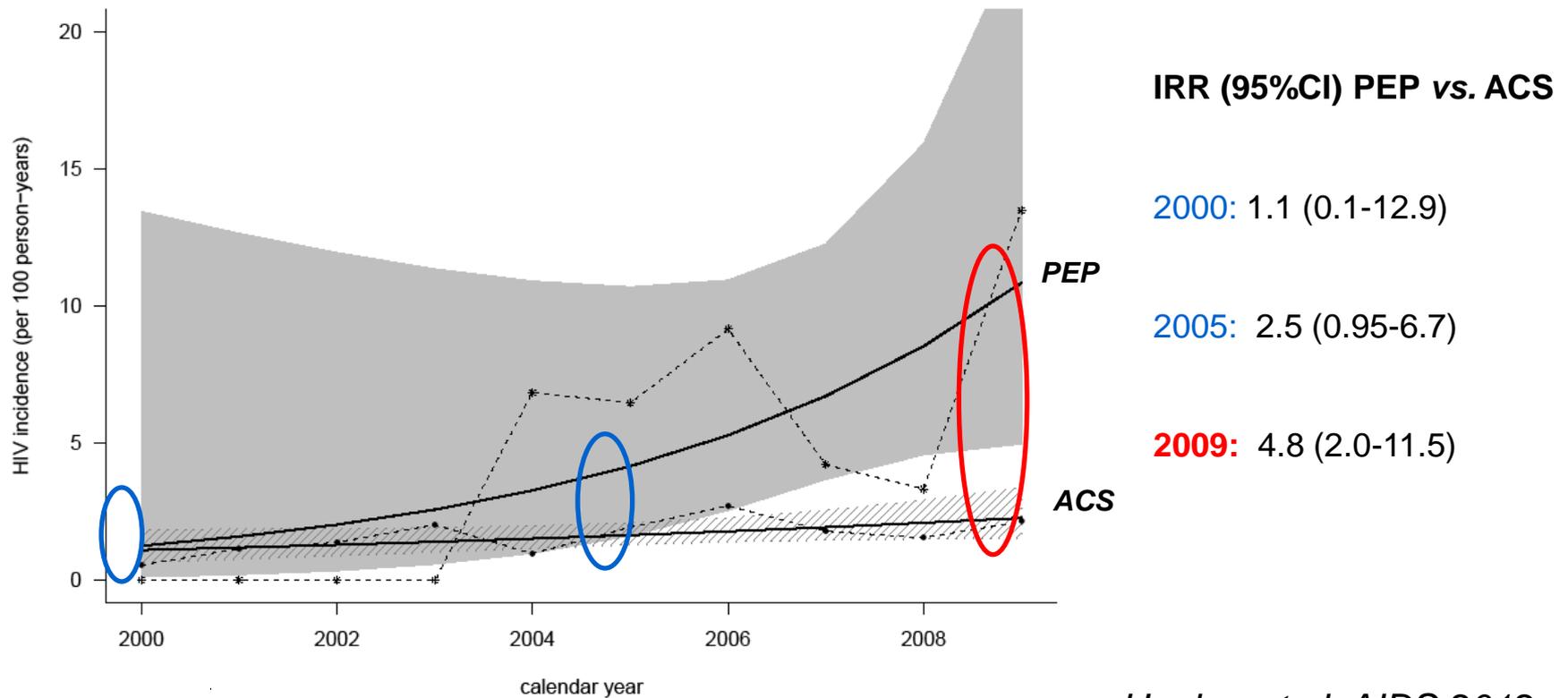
Available for HIV negative risk groups:

- Post-exposure prophylaxis (PEP)
- USA: Pre-exposure prophylaxis (PrEP)

HIV incidence among MSM PEP users versus MSM of the ACS

Majority of HIV seroconverters tested positive at 6m after PEP prescription

IRR (95%CI) PEP *vs.* ACS

2000: 1.1 (0.1-12.9)

2005: 2.5 (0.95-6.7)

2009: 4.8 (2.0-11.5)

Heuker et al. AIDS 2012

PrEP awareness and intention to use PrEP among MSM, ACS, 2012-2013

- 54% reported to have ever heard of PrEP

- The intention to use PrEP was relatively low:
  - 13% had a high intention to use PrEP
  - Intention decreases with higher expected costs and longer duration of use
  - Intention increases with high risk sexual behavior

- Social psychological factors play an important role

  - Facilitating factors: Self-perceived efficacy, perceptions of hope and relieve due to PrEP

  - Barriers to PrEP use: side-effects, feeling ashamed about using it

Bil et al. NCHIV13 poster 39

Conclusions and recommendations: HIV and drug users

Continuing low HIV incidence accompanied by low injecting and reduced sexual risk behaviour, suggesting that drug users do not play a major role in the current spread of HIV in Amsterdam

Reduction in Infection risk could be due partly to harm reduction measures cART led to only 4% less HIV incidence (*poster NCHIV13, Anneke de Vos*)

Substantial decline in HIV incidence might be the result of
  – depletion of high-risk DU among those at risk for infection
  – a decrease in the number of high risk individuals in the population due to HIV-related mortality
  – future research quantifying benefits of interventions should not neglect the impact of natural epidemic progression and demographic changes

Conclusions and recommendations: HIV and MSM -1-

Risk behaviour is substantial and STI continues to spread among MSM. HIV incidence increased in the cART era, but appears to level off in recent years

Risk reduction: protective effect for serosorting was not statistically significant whereas consistent condom use was
- Larger studies are needed to demonstrate whether serosorting offers sufficient protection against HIV infection, and if not why it fails to do so

Conclusions and recommendations: HIV and MSM -2-

HIV incidence in recent PEP users substantial

Intention to use PrEP low, but increased in MSM with high risk behaviour
- MSM PEP users may well be suitable participants for future intervention studies

Less decrease in risk behaviour from pre to post seroconversion among MSM in the cART are compared to the pre-cART era
- Need for early HIV testing
- Much more effort should go to identifying, counseling en possibly treating recently seroconverting MSM
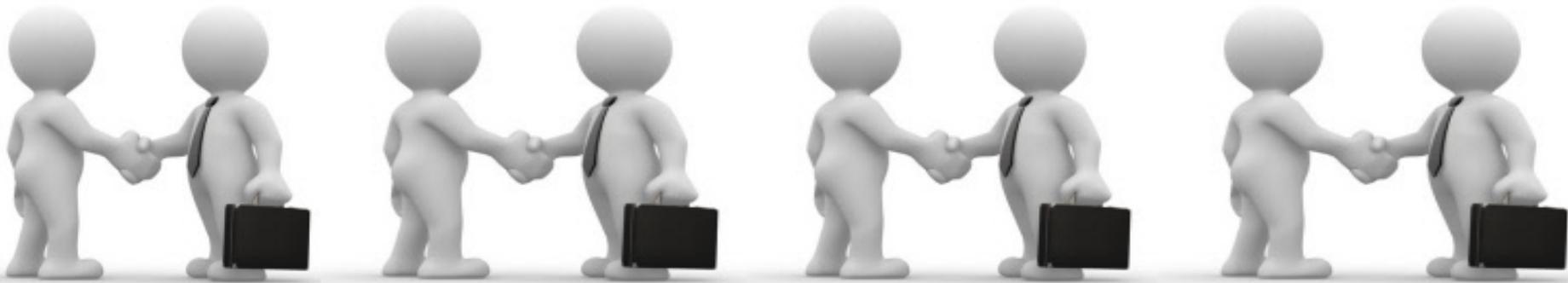
Acknowledgements

Thanks

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- Study participants

Organizers of the symposium

TO YOU: THE AUDIENCE