



POPPY

Pharmacokinetic and clinical
observations in people over 50

Respiratory symptoms and chronic bronchitis in people with HIV and demographically-similar HIV-negative controls: prevalence and risk factors

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Background



- Respiratory symptoms may occur more frequently among people with HIV; reasons for higher rates remain unclear
- Primary risk factor is smoking, although other risk factors may also be present in people with HIV
- Identification of risk factors for respiratory symptoms and chronic bronchitis (CB) is crucial if we are to effectively prevent and manage these conditions

Aims

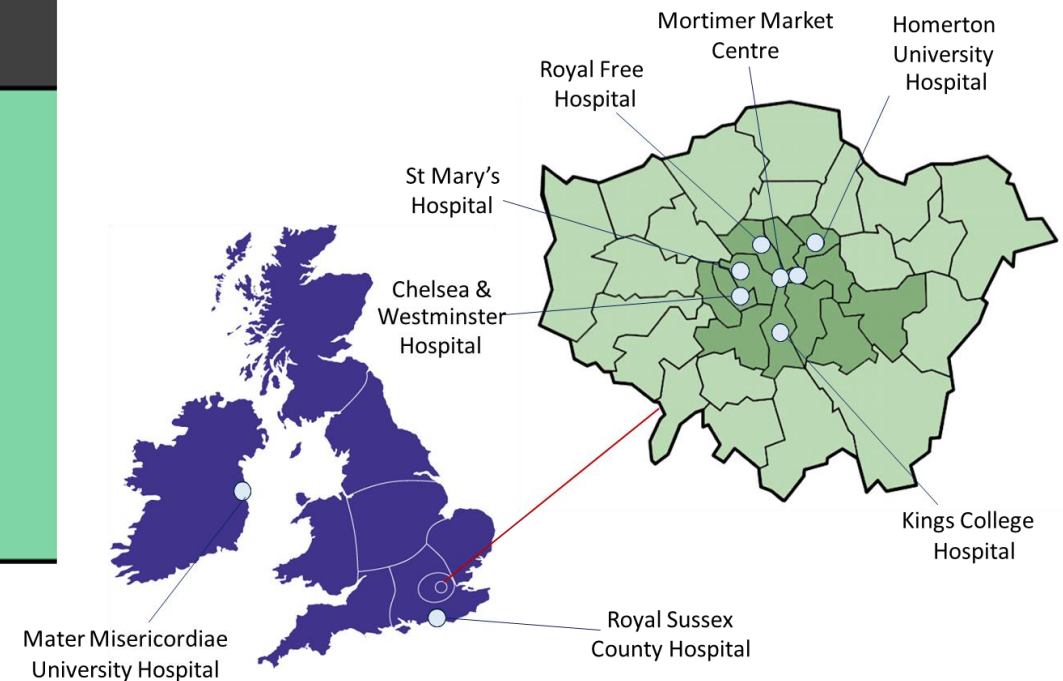


- To investigate the prevalence of respiratory symptoms and CB in people with HIV and HIV-negative controls in the POPPY study
- To determine associations of each with markers of HIV infection and immunosuppression
- To describe associations with patient-reported outcome measures (PROMs)

The POPPY Study

- Multi-centre cohort study to examine effects of ageing on the health of people with HIV in the UK and Ireland

PWH ≥ 50 years	PWH < 50 years	HIV-ve ≥ 50 years
<ul style="list-style-type: none"> N=699 Aged ≥ 50 years White/black African ethnicity Acquired HIV via sexual routes 	<ul style="list-style-type: none"> N=374 Aged < 50 years 150 aged 20-29, 30-39, 40-49 years Frequency matched on gender, ethnicity, sexual orientation and clinic 	<ul style="list-style-type: none"> N=304 Aged ≥ 50 years Frequency matched on age, gender, ethnicity, sexual orientation and geographical location (in/out London)



Respiratory symptoms

- Sub-set of participants at wave 3 visit (May 15 - Feb 18)
- Short (40-question) version of **St. George's Respiratory Questionnaire for COPD (SGRQ-C)**; present analyses will focus on **Symptoms** component
- SGRQ-C used to identify people with symptoms consistent with CB, as those responding 'almost every day' or 'most days a week' to the following questions¹:
 - Over the last 4 weeks, I have coughed
 - Over the last 4 weeks, I have brought up phlegm (sputum)

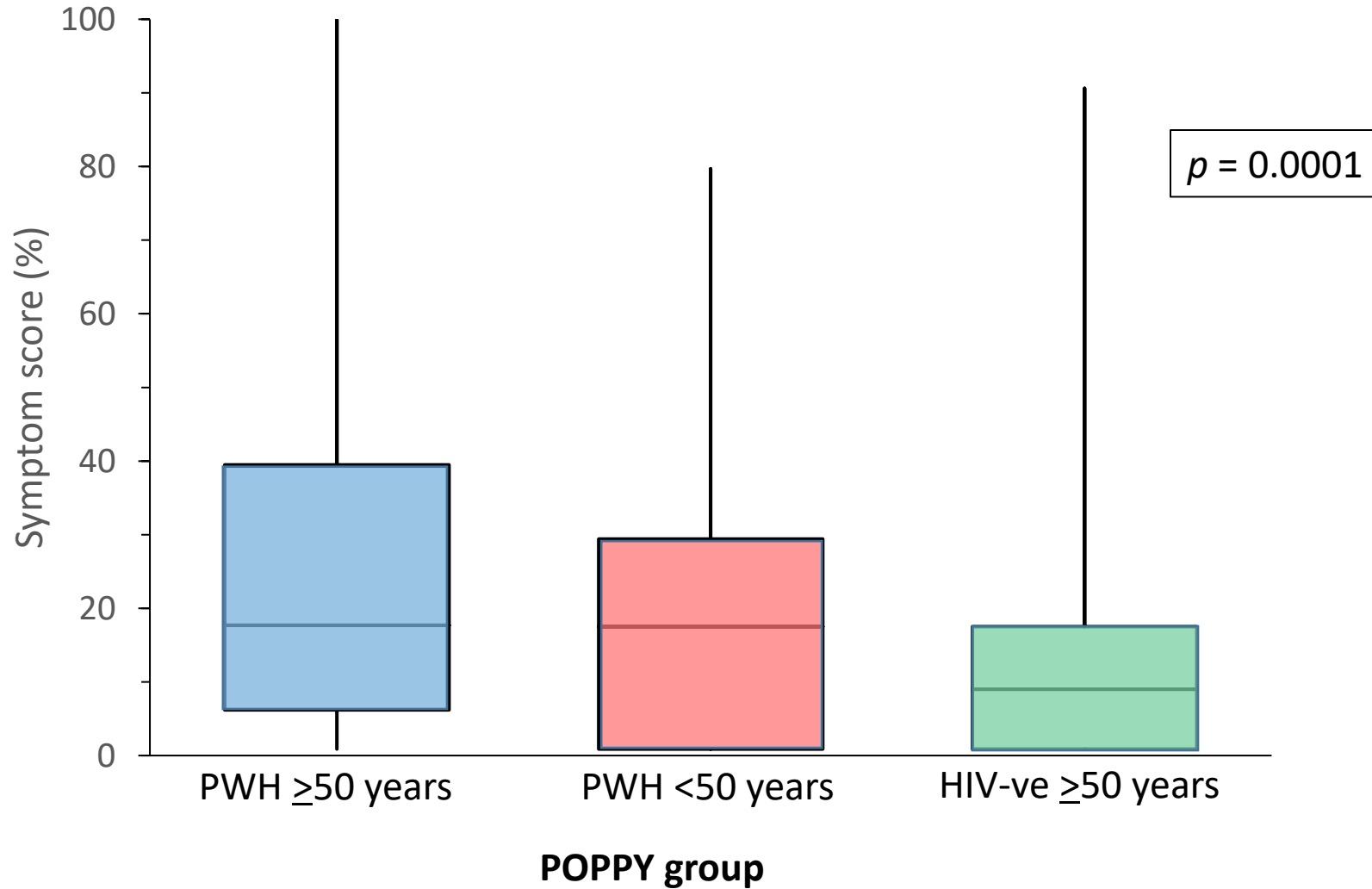
Statistical methods

- Associations of Symptoms score: Mann-Whitney U tests and multiple linear regression (after \log_{10} transformation of Symptom score)
- Associations of CB: Chi-squared tests and logistic regression after adjustment for confounders
- Associations with PROMs (CES-D, PHQ-9, and SF-36): Mann-Whitney U tests and Spearman correlations

Participant characteristics (n=619)

	Study Group			
	PWH \geq 50 years	PWH <50 years	HIV-ve \geq 50 years	
Number	315	152	152	
Male gender, %	87.6	82.2	60.5	
White ethnicity, %	87.3	81.6	90.1	
Sexuality/mode of infection, %				
	MSM	80.0	73.7	46.7
	Heterosexual	20.0	26.3	53.3
Median age (years)	56	42	57	
Median body mass index (kg/m²)	25.7	24.7	26.5	
Smoking status, %				
	Current	20.6	30.3	10.5
	Ex-smoker	40.3	27.6	44.1
	Never/unknown	3.0	42.1	45.4
Recreational drug use in past 6 months, %	22.5	39.5	16.5	
Educational attainment, %				
	Low/unknown	29.2	23.0	25.0
	High	70.8	77.0	75.0

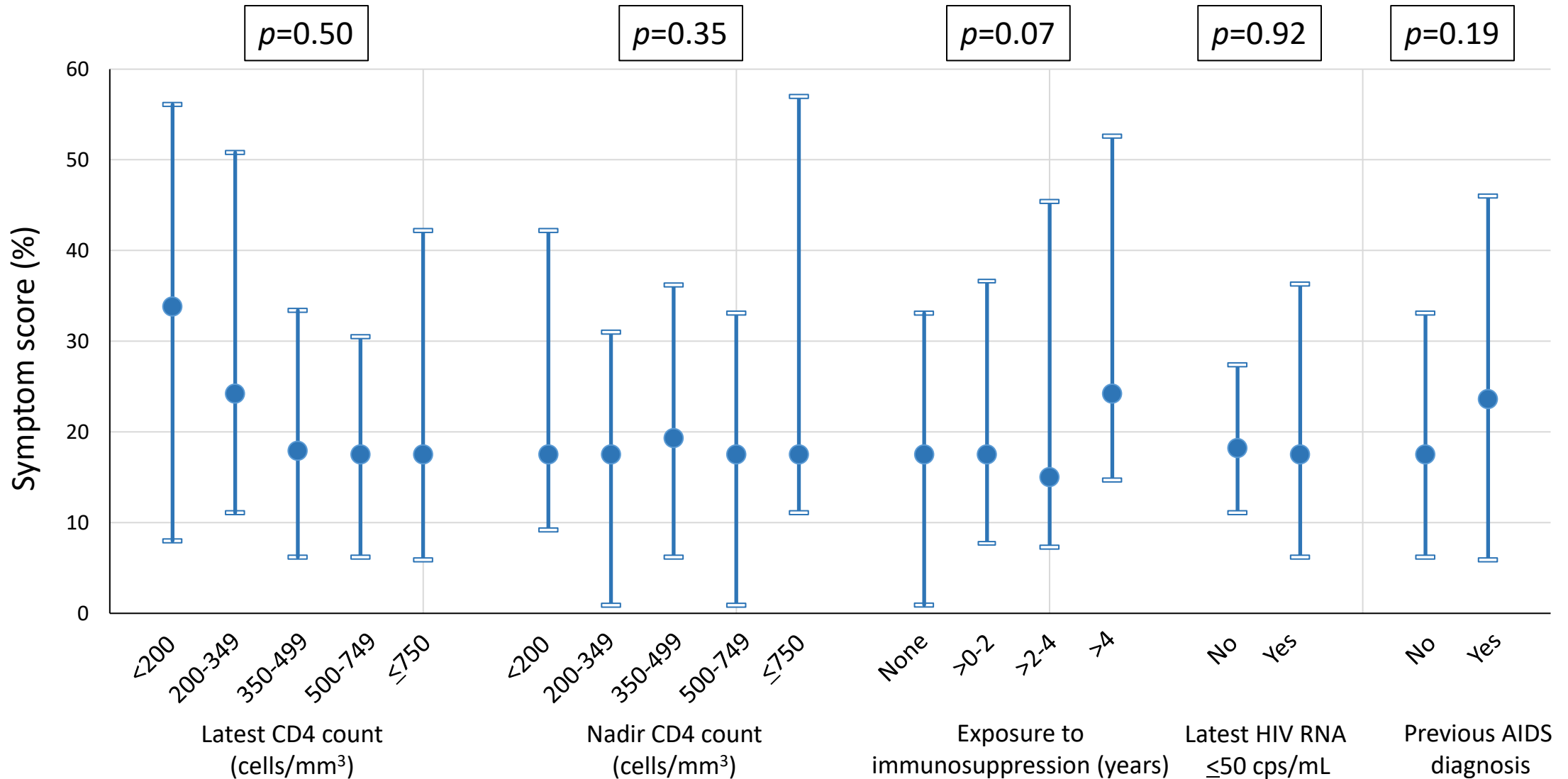
Respiratory Symptom scores



Associations with Symptom score

- Symptom scores higher in:
 - Men vs. women ($p=0.0002$)
 - White vs. Black African participants ($p=0.09$)
 - MSM vs. heterosexuals ($p=0.0009$)
 - Current and ex- vs. never smokers ($p=0.0001$)
 - Those reporting recent recreational drug use vs. those not ($p=0.001$)
 - Those with low/unknown vs. high educational attainment ($p=0.0001$)
- After adjustment, mean Symptom score in older people with HIV:
 - **29%** higher than in younger people with HIV
 - **119%** higher than in older HIV-ve participants
 - $p=0.0001$

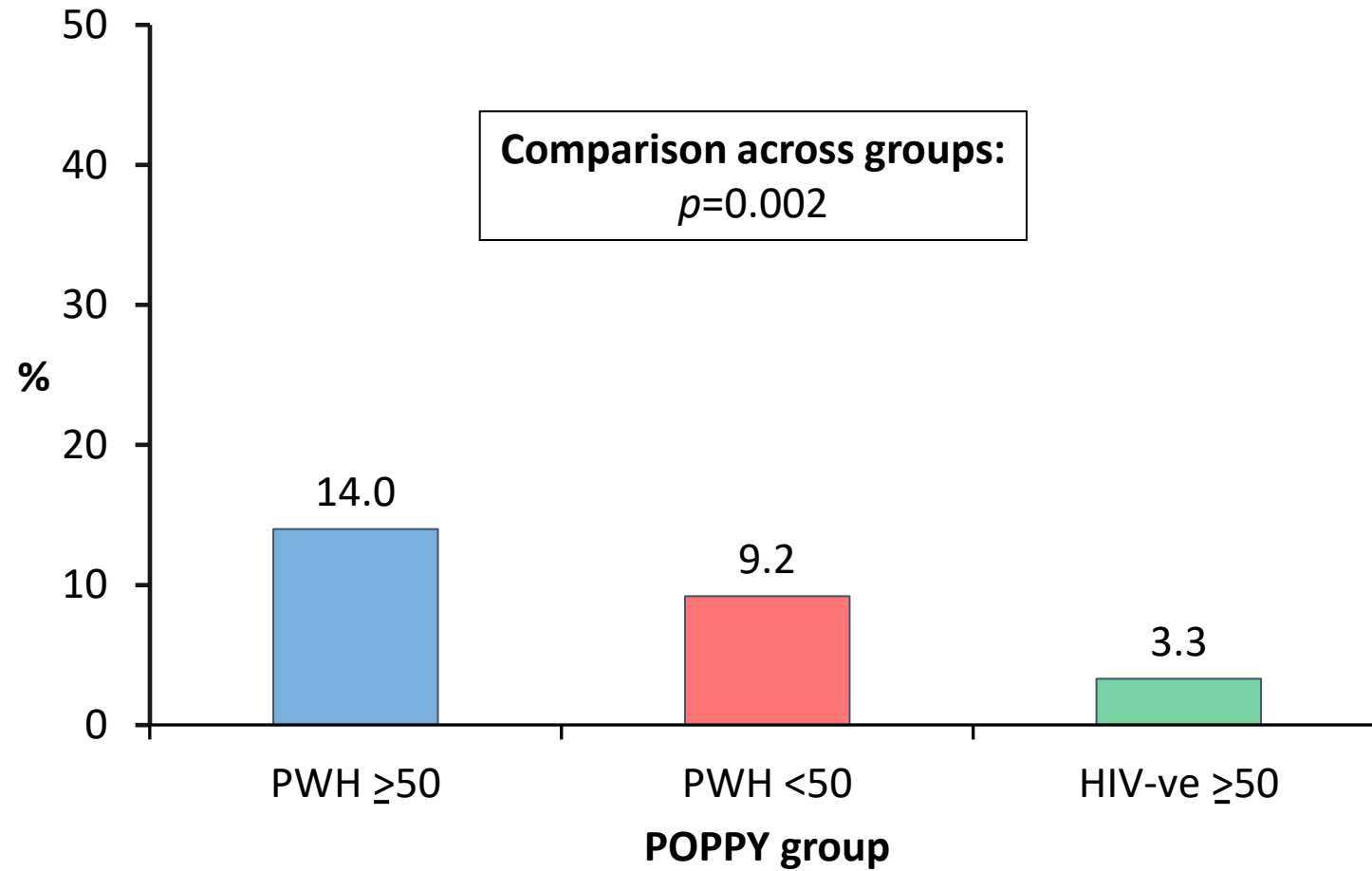
Associations of Symptoms with HIV factors



Associations of Symptom score with PROMs

Measure	Spearman's r	p-value
<i>Depressive symptom score</i>		
CES-D	0.41	0.0001
PHQ-9	0.41	0.0001
<i>SF-36 subscale</i>		
Physical functioning	-0.39	0.0001
Physical limitations	-0.35	0.0001
Emotional limitations	-0.31	0.0001
Energy/fatigue	-0.42	0.0001
Emotional wellbeing	-0.34	0.0001
Social functioning	-0.38	0.0001
Pain	-0.35	0.0001
General health	-0.45	0.0001

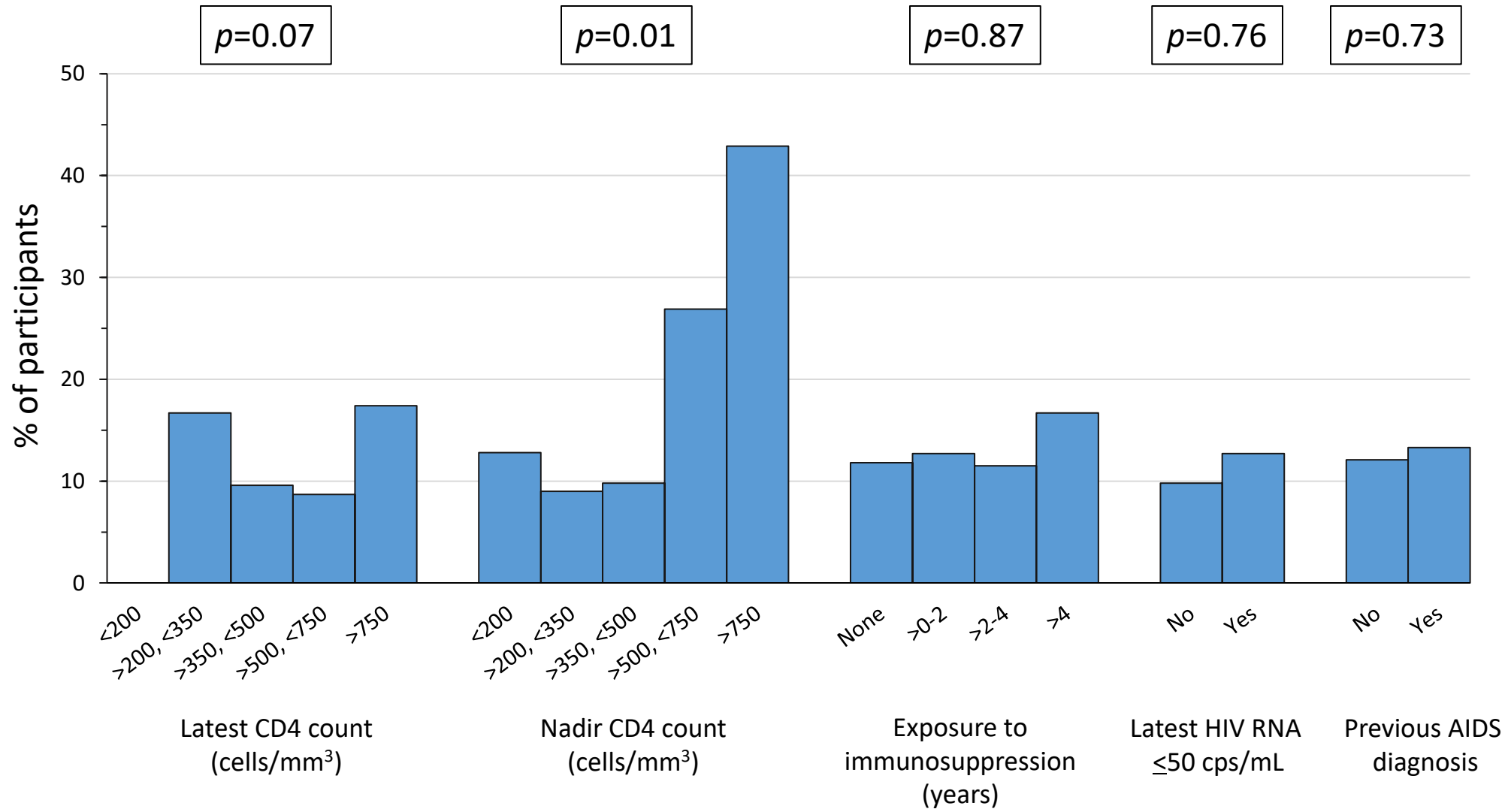
Prevalence of CB



Associations with CB

- Only demographic/lifestyle factor associated with CB was smoking status:
 - Current smokers 21.3%
 - Ex-smokers 11.4%
 - Never smokers 3.5%
 - $p=0.0001$
- Adjusted odds ratio for CB (95% confidence interval), compared to HIV-negative group:
 - Older people with HIV: **4.48** (1.64, 12.30), $p=0.004$
 - Younger people with HIV: **4.53** (1.12, 18.28), $p=0.03$

Associations of CB with HIV parameters



Associations of CB with PROMs

Measure	No CB Median (IQR)	CB Median (IQR)	<i>p</i> -value
<i>Depressive symptom score</i>			
CES-D	7 (3, 15)	16 (7, 28)	0.0001
PHQ-9	2 (0, 6)	9 (2, 13)	0.0001
<i>SF-36 subscale</i>			
Physical functioning	95 (80, 100)	80 (40, 95)	0.0001
Physical limitations	100 (75, 100)	50 (0, 100)	0.0001
Emotional limitations	100 (67, 100)	67 (0, 100)	0.0005
Energy/fatigue	65 (50, 80)	50 (30, 65)	0.0001
Emotional wellbeing	80 (64, 92)	68 (48, 80)	0.0001
Social functioning	90 (68, 100)	68 (43, 90)	0.0001
Pain	80 (58, 100)	68 (32, 90)	0.0001
General health	70 (55, 85)	55 (30, 75)	0.0003

Benefits and limitations

- Sample representative of older people with HIV in UK with appropriately selected HIV-ve control group
- Cannot rule out possibility of unmeasured confounding
- Lacking more detailed information on smoking (e.g. pack-years) and smoking alternatives
- No formal clinical assessment of respiratory symptoms, or use of lung function tests to facilitate diagnosis of underlying clinical conditions

Summary

- Respiratory problems are more common in people with HIV than in similarly-aged HIV-negative people, and were associated with poorer mental health and quality-of-life
- Whilst current and ex-smoking status was one of the strongest risk factors for respiratory problems and CB, association with HIV infection remained significant after adjustment
- No evidence that symptoms were related to immune dysfunction, suggesting that higher rate may reflect unmeasured lifestyle or laboratory factors, rather than legacy effects of HIV *per se*

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ORIGINAL RESEARCH

Respiratory symptoms and chronic bronchitis in people with and without HIV infection

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Acknowledgements



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POPPY methodology/statistics/analysis: Caroline Sabin, Davide De Francesco, Emmanouil Bagkeris

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