

# NHS healthcare utilisation of people living with HIV compared to matched, HIV-negative controls



Gilead Sciences Ltd  
280 High Holborn  
London  
WC1V 7EE

Bethan Jones<sup>1</sup>, Andrew Freedman<sup>2</sup>, Craig J Currie<sup>1,3</sup>, Laurence Wild<sup>4</sup>, Sinéad Kearns<sup>4</sup>

<sup>1</sup>Global Epidemiology, Pharmatelligence, Cardiff, UK <sup>2</sup>College of Biomedical and Life Sciences, Cardiff University, Cardiff UK

<sup>3</sup>Institute of Population Medicine, Cardiff University, Cardiff, UK <sup>4</sup>Gilead Sciences Ltd, London, UK

Poster Number

P100

25<sup>th</sup> BHIVA Conference

2-5 April 2019

Bournemouth, UK

## Introduction

- Changes in the demographics of people living with HIV (PLHIV) and setting of care are likely to have shifted resource use in the UK.
- Due to advancements in HIV treatments, the survival time of PLHIV has increased,<sup>1</sup> resulting in a higher incidence of related comorbidities, inferring greater resource requirements.
- HIV care has been managed predominately in hospital settings, but the impact of comorbidities associated with increased survival on resource use in other settings remains largely unknown.
- Some data are available showing increased rates of hospitalisation,<sup>2</sup> but the impact this has on the healthcare system as a whole is not understood.

## Objectives

- To use longitudinal primary and secondary care data to characterise and compare resource use for patients with and without a HIV diagnosis in the United Kingdom.
- To evaluate which healthcare setting - hospital inpatient admissions, hospital outpatient or general practice visits incurs the greatest burden for each cohort.

## Methods

### Data Source

- Patients were selected from the Clinical Practice Research Datalink (CPRD) GOLD database, a routine primary care database in the United Kingdom comprising approximately 15 million patients.<sup>3</sup>
- CPRD captures data from approximately 10% of the UK general practice records and it is representative of the UK as a whole.
- Approximately 60% of primary care practices participated in a linkage scheme, by which their patient records were linked to hospital episode statistics (HES), providing inpatient and outpatient data throughout the NHS hospitals in England.<sup>4</sup>

### Patient Selection

- The study population was selected from permanently registered patients from CPRD practices of acceptable research quality, who were eligible for the HES linkage scheme.
- The index date for PLHIV was fixed at the earlier of the patient's incident diagnosis of HIV, or the patient's first positive test result for HIV. For HIV-negative controls, their index date was set to the index date of their matched HIV case.
- Only patients with an index date between 1st January 2003 and 31st December 2017 were selected for analysis.

- PLHIV were matched 1:2 with HIV-negative controls according to their age, gender, GP practice and HES eligibility status.

## Analysis

- Demographic data are presented for both cohorts. The number of visits for each cohort were assessed for GP visits, outpatient visits and inpatient admissions.
- The rate of visits was calculated per person year for the period 1-year post index and the total patient follow-up period.
- Rate ratios (RR) were calculated using a negative binomial model using case/controls as the independent variable.

## Results

- Baseline characteristics are presented in table 1. There were 2,315 PLHIV matched to 4,630 HIV-negative controls.
- The mean age of both cohorts were 39 years with the majority of patients being male (64.9%).
- The highest proportion of patients were of white ethnicity in both cohorts.

Table 1. Baseline Characteristics for overall population

	PLHIV cases	HIV-negative controls	p-value
N	2,315	4,630	
Males, n (%)	1,502 (64.9)	3,004 (64.9)	1
Age, mean (SD)	39.3 (12.6)	39.3 (12.6)	1
BMI, mean (SD)	25.3 (5.3)	27.7 (6.0)	<0.0001
Ethnicity, n (%)			<0.0001
White	1,040 (44.9)	2,597 (56.1)	
Black	677 (29.2)	308 (6.7)	
Asian	65 (2.8)	291 (6.3)	
Mixed	64 (2.8)	50 (1.1)	
Other	45 (1.9)	107 (2.3)	
Missing	424 (18.3)	1,277 (27.6)	
Smoking status, n (%)			0.0078
Never smoked	1,158 (50.0)	2,209 (47.7)	
Ex-Smoker	382 (16.5)	857 (18.5)	
Current smoker	673 (29.1)	1,186 (25.6)	
Missing	102 (4.4)	378 (8.2)	

- Significantly higher frequencies of GP visits, outpatient visits and inpatient admissions were observed between PLHIV and HIV-negative controls, both for 1 year following documented HIV diagnosis and during total patient follow-up (Table 2).
- The RR of resource use for PLHIV versus HIV-negative controls was greatest for inpatient admissions one-year post index date with a RR of 5.1 (4.6 – 5.6).
- The highest rate per person year was observed in GP visits for PLHIV one-year post index with a rate of 7.6 visits per person year, compared to 4.0 visits in HIV-negative controls.

Table 2. Negative binomial model for Healthcare utilisation

		Group	Rate per person year	RR (95%CI)	P-value
GP visits	Up to 1-year	HIV-negative	3.96	1.86 (1.74 - 1.98)	<0.0001
		PLHIV	7.58		
	Total period	HIV-negative	4.46	1.22 (1.13 - 1.31)	<0.0001
		PLHIV	6.01		
Outpatient visits	Up to 1-year	HIV-negative	0.25	3.72 (3.25 - 4.26)	<0.0001
		PLHIV	0.95		
	Total period	HIV-negative	0.27	1.34 (1.19 - 1.51)	<0.0001
		PLHIV	0.40		
Inpatient admissions	Up to 1-year	HIV-negative	0.88	5.50 (4.56 - 5.59)	<0.0001
		PLHIV	4.60		
	Total period	HIV-negative	1.00	2.73 (2.47 - 3.02)	<0.0001
		PLHIV	3.03		

## Conclusions

- The number of visits to both primary and secondary healthcare settings were significantly higher in PLHIV compared to the matched HIV-negative controls which is likely to reflect the increased complexity of clinical needs in this patient group.
- A key part of the NHS ten-year plan is to reduce the number of outpatient visits. Outpatient visits were significantly higher in the PLHIV, potentially offering an opportunity for efficiency gains in this area.
- PLHIV are a key patient group that require better alignment and communication between primary and secondary care, to ensure a good health related quality of life.

## Limitations

- Coding of HIV status may be underrepresented as PLHIV may choose to access care in other settings (e.g. GUM clinic) or choose to not disclose HIV status.
- Some patients once diagnosed with HIV may not have given consent for their GP to be informed, therefore these patients may not be identified as HIV patients in the data.
- The RR has not been adjusted for differences in ethnicity between cohorts which may affect the resource use estimates.

## References

- Trickey A, et al. Survival of HIV-positive patients starting antiretroviral therapy between 1996 and 2013: a collaborative analysis of cohort studies. *Lancet HIV* 2017; 4:e349-356
- Wild et al., poster PE11/16, EACS 2017
- Herrett E, et al. Data resource profile: clinical practice research datalink (CPRD). *Int J Epidemiol* 2015;44:827-836
- <https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/hospital-episode-statistics>