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Reducing onward transmission: Viral suppression among key population groups living with HIV in the United Kingdom

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We gratefully acknowledge

all the patients living with HIV as well as

clinicians, health advisors, nurses, microbiologists, public health practitioners, data managers and other colleagues who contribute to

the surveillance of HIV and STIs in the UK.

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Background

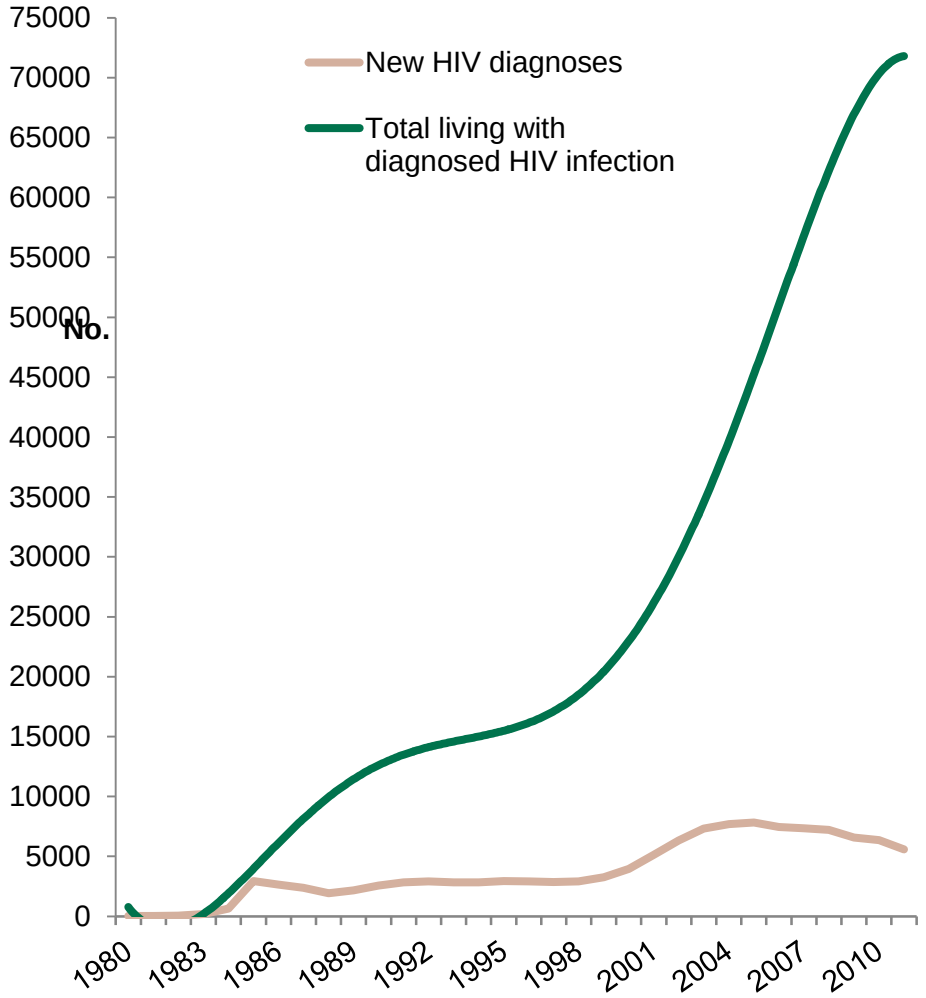
People living with HIV can expect a near normal life expectancy resulting in large increases in persons living with diagnosed HIV

UK epidemic is largely concentrated in key prevention groups: MSM, BA, PWID

Access to and quality of HIV care is excellent

Viral load is a marker of infectiousness

Good evidence that treatment as prevention works in serodiscordant couples, less convincing evidence that it can reduce incidence at the population level



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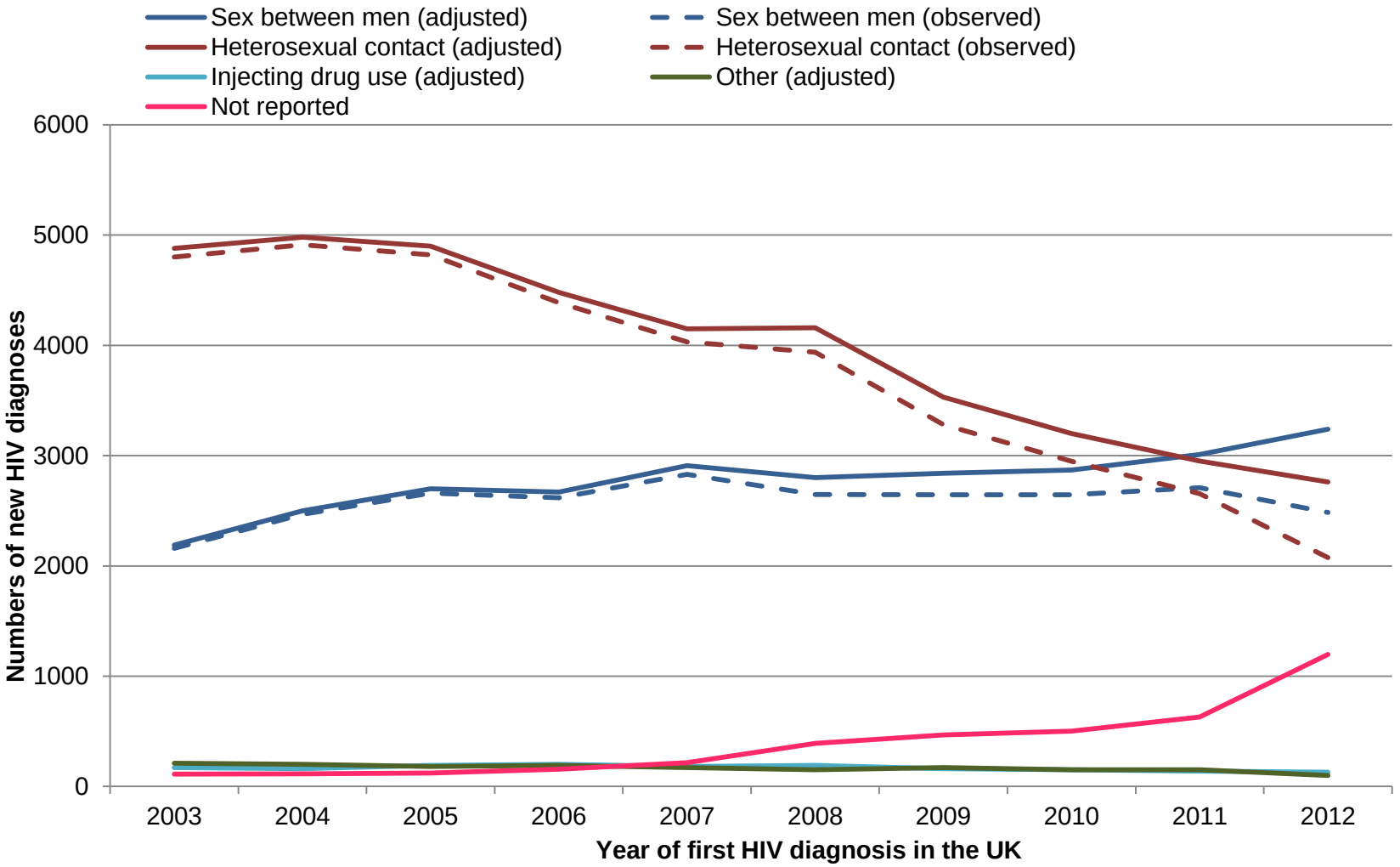
New HIV diagnoses in the UK by exposure category: 2003 - 2012



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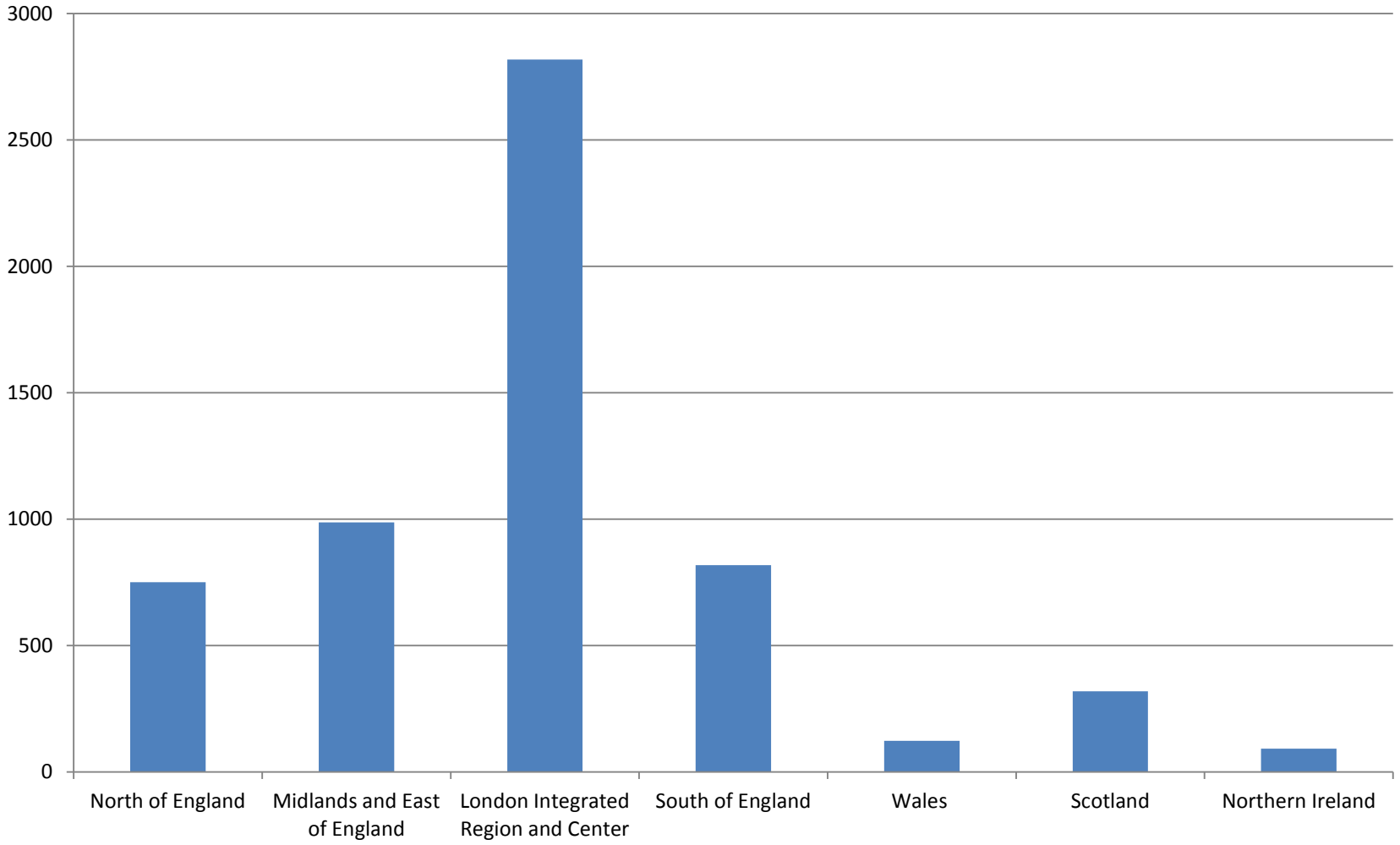
New HIV diagnoses in the UK by PHE region: 2012



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The proportion of UK acquired infections is increasing (>50%)

Access to and quality of HIV care is excellent

A new method to assign country of HIV infection among heterosexuals born abroad and diagnosed with HIV in the UK

Brian D. Rice[a,b,*], Jonathan Elford[b], Zheng Yin[a] and Valerie C. Delpech[a]

Objective: To apply a new method to ascertain likely place of HIV infection among persons born abroad and diagnosed with HIV in the United Kingdom (UK).

Design: Analyses of heterosexual adults born abroad, diagnosed with HIV in the UK between 2004 and 2010, and reported to the national HIV diagnoses database.

Methods: Year of infection was ascertained by applying an estimated rate of CD4-cell count decline between an individual's CD4-cell count at diagnosis and estimates of CD4-cell count at infection. A person was classified as having probably acquired HIV while living in the UK if estimated year of infection was later than reported year of arrival in the UK.

Results: Of 10,612 heterosexual adults born abroad included in the analyses, 85% (9065) were of black-African ethnicity. We estimate that 33% (26%-39%) of persons acquired HIV whilst living in the UK. This percentage increased from 24% (16%-39%) in 2004 to 46% (31%-50%) in 2010 ($p < 0.01$). The estimate of 33% is three times higher than national estimates of HIV acquired in the UK based on clinic reports (11%) ($p < 0.01$).

Conclusions: Assigning place of HIV infection using routinely available clinical and demographic data and estimated rates of CD4-cell decline is feasible. We report a high and increasing proportion of persons born abroad who appear to have acquired their HIV infection whilst living in the UK These findings highlight the need for continued targeted HIV prevention efforts, particularly among black-African communities.

AIDS 2012, **26**:000–000

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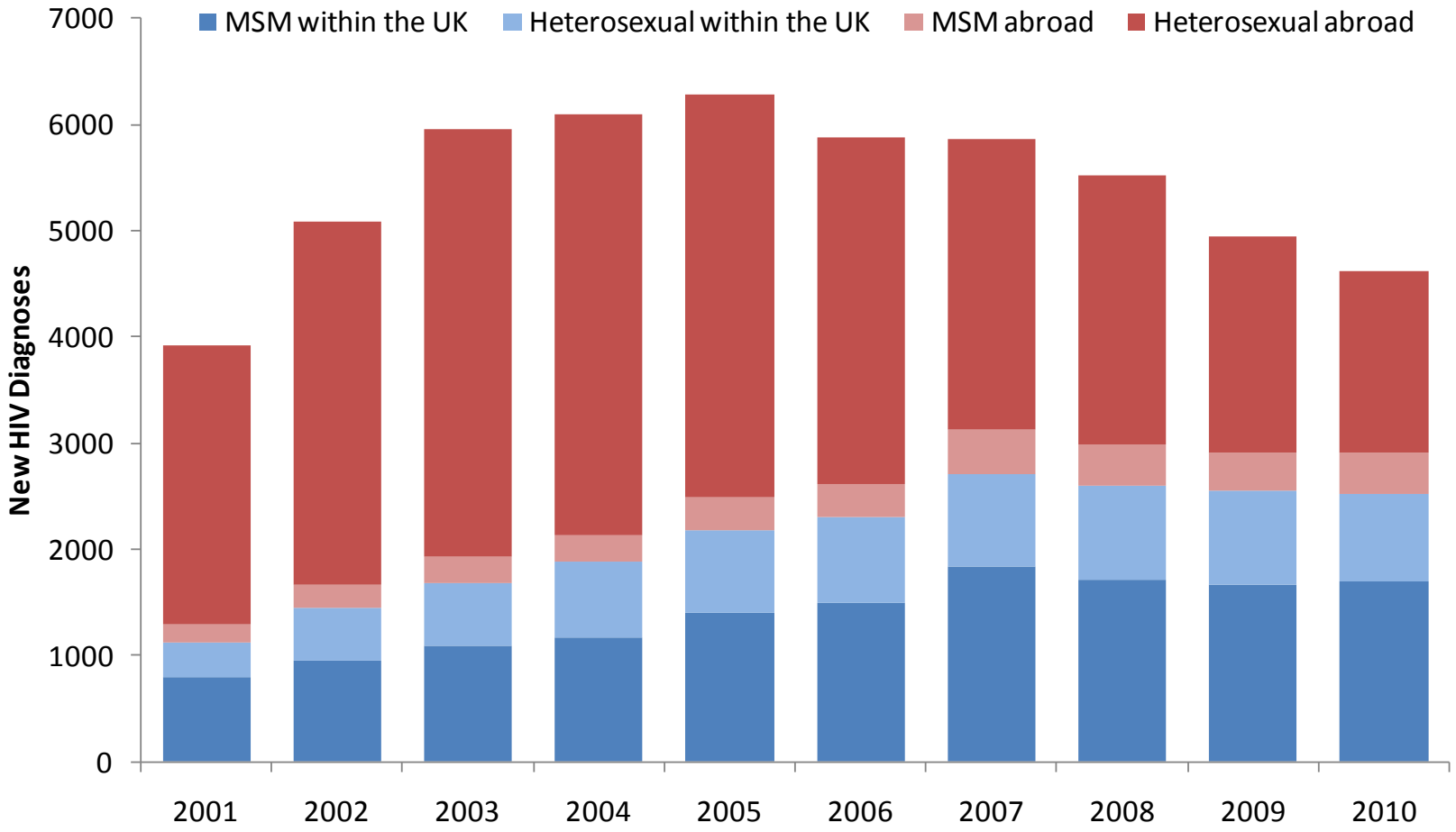
New HIV diagnoses by probable country of infection and exposure group: 2001–2010



MSM=men who have sex with men

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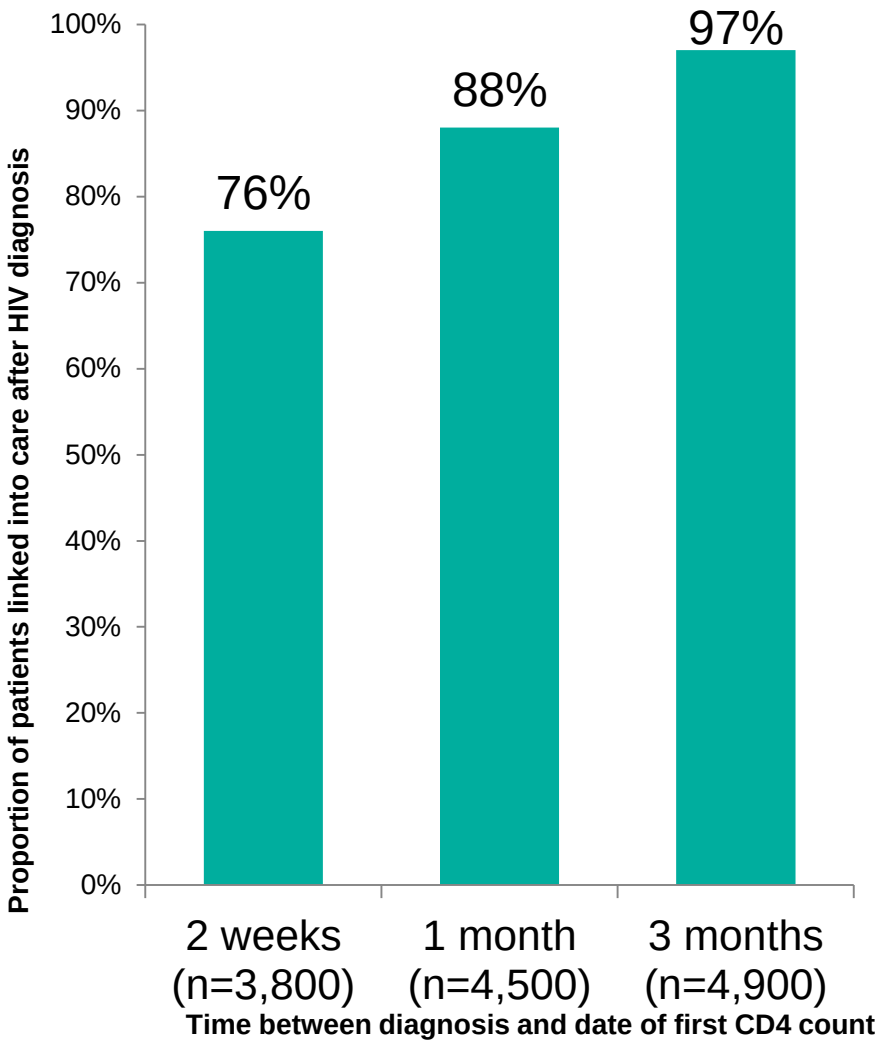

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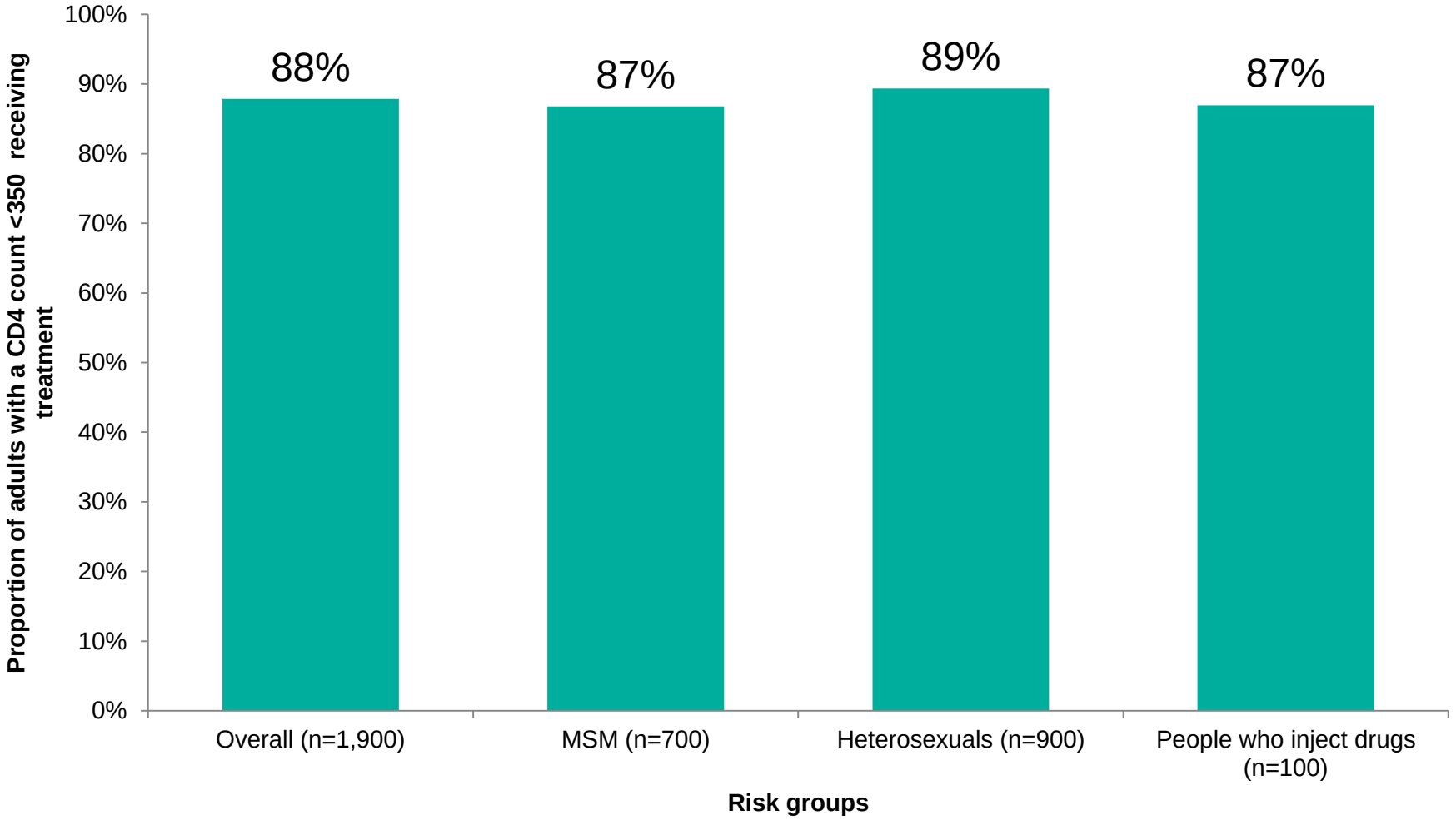
ART coverage among adults with a CD4 cell count of <350 cells/mm3: United Kingdom, 2011



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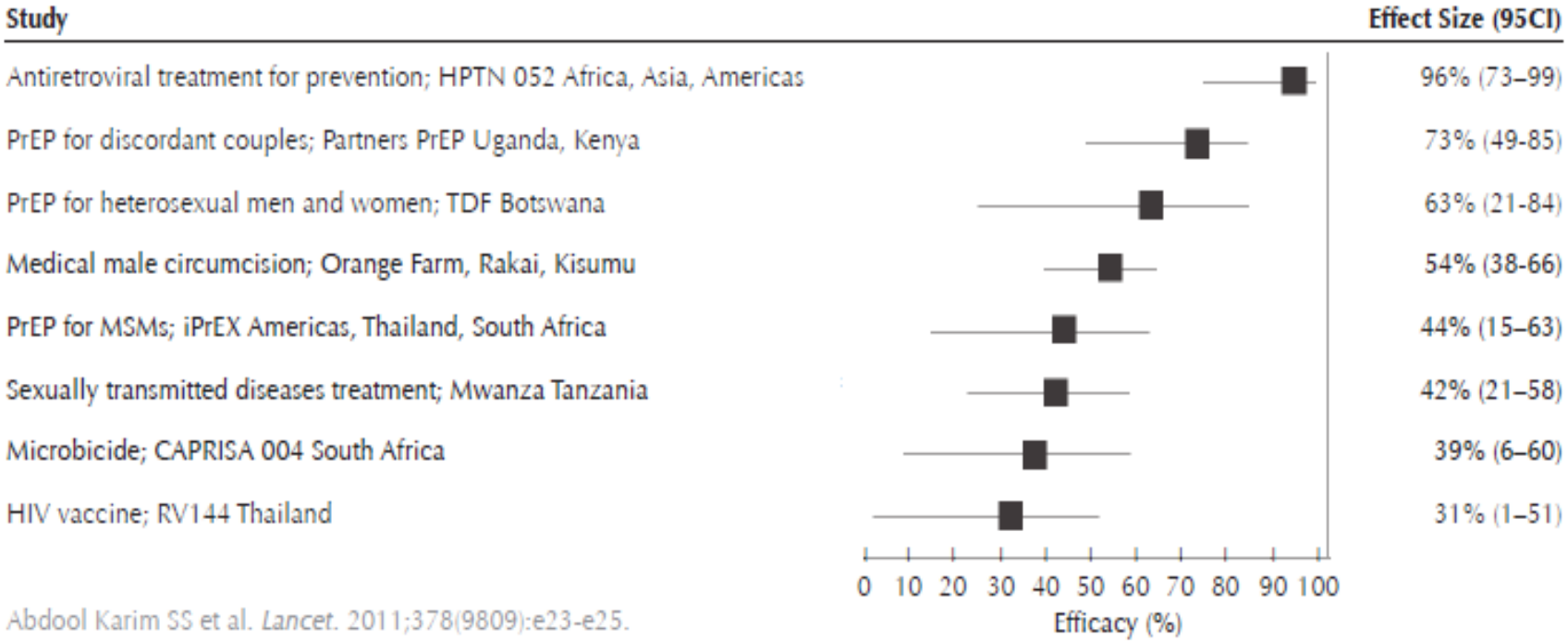

Abdool Karim SS et al. *Lancet*. 2011;378(9809):e23-e25.

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Aim

To present estimates of the proportion of all diagnosed and undiagnosed adults who are virally suppressed (and therefore uninfectious) by key population groups

Show findings in a ‘treatment cascade’ image and compare these with other countries to illustrate differences in prevention, testing and delivery of care.

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Methods

Linking of national datasets

- Cohort of HIV diagnosed persons accessing care (longitudinal SOPHID)
- Newly diagnosed persons reported by clinics and laboratory
- CD4 laboratory counts

Undiagnosed calculated using Multi Parameter Evidence Synthesis (MPES) model (1)

Credible intervals are omitted for simplification

Numbers are rounded off to nearest 100

1. Goubar A, Ades AE, De Angelis D, McGarrigle CA, Mercer CH, Tookey PA, Fenton K, Gill ON. Estimates of human immunodeficiency virus prevalence and proportion diagnosed based on Bayesian multi-parameter synthesis of surveillance data. Journal of the Royal Statistical Society:171(3):541-580, 2008.

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Assumptions

National cohort is comprehensive and ‘closed community’

Undiagnosed are assumed to all have a detectable viral load

Viral load of 50 copies/mL is used as a cut-off

Sensitivity analyses were conducted using a VL=200 and VL =1500 copies/mL

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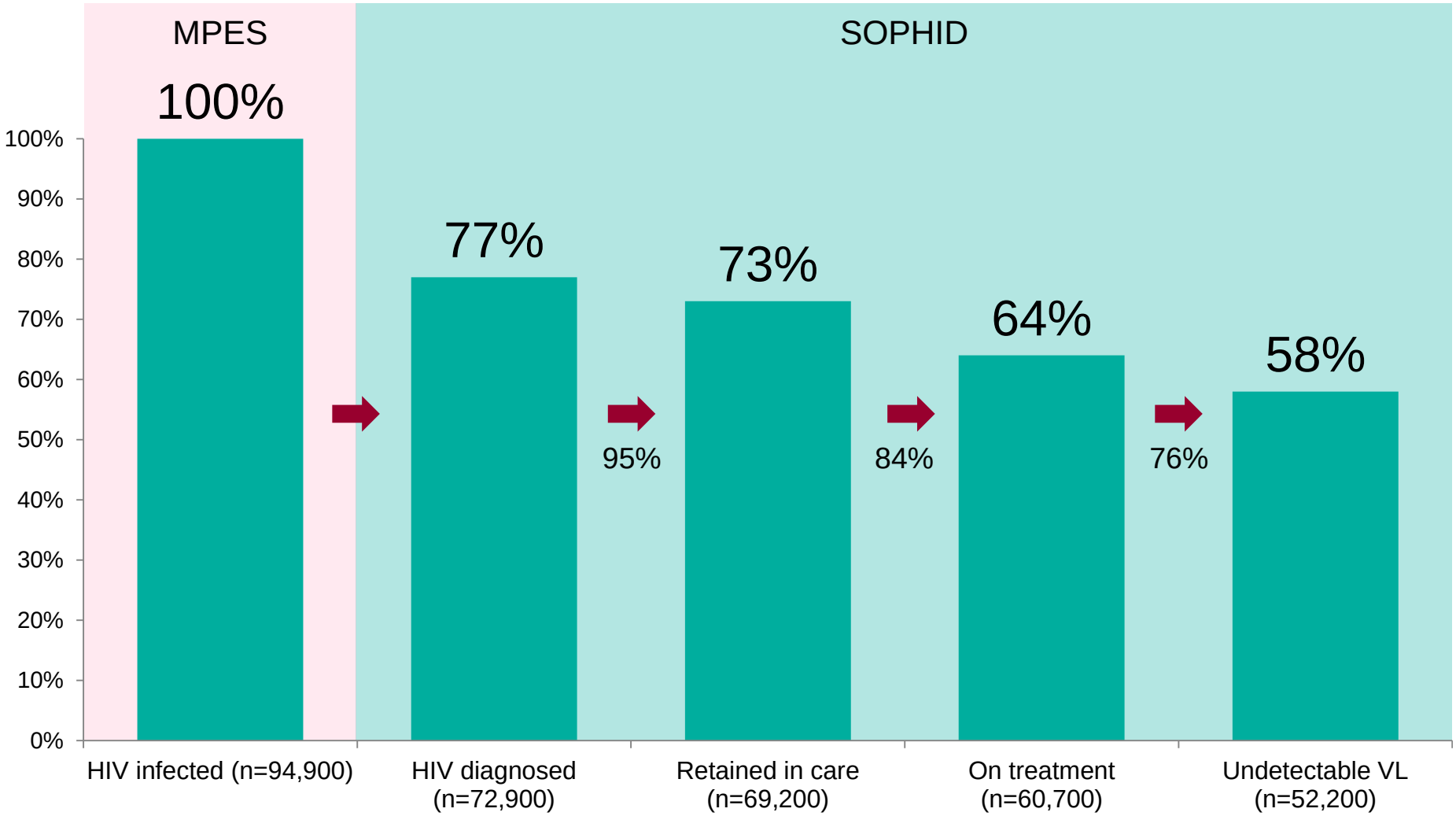
Treatment cascade of adults living with HIV: United Kingdom, 2011



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Treatment cascade of adults living with HIV: United Kingdom, 2011

	Total HIV infected	% diagnosed	Total HIV diagnosed
All adults	94,900	77%	73,000
Men 15 – 44 yrs	36,400	70%	26,200
Men 45+	26,600	85%	22,500
Women 15 – 44	23,300	72%	17,100
Women 45+	8,500	88%	7,100
Men who sex with men	40,100	80%	31,300
Heterosexual men	20,600	70%	13,300
Heterosexual women	30,800	75%	22,300
People who inject drugs	2,300	83%	1,600

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Treatment cascade of adults living with HIV: United Kingdom, 2011

	Total HIV diagnosed	% diagnosed Retained in care	% diagnosed on ART	% diagnosed VL<50
All adults	73,000	95%	84%	76%
Men 15 – 44 yrs	26,200	94%	77%	69%
Men 45+	22,500	97%	91%	89%
Women 15 – 44	17,100	94%	81%	72%
Women 45+	7,100	96%	90%	83%
Men who sex with men	31,300	97%	82%	76%
Heterosexual men	13,300	95%	88%	77%
Heterosexual women	22,300	95%	85%	76%
People who inject drugs	1,600	94%	85%	71%

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Treatment cascade of adults living with HIV: United Kingdom, 2011

	Total HIV infected	% VL<50 among all
All adults	94,900	58%
Men 15 – 44 yrs	36,400	46%
Men 45+	26,600	67%
Women 15 – 44	23,300	51%
Women 45+	8,500	66%
Men who sex with men	40,100	55%
Heterosexual men	20,600	47%
Heterosexual women	30,800	53%
People who inject drugs	2,300	47%

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Adults living with HIV: United Kingdom, 2011

	Total HIV infected	Total HIV infective
All adults	94,900	40,400
Men 15 – 44 yrs	36,400	18,700
Men 45+	26,600	8,000
Women 15 – 44	23,300	11,000
Women 45+	8,500	2,700
Men who sex with men	40,100	16,700
Heterosexual men	20,600	10,600
Heterosexual women	30,800	13,800
People who inject drugs	2,300	1,200

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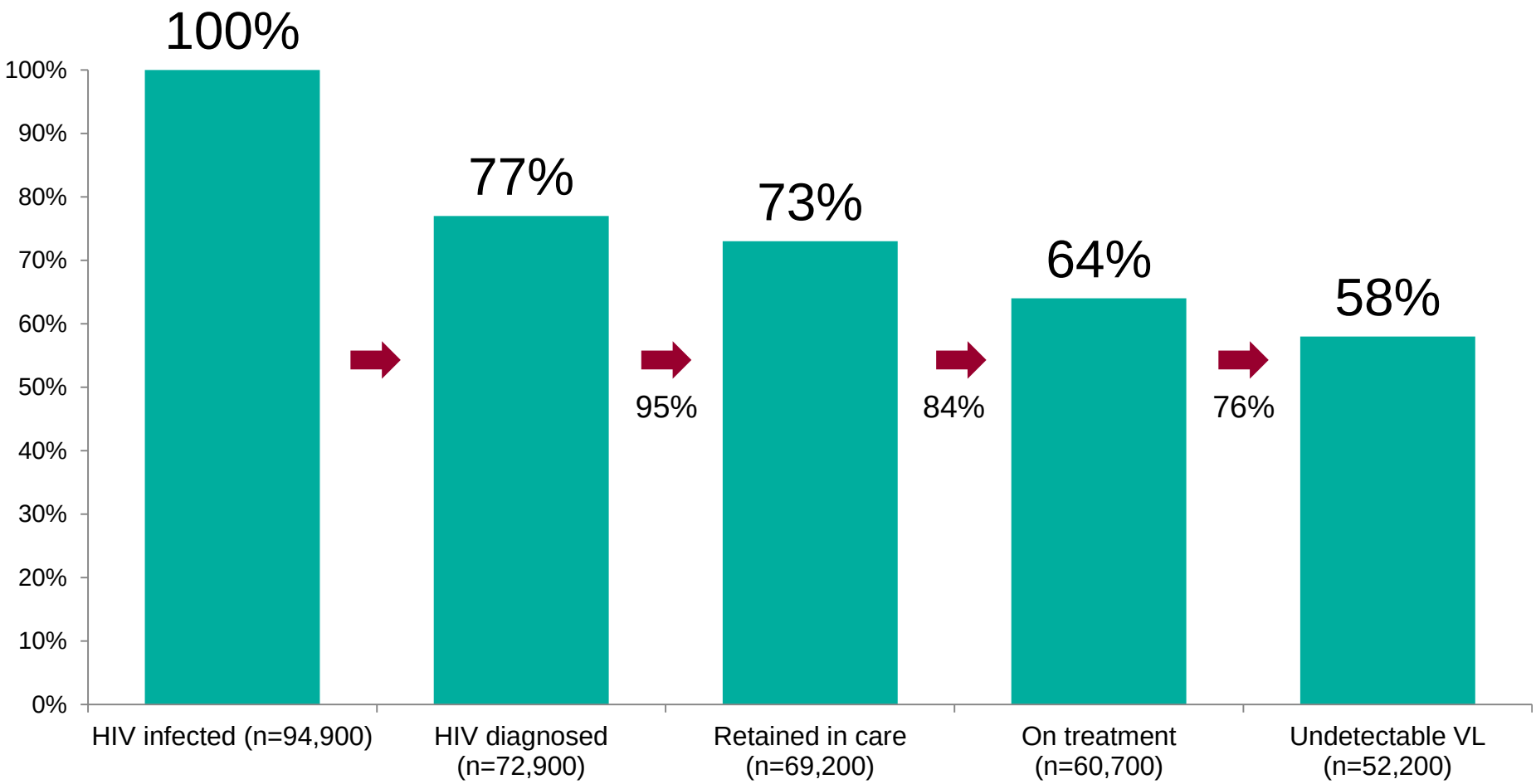
Treatment cascade of adults living with HIV: United Kingdom, 2011



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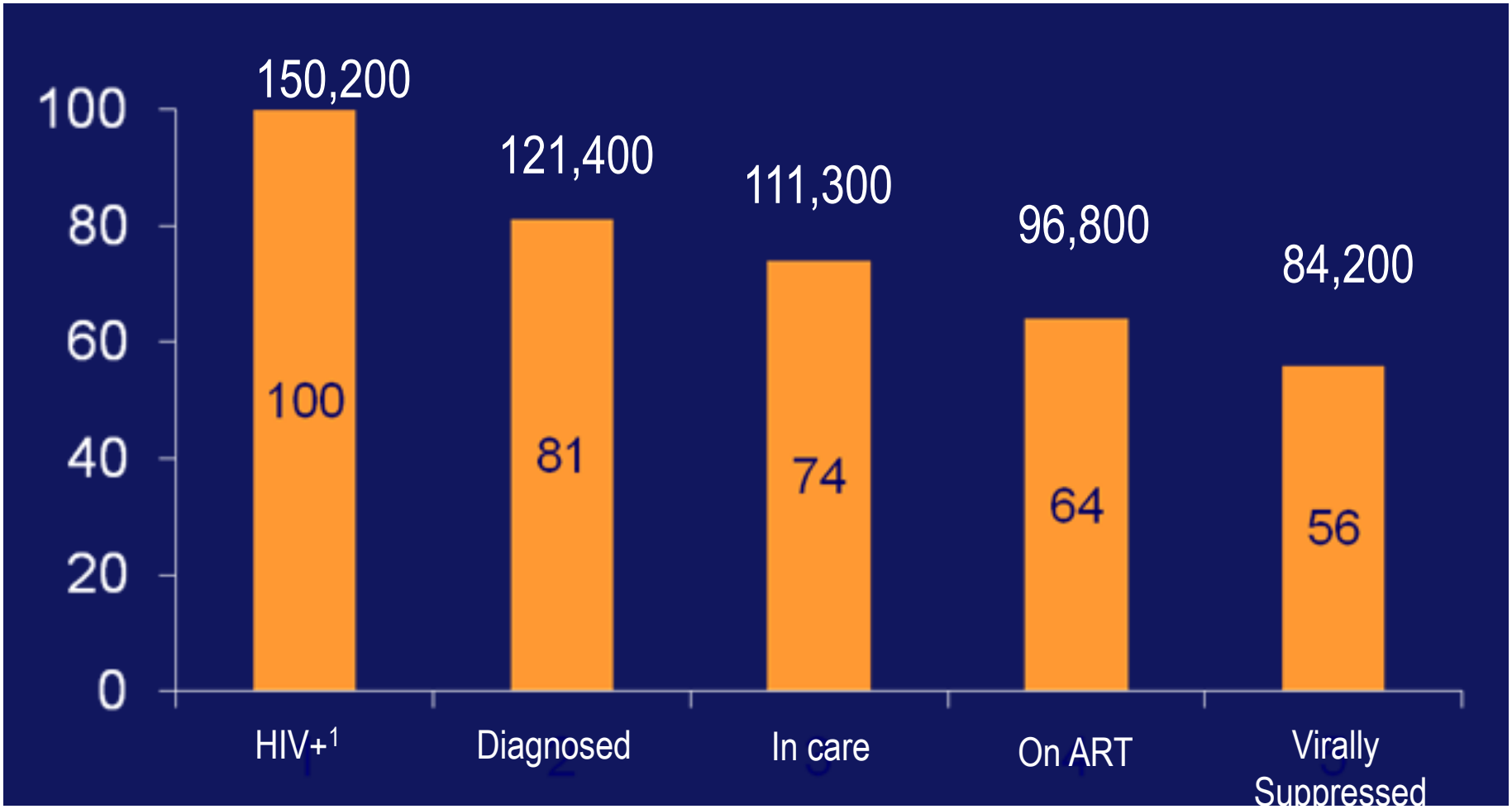
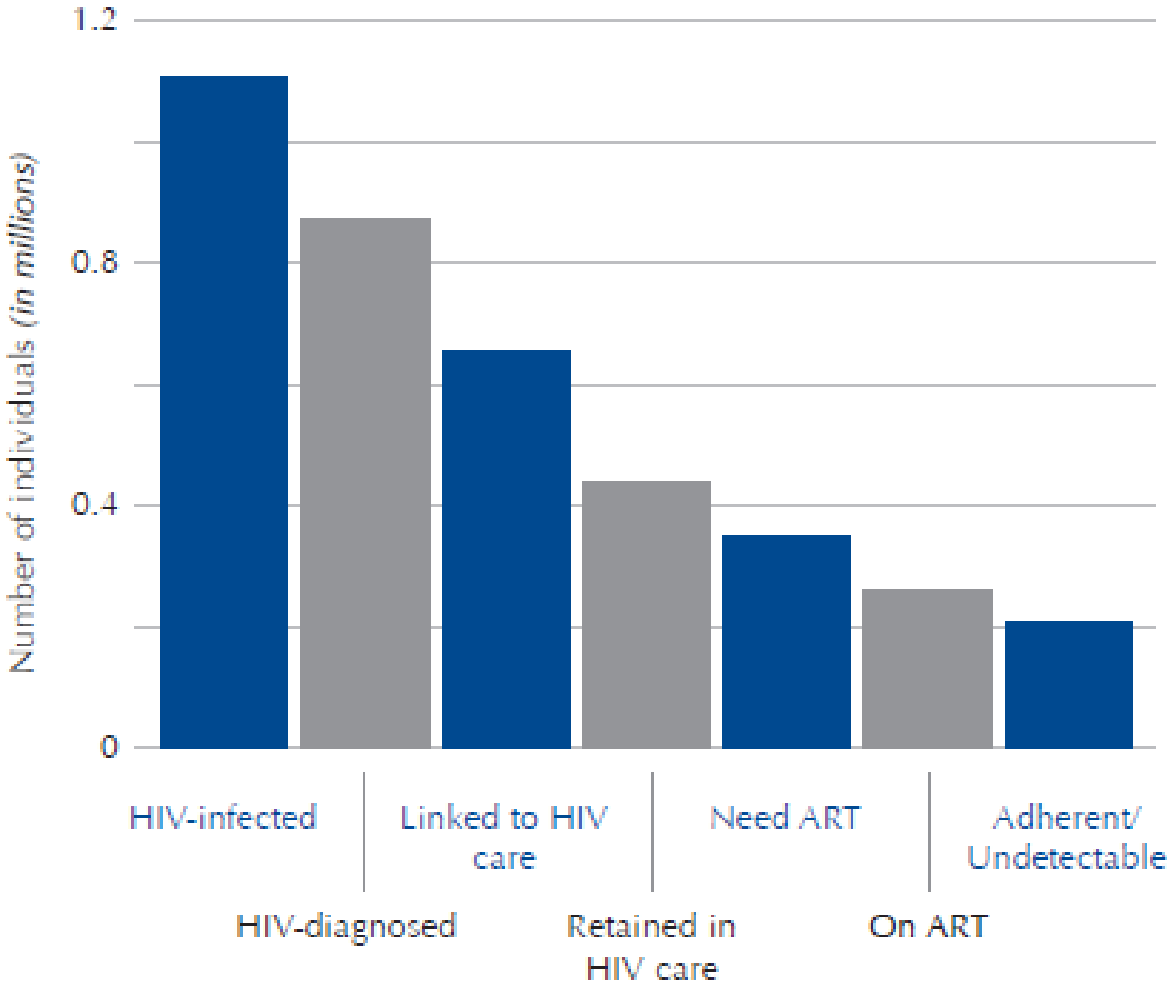
Treatment cascade of People with HIV in France 2010, *Supervie V et al*



*Data from health insurance scheme (CNAMTS) and French Hospital Database on HIV ANRS-CO4

Number of HIV-Infected Persons Engaged in Selected Stages of the Continuum of HIV Care – United States



Gardner EM et al. *Clin Infect Dis*. 2011;52(6):793-800.

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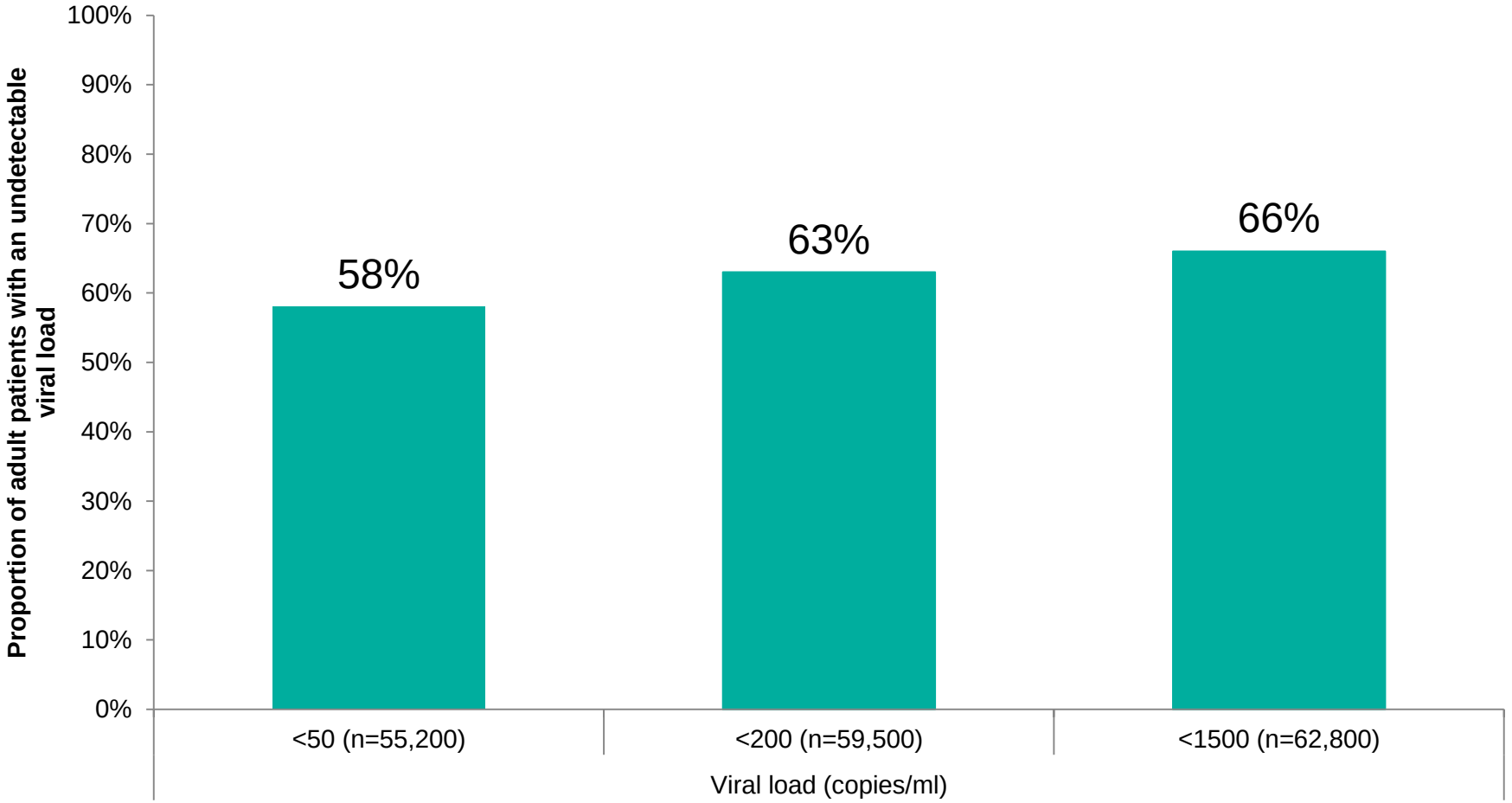
Sensitivity analysis: Varying definitions of viral load suppression among HIV infected adults: United Kingdom, 2011



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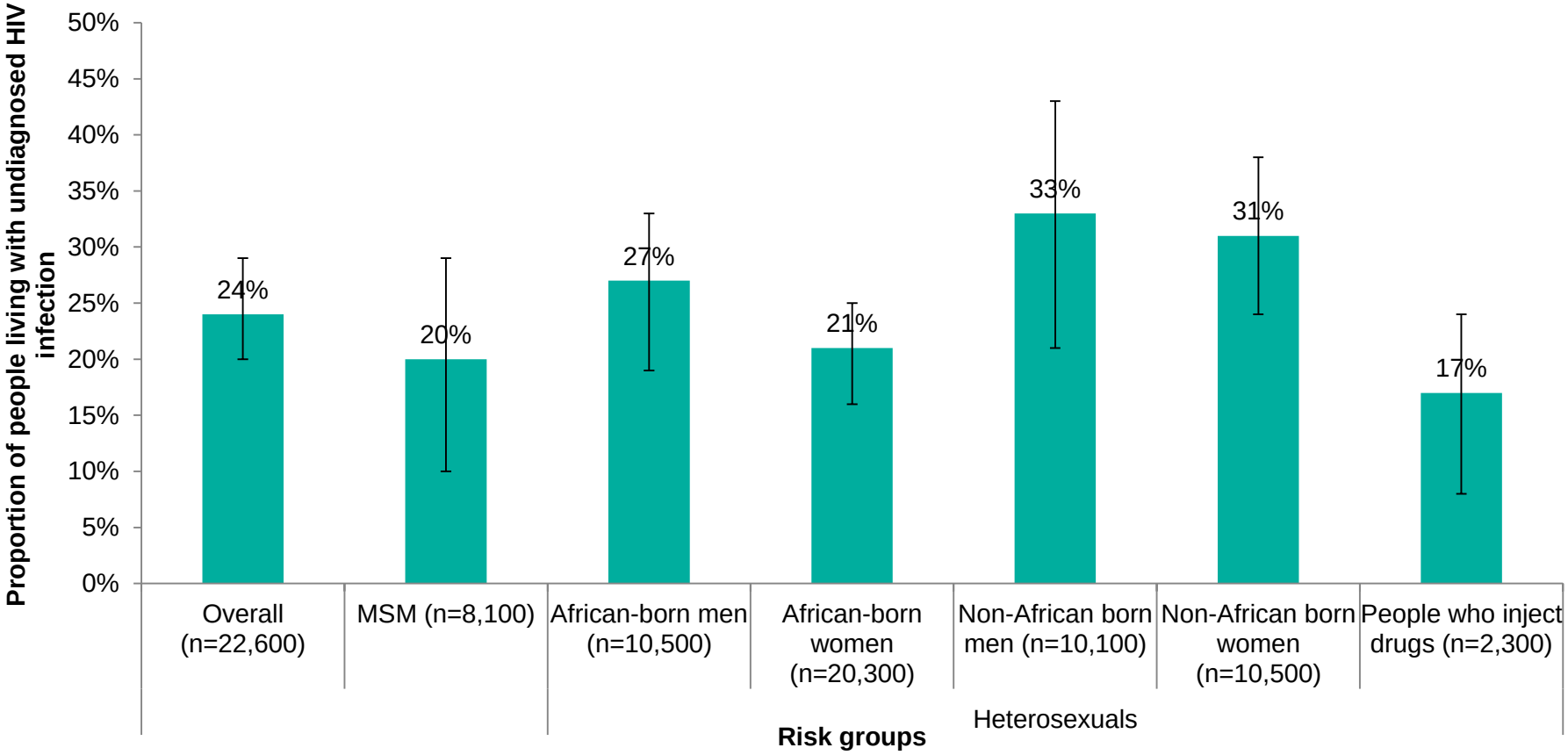
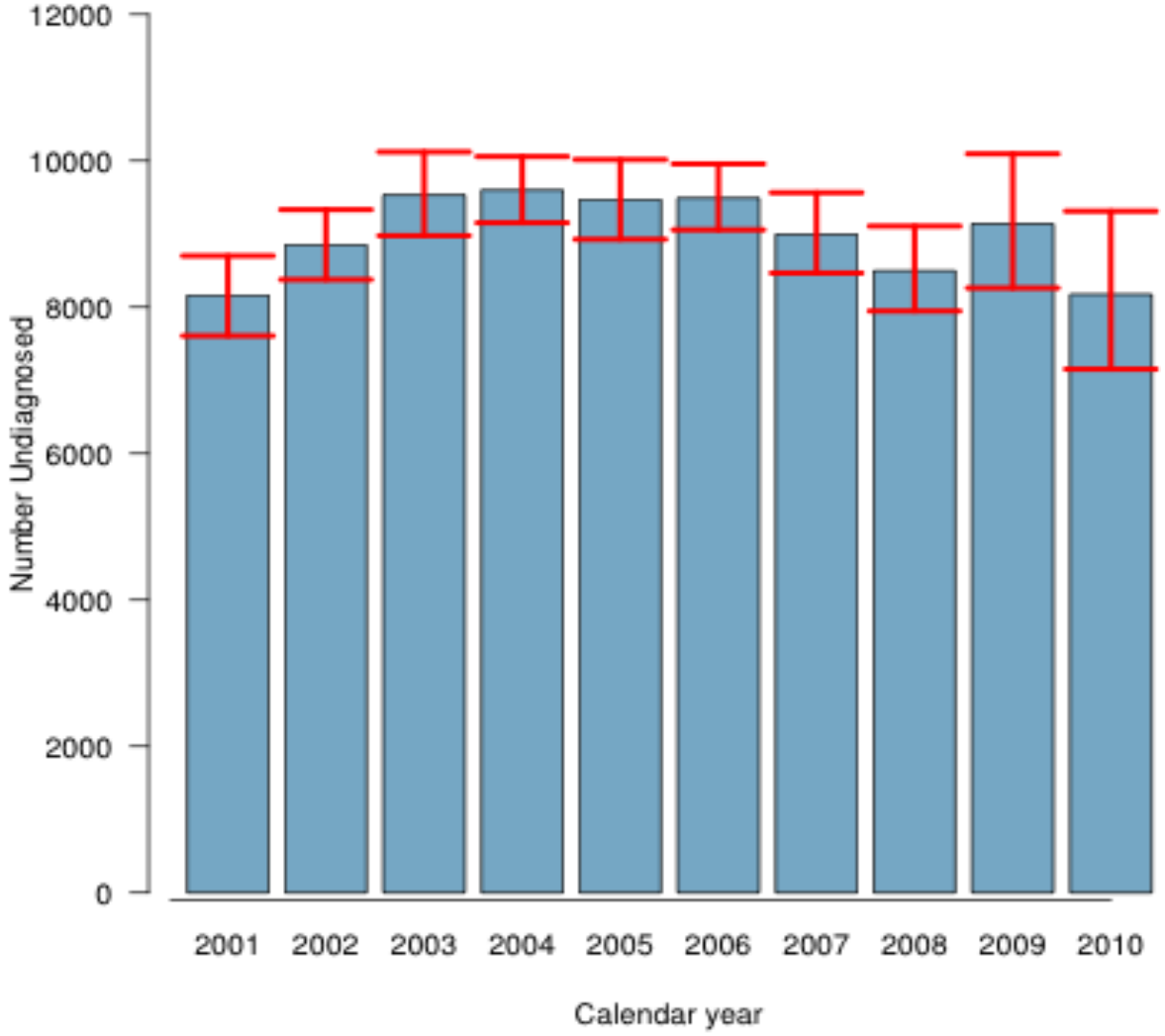
Estimates of the proportion of people living with HIV that remain undiagnosed by risk group: United Kingdom, 2011

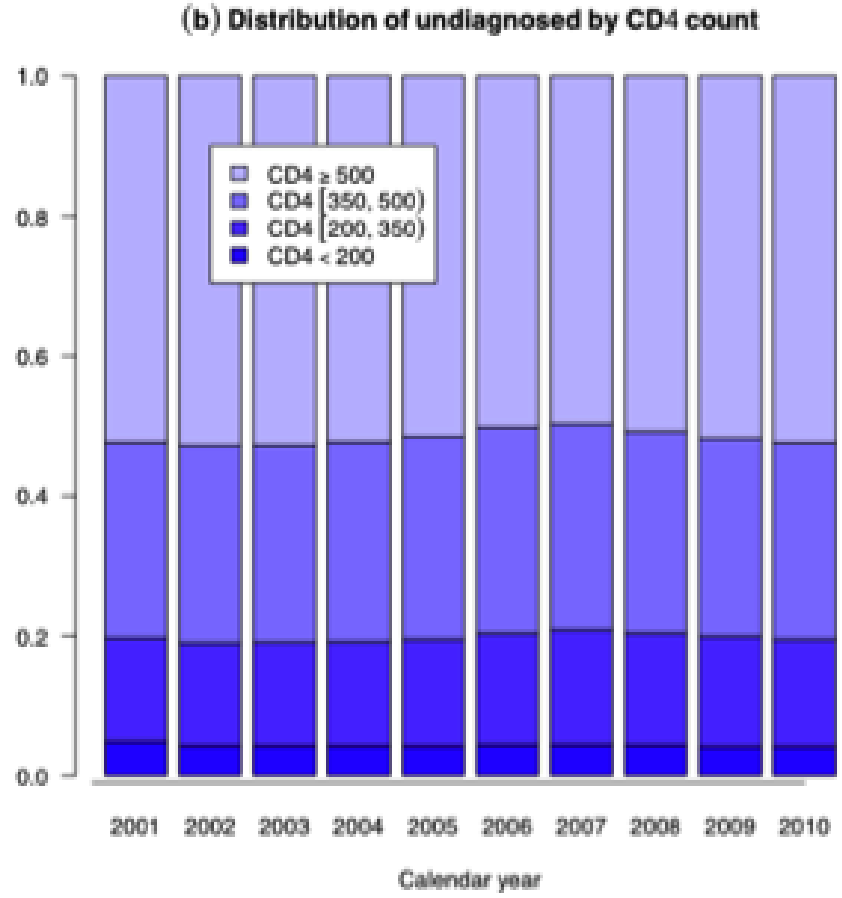


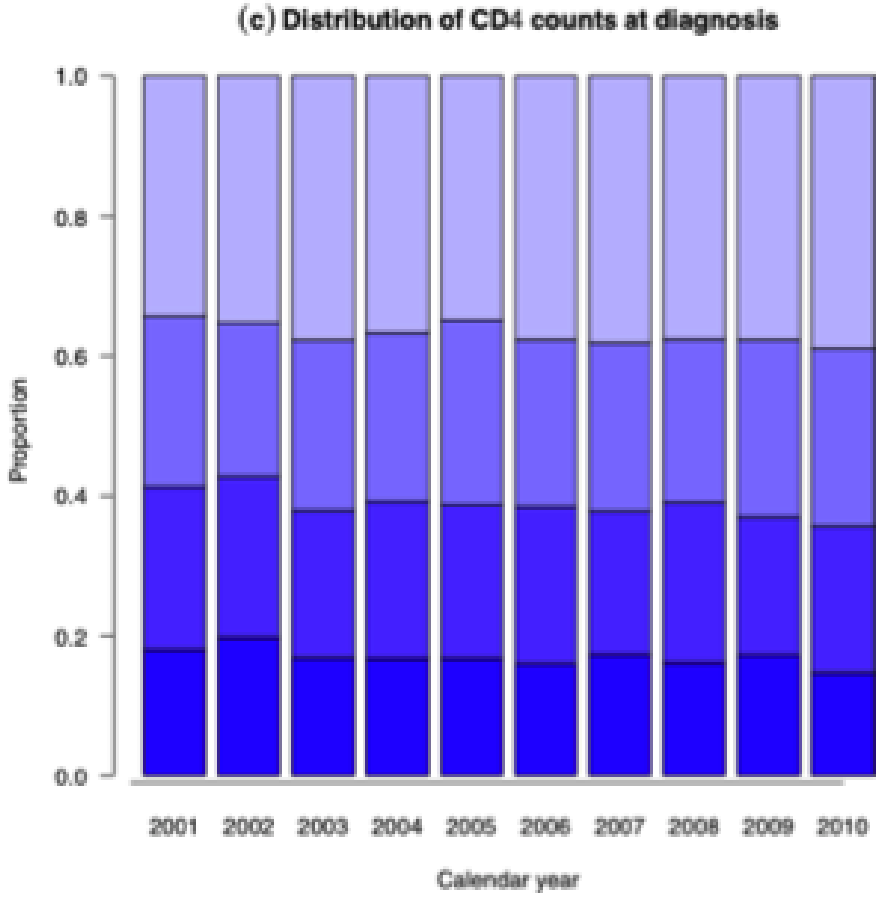
Estimated undiagnosed infections in MSM;

Birrell et al

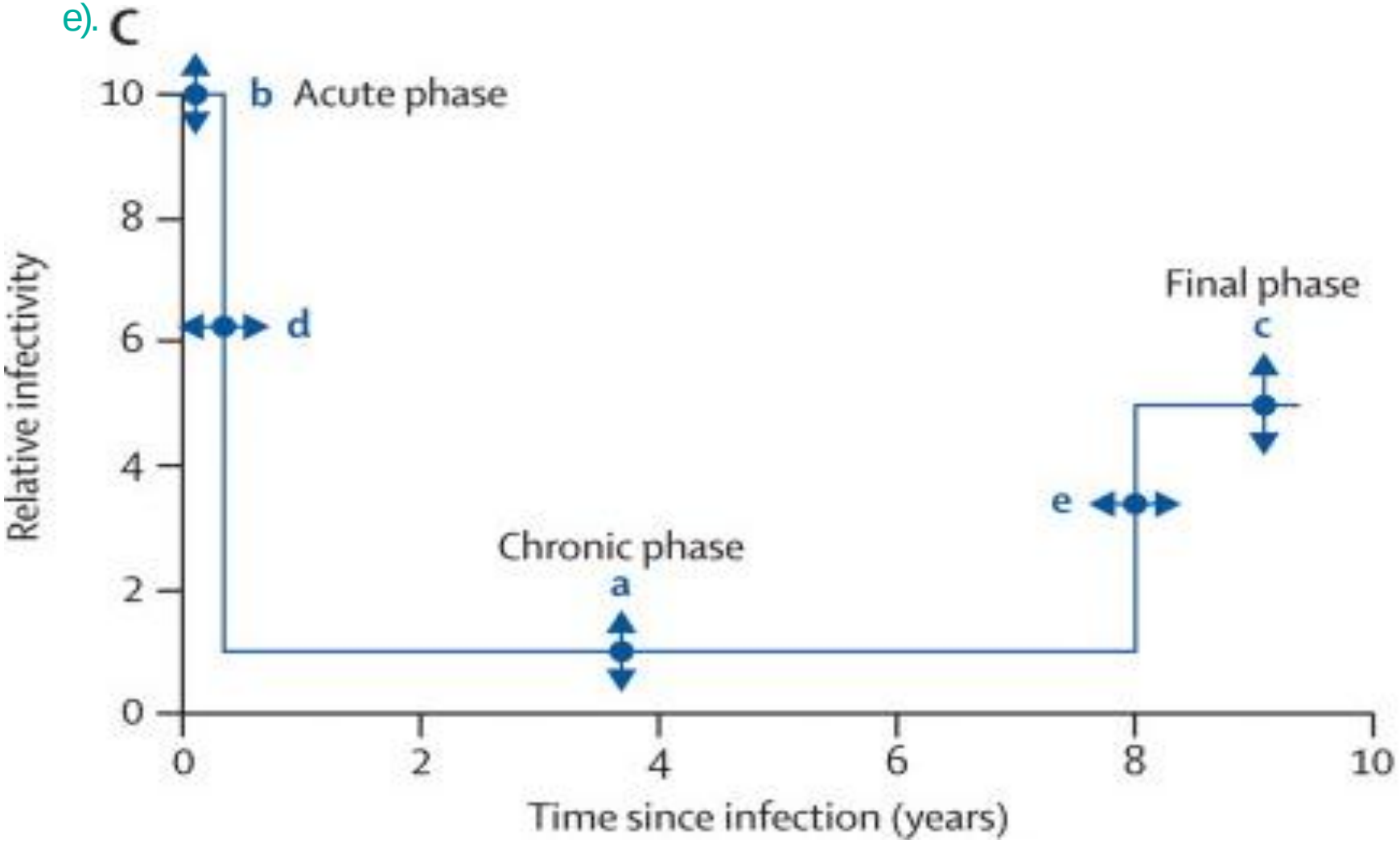


CD4 count distribution among undiagnosed and at newly diagnosed MSM, England and Wales





Theoretical basis for the stochastic and deterministic transmission models - Schematic diagram of the change in infectivity with time in a person who survives for 10 years. The infectivity during all three phases (a–c) can be varied, as can the duration of the acute and final phases (d and e).



Granich RM et al, *Lancet 2009; 373: 48–57*

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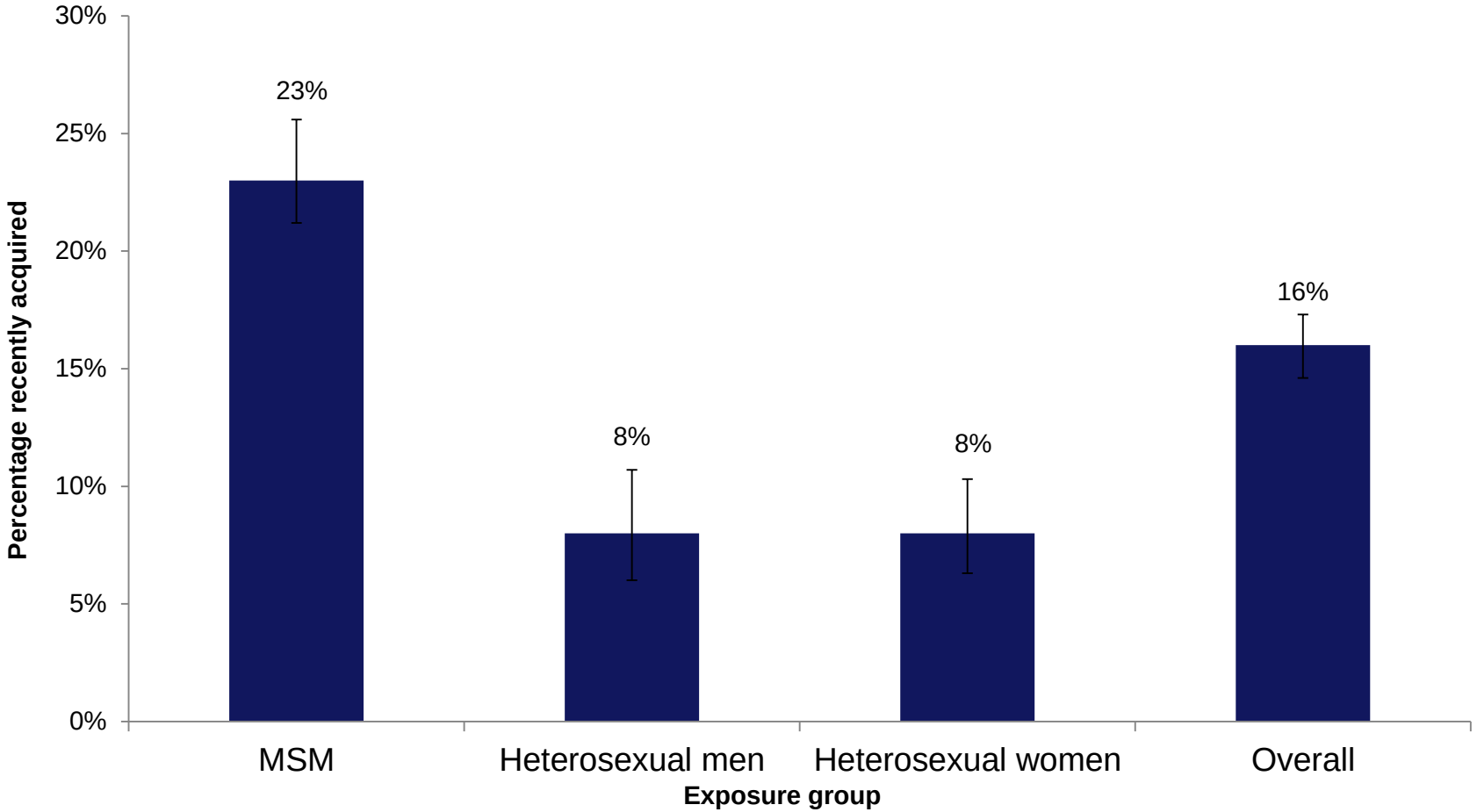
Proportion recently infected among new diagnoses, 2011 England, Wales and Northern Ireland



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HIV Transmission

Impact of ART at diagnosis on prevention is likely to minimal given the large pool of undiagnosed

Transmission dynamics are complex

Predictors of very high VL >40,000 copies/mL - see poster P128

?? Role of primary infection

?? Role of sexual networks

?? Role of PN

?? Role of multiple partners

?? Role of ‘regular’ vs ‘casual’

?? What is the optimal testing frequency in MSM, BA, general population

?? Impact of Prep - >60% of newly diagnosed MSM had not attended the same STI clinic in past 3 years (GUMCAD)

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Conclusions

Treatment Cascade is a useful tool to illustrates access to HIV care and quality of care received, as well as highlight prevention needs.

Estimates of the ‘infective’ population rely on good estimates of the undiagnosed population

Caution should be taken when interpreting differences across subgroups due to less robust undiagnosed estimates and complex transmission dynamics

Treatment cascade from the time of diagnosis are more robust and can reliably be used to compares demographic, risk and geographies

Link to care and ART uptake indicators have been included in the HIV dashboard

This works highlights the need for continued efforts in primary prevention and HIV testing in reducing transmission.

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Thank you!

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British HIV Association

BHIVA

19th Annual Conference of the British HIV Association (BHIVA)

16–19 April 2013

Manchester Central Convention Complex