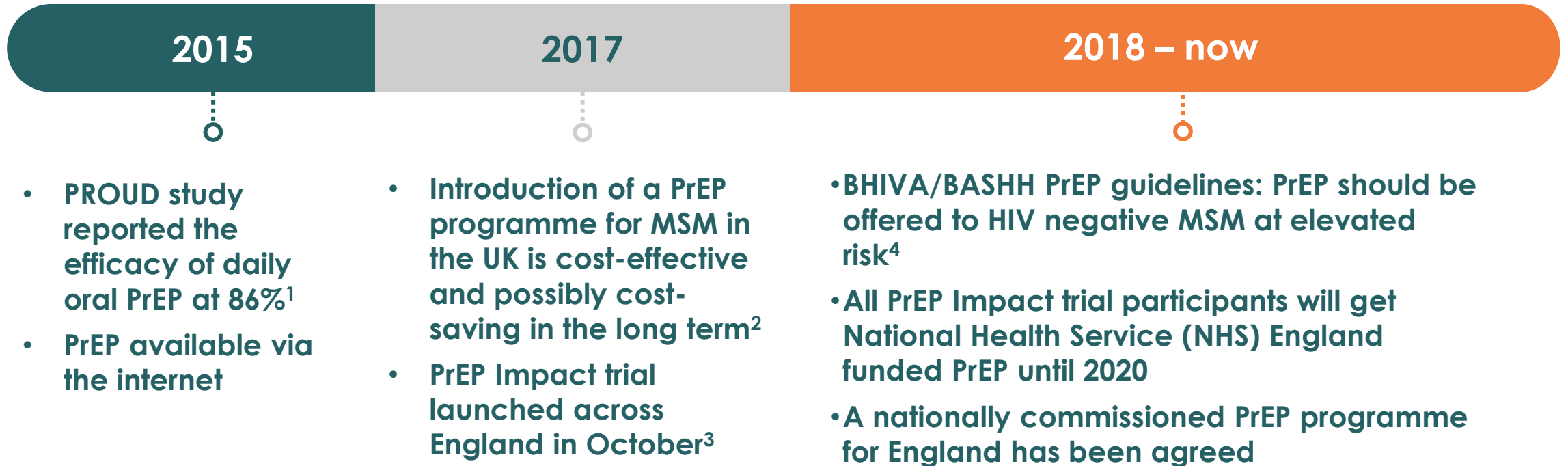


Use of HIV pre-exposure prophylaxis among men who have sex with men in England: data from the AURAH2 prospective study

Nadia Hanum, Valentina Cambiano, Janey Sewell, Andrew N Phillips, Alison J Rodger, Andrew Speakman, Nneka Nwokolo, David Asboe, Richard Gilson, Amanda Clarke, Ada R Miltz, Simon Collins, and Fiona C Lampe, for the AURAH2 Study Group

Background



¹ McCormack et al., 2016; ² Cambiano et al., 2017; ³ NHS England / PHE, 2017; ⁴ Brady et al., 2018

Background

- **Combining PrEP scale-up with rapid ART initiation and a large increase in HIV testing volumes in London has led to steep falls in new infections largely in MSM⁵**
- **Similar decreases in HIV diagnoses among MSM in San Francisco,⁶ New York City,⁷ and New South Wales⁸**
- **Little information on past trends in PrEP uptake and predictors of PrEP initiation in England**

⁵ Nwokolo et al., 2017; ⁶ Scheer at al., 2018; ⁷ NYC Dept. of Health and Mental Hygiene, 2018; ⁸ The NSW HIV Strategy 2016 – 2020, 2018

Objectives

Among MSM participating in the AURAH2 study between 2013 – 2018:

- **To describe baseline trends in awareness of PrEP and post-exposure prophylaxis (PEP);**
- **To provide longitudinal assessments of changes in use of PrEP and PEP;**
- **To assess the extent to which demographic, socio-economic, health and lifestyle factors are predictive of PrEP initiation;**
- **To determine factors associated with reporting the recent use of PrEP**

Study design and participants

Prospective cohort study, three sexual health clinics in London and Brighton

Participants inclusion: HIV-negative gay, bisexual and other MSM, ≥ 18 years



"Attitudes to and Understanding of Risk of Acquisition of HIV over time"



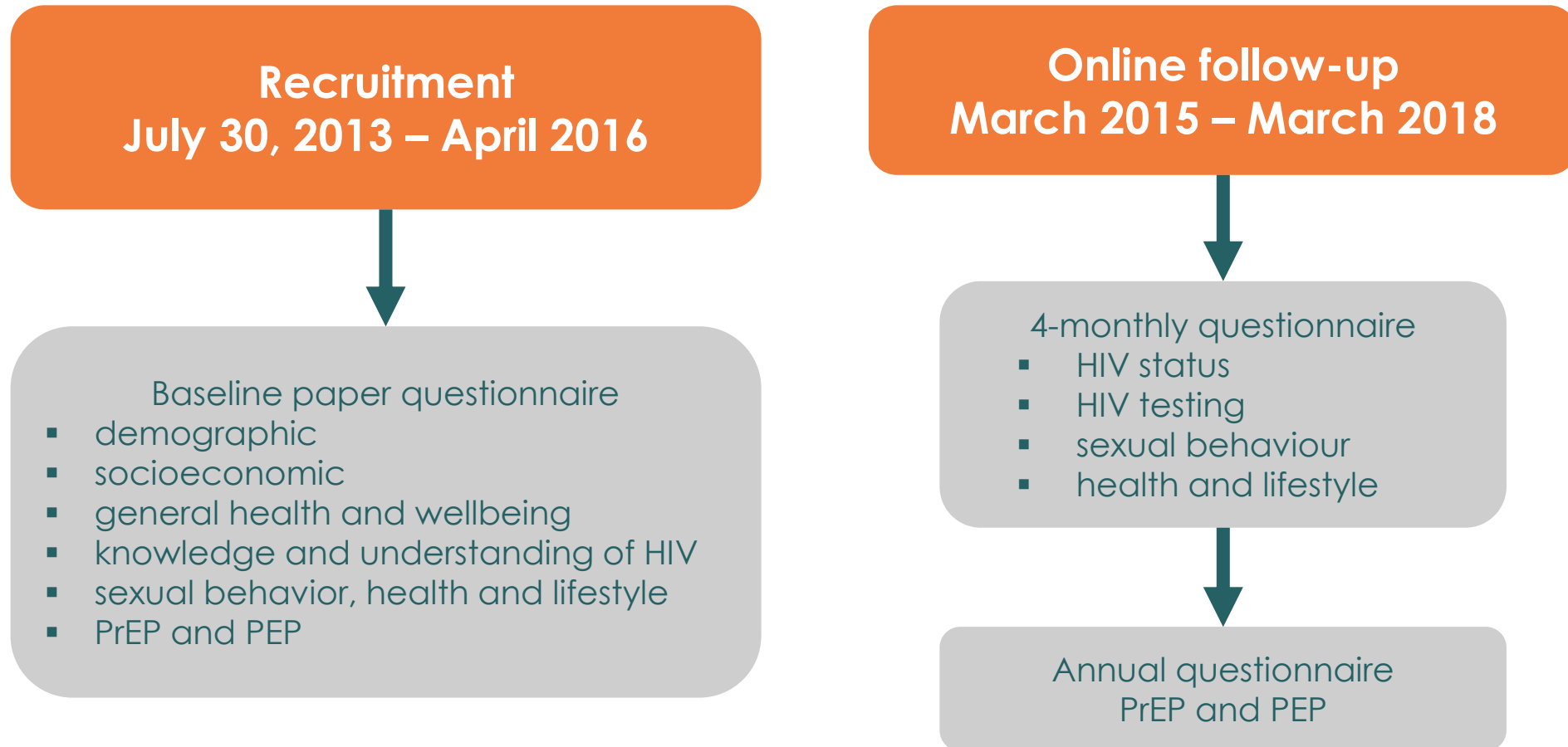
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Period of study and data collection



PrEP and PEP measures*

Outcomes	Baseline questionnaire	Annual questionnaire
PrEP awareness	Were you aware that you can take PrEP to try to prevent HIV infection? (Yes/No)	—
PEP awareness	Were you aware that you can take PEP to try to prevent HIV infection after sex without a condom? (Yes/No)	—
PrEP use in the past 12 months	Have you ever taken PrEP? (Yes/No)	Have you taken PrEP in the past 12 months? (Yes/No)
	If yes, approximately for how many days did you take PrEP in the last year? <ul style="list-style-type: none"> • Between 1 and 4 days • Between 5 and 19 days • 20 to 50 days • More than 50 days 	Approximately how much of the time were you on PrEP in the last 12 months? <ul style="list-style-type: none"> • Less than 3 months • 3 to 6 months • 6 to 9 months • More than 9 months
PEP use in the past 12 months	Have you ever taken PEP? (Yes/No)	Have you taken PEP in the past 12 months? (Yes/No)
	If Yes, approximately how often did you take PEP in the last year? <ul style="list-style-type: none"> • Never • Once • 2 to 3 times • More than 3 times 	Approximately how often did you take PEP in the last year? <ul style="list-style-type: none"> • Once • 2 to 3 times • More than 3 times
Source of PrEP	—	Where did you access PrEP from? (clinic, the internet, research study, a friend, other)

*PrEP data not collected in the 4-monthly questionnaire

Analyses

- **Prevalence of PrEP and PEP awareness at baseline**
- **Longitudinal changes in past 12-month PrEP and PEP use over time:**
Generalized Estimation Equation (GEE) models with a logit link and robust standard errors
- **The rate of PrEP initiation and associated factors:**
 - Age-adjusted Poisson models with robust standard errors
 - PrEP initiation: the first report of PrEP in past 12 months from an annual questionnaire, following a No-PrEP use report at baseline
 - Time to initiation: the time from baseline to the date of completion of the questionnaire in which PrEP was first reported, or from baseline to the end of follow-up if PrEP was not initiated
- **Factors associated with being on PrEP (in the previous 12 months):**
 - GEE models with a logit link function
 - Factors associated with reporting non-prescribed PrEP among PrEP users

Study participants

1162 completed baseline questionnaire



622 subsequently completed at least an online follow-up questionnaire



483 completed at least one online annual questionnaire



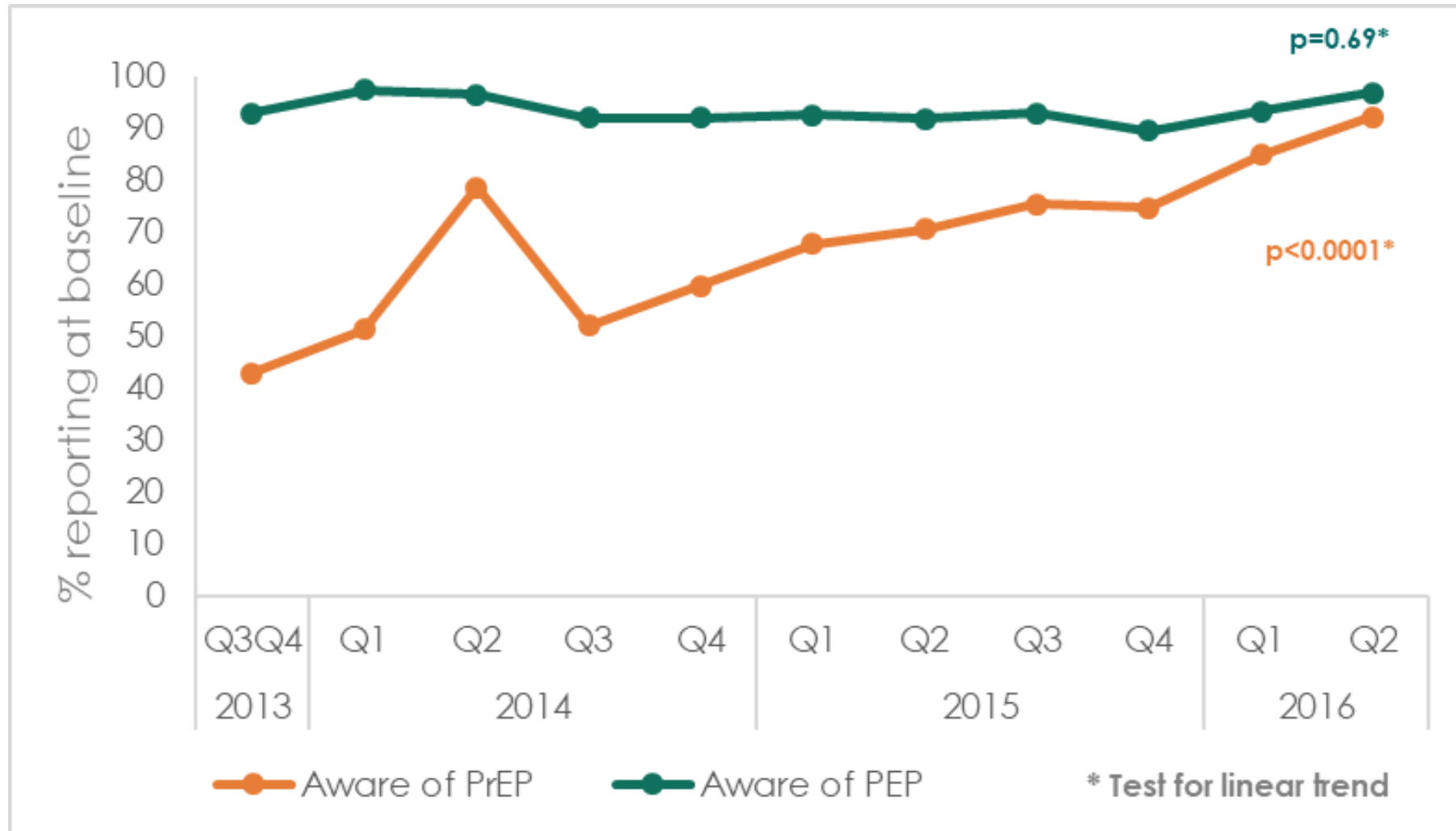
400 followed to end of study (March 2018)

Baseline socio-demographic characteristics of participants

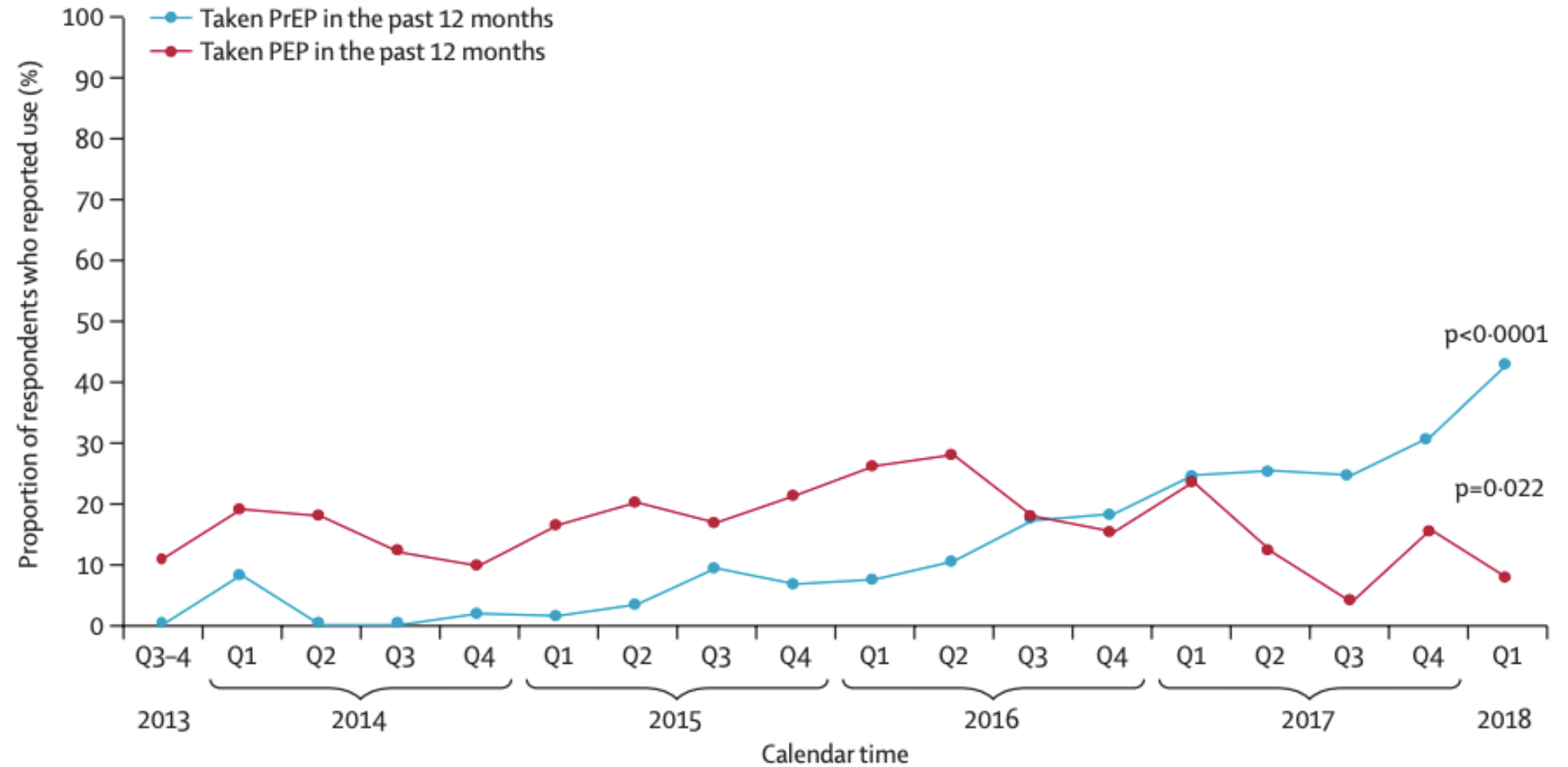
	Completing baseline paper questionnaire on clinic (N=1162)	Completing at least one online follow-up questionnaire (N=622)	Completing at least one annual online questionnaire (N=483)
Mean age, years (SD)	34 (10.4)	34 (11.3)	35 (11.2)
Median age, years (IQR)	31 (26 – 39)	33 (26 – 41)	33 (26 – 42)
Born in the UK and White ethnicity	49.4%	51.9%	54.7%
Gay	93.6%	94.5%	94.8%
University education	73.9%	76.1%	75.6%
Employed	90.9%	88.5%	89.2%
Money all the time to cover basic needs	77.4%	82.4%	84.0%
Housing status:			
Home owner	27.4%	33.0%	35.4%
Renting	59.3%	54.0%	52.6%
Unstable / other	13.3%	12.9%	12.0%

Median number online questionnaire completed (IQR)	6 (3-7)
Total online follow-up questionnaire completed	3277

PrEP and PEP awareness at baseline by calendar period of baseline questionnaire, 2013 - 2016



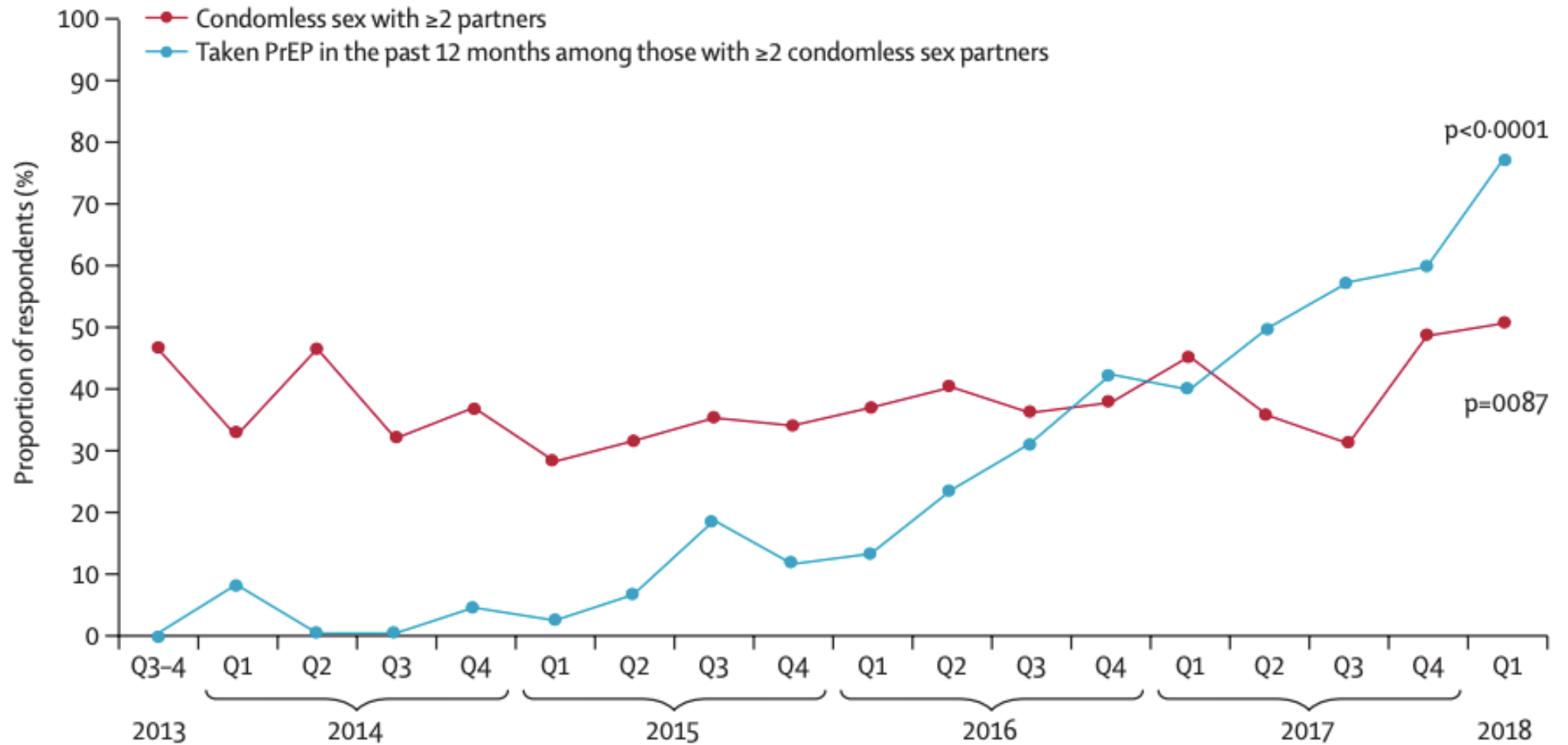
Prevalence of PrEP and PEP use in the past 12 months over time, 2013 – 2018



	Calendar time																	
	2013	2014				2015				2016				2017				2018
	Q3-4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Number of questionnaires	28	37	28	25	62	160	304	271	152	165	147	169	125	77	67	106	103	53
Taken PrEP in the past 12 months	0	3	0	0	1	2	10	25	10	12	25	29	23	19	17	26	32	23
Taken PEP in the past 12 months	3	7	5	3	6	26	61	45	31	43	41	30	19	18	8	4	16	4

p value for linear trend from GEE logistic model

Prevalence of condomless sex with two or more partners and prevalence of PrEP use among these men, 2013 – 2018



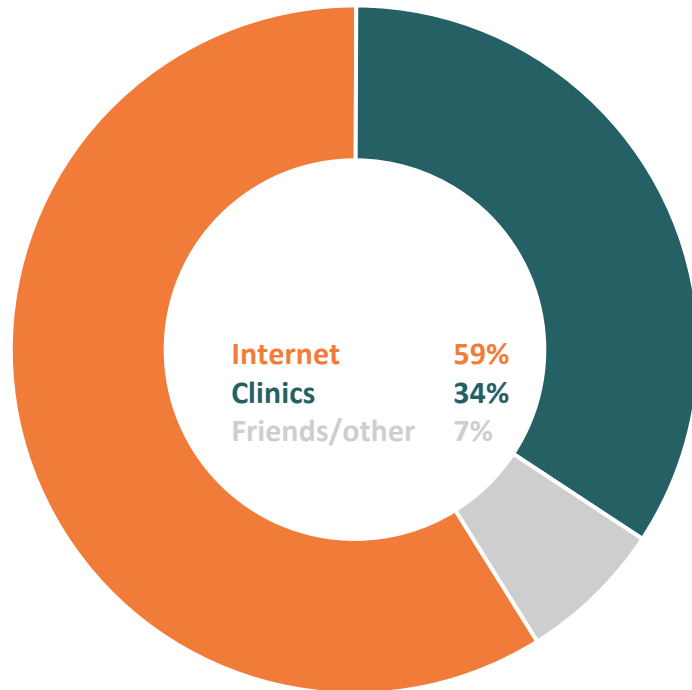
Number of questionnaires reporting condomless sex with ≥ 2 partners
 Taken PrEP in the past 12 months and condomless sex with ≥ 2 partners

13	12	13	8	23	45	96	96	52	61	59	61	47	35	24	33	50	27
0	1	0	0	1	1	6	18	6	8	14	19	20	14	12	19	30	21

p value for linear trend from GEE logistic model

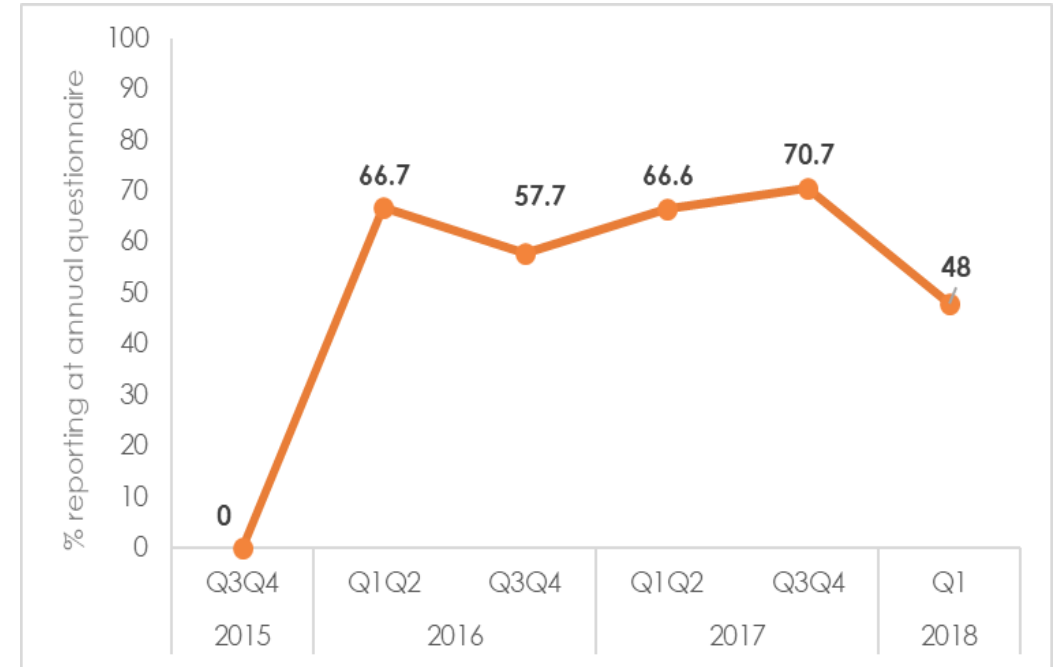
PrEP source

About half of PrEP was obtained by online purchasing



PrEP source
(n=190 annual questionnaires)

Prevalence of sourcing PrEP from internet over time



Longitudinal analysis of factors associated with initiating PrEP

	Predictors of initiating PrEP (N=460 participants, 875 questionnaires)	
	Age-adjusted IRR (95% CI)	p-value
Age category (ref: <25)		0.005
25-29	1.76 (0.47 – 6.56)	
30-34	2.42 (0.69 – 8.45)	
35-39	1.92 (0.49 – 7.58)	
40-44	4.25 (1.14 – 15.79)	
≥45	3.59 (1.07 – 11.97)	
Not employed	0.35 (0.14 – 0.91)	0.032
Unstable housing vs. home owner	0.13 (0.02 – 0.95)	0.025
Recent HIV test	5.17 (1.89 – 14.08)	0.001
CLS in the past 3 month	5.01 (2.16 – 11.63)	<0.001
CLS with ≥2 partners	5.43 (2.99 – 9.86)	<0.001
Group sex in the past 3 months	1.69 (1.01 – 2.84)	0.045
PEP use in the previous 12 months	4.69 (2.83 – 7.79)	<0.001
Use of ≥1 chemsex-related drug	2.86 (1.67 – 4.91)	0.002
Calendar year category		<0.001
2016 (ref: 2013 – 2015)	6.69 (3.28 – 13.68)	
2017 – 2018	21.19 (9.48 – 47.35)	

Longitudinal analysis of factors associated with initiating PrEP vs. Cross-sectional analysis of factors associated with being on PrEP

	Predictors of initiating PrEP (N=460 participants, 875 questionnaires)		Factors associated with being on PrEP (N=1162 participants, 2080 questionnaires)	
	Age-adjusted IRR (95% CI)	p-value	Age-adjusted OR (95% CI)	p-value
Age category (ref: <25)		0.005		<0.0001
25-29	1.76 (0.47 – 6.56)		1.13 (0.49 – 2.57)	
30-34	2.41 (0.69 – 8.45)		2.86 (1.43 – 5.69)	
35-39	1.92 (0.49 – 7.58)		3.12 (1.47 – 6.29)	
40-44	4.25 (1.14 – 15.79)		3.89 (1.80 – 8.36)	
≥45	3.59 (1.07 – 11.97)		3.54 (1.77 – 7.09)	
Not employed	0.35 (0.14 – 0.91)	0.032	0.58 (0.32– 1.06)	0.078
Unstable housing vs. home owner	0.13 (0.02 – 0.95)	0.044	0.36 (0.18 – 0.73)	0.003
Money to cover basic needs				
Most of the time (ref: all of the time)	1.03 (0.45 – 2.37)	0.070	0.83 (0.51 – 1.31)	0.120
Sometimes / No	0.57 (0.08 – 3.86)		0.52 (0.21 – 1.29)	0.037 (p trend)
Recent HIV test	5.17 (1.89 – 14.08)	0.001	2.73 (1.93 – 3.87)	<0.001
CLS in the past 3 month	5.01 (2.16 – 11.63)	<0.001	4.57 (2.91 – 7.17)	<0.001
CLS with ≥2 partners	5.43 (2.99 – 9.86)	<0.001	5.64 (3.97 – 8.01)	<0.001
Group sex in the past 3 months	1.69 (1.01 – 2.84)	0.045	1.77 (1.26 – 2.47)	0.001
PEP use in the previous 12 months	4.69 (2.83 – 7.79)	<0.001	1.78 (1.17 – 2.71)	0.007
Use of ≥1 chemsex-related drug	2.05 (1.21 – 3.47)	0.007	2.70 (1.91 – 3.81)	<0.001
Calendar year category				
2016 (ref: 2013 – 2015)	6.69 (3.28 – 13.68)	<0.001	2.80 (2.04 – 3.84)	<0.001
2017 – 2018	21.19 (9.48 – 47.35)	<0.001	7.44 (5.39 – 10.26)	<0.001

Factors associated with reporting non-prescribed PrEP among PrEP users

	Factors associated with reporting non-prescribed PrEP (n=128 participants, 190 questionnaires)	
	unadjusted OR (95% CI)	p-value
STI diagnosis in the past 3 months	2.00 (1.09 – 3.69)	0.025
CLS in the past 3 months	3.55 (1.14 – 11.09)	0.029
CLS with ≥ 2 partners	2.22 (1.01 – 4.85)	0.045
Group sex in the past 3 months	2.32 (1.23 – 4.39)	0.009
Use of ≥ 1 chemsex-related drug	3.69 (1.80 – 7.56)	<0.001
Calendar year	2.12 (1.43 – 3.15)	0.028

Limitations

- The sample characteristics may not allow generalisability to all MSM living in England and in the UK
- Trends in use and predictors of PrEP initiation might differ among MSM who are not engaged with sexual health clinics
- Self-report data may be subject to recall bias and social desirability bias
- The online retention was lower than we hoped

Conclusions

- Both awareness and use of PrEP increased substantially from 2013 to 2018 among MSM attending sexual health clinics in London and Brighton
- A substantial proportion of men accessing PrEP obtained it via the internet
- By 2018, PrEP use was almost 80% among men with multiple condomless sex partners
- Men engaging in sexual behaviour related to high HIV risk, who are older, and those of higher economic status are significantly more likely to use PrEP
- Improving access to PrEP via routine commissioning by NHS England could increase PrEP use among all eligible MSM and reduce socioeconomic disparities

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Check for updates

PEP use in the
past 12 months

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Thank you!