

# Does setting of diagnosis impact time to link to HIV care following diagnosis in England, Wales and Northern Ireland?

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Protecting and improving  
the nation's health

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## INTRODUCTION

- Over the past decade, HIV testing in the United Kingdom (UK) has been scaled up across a variety of settings in an effort to reduce late diagnosis and undiagnosed infection<sup>1,2</sup>.
- Non-traditional settings, such as general practice and community testing venues, have played an increasingly important role in diagnosing people with HIV<sup>3</sup>.
- Attendance to an HIV care provider promptly after testing positive is critical. Care services facilitate access to HIV treatment, which has substantial benefits to the patient, reducing morbidity and mortality<sup>4</sup>. Treatment can also have a public health impact, eliminating HIV infectivity (undetectable=untransmissible)<sup>5</sup>.
- We explore national trends in the time to link to HIV outpatient care following diagnosis and investigate the extent to which setting of diagnosis has impacted on the time to linkage in recent years.

## METHODS

**Data source:** National HIV surveillance data held at Public Health England

**Population:** Adults (aged  $\geq 15$  years) diagnosed with HIV between 2005 and 2014 in England, Wales and Northern Ireland. Children were excluded under the assumption that pathways to HIV care are different for people aged  $< 15$  years at diagnosis.

**Linkage to care definition:** Time it takes for a person newly diagnosed to access HIV care, using CD4 count date as a proxy for the date of care entry. Prompt linkage to care was defined as care entry within 3 months (91 days) of diagnosis.

**Exclusion criteria:** People were excluded if they had a known previous diagnosis ( $n=511$ ), died within 3 months of diagnosis ( $n=1,392$ ), had no HIV outpatient clinical record after diagnosis by the end of 2017 ( $n=1,808$ ) or were missing a first care date ( $n=926$ ).

**Statistical analyses:**

- Trends in timeliness of linkage to care were examined overall and by diagnosis setting.
- Logistic regression was used to identify factors associated with delayed linkage to care (care entry  $\geq 3$  months after diagnosis) in recent years (2012-2014).

## RESULTS

### Linkage to HIV care following diagnosis

- Of the 63,599 adults first diagnosed with HIV in England, Wales and Northern Ireland between 2005 and 2014, 58,962 (93%) were included in these analyses.
- Over the decade, linkage to care within two weeks of diagnosis was 58% (34,331), within 1 month was 73% (42,862), within 3 months was 88% (52,113) and within 1 year was 95% (55,971) (Figure 1).

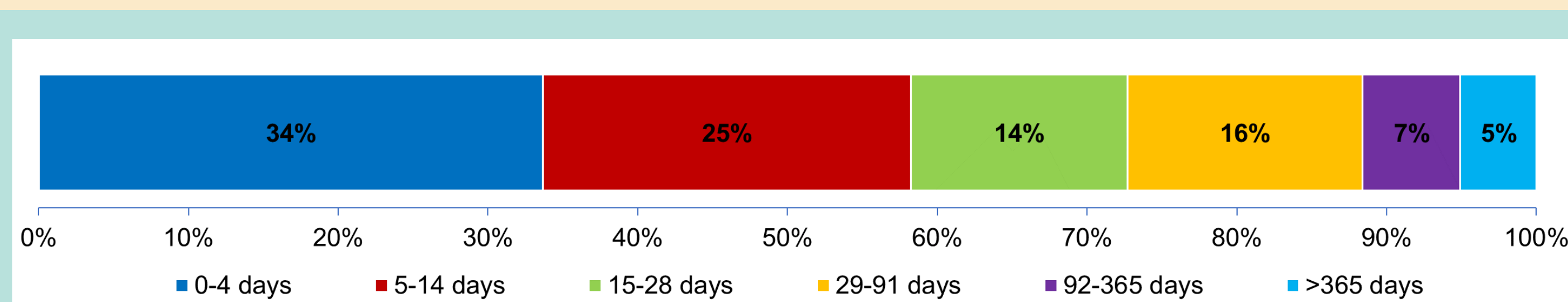


Figure 1. Time to HIV care entry following diagnosis: England, Wales & Northern Ireland, 2005-2014

### Changes in linkage to care over time

- Prompt linkage to care, within 3 months of diagnosis, increased from 85% (5,892/6,926) in 2005 to 92% (4,795/5,201) in 2014 (Figure 2).
- There was an increase in prompt linkage to care over the decade across all diagnosis settings (Figure 2). The largest improvement was seen in the proportion of people linked promptly after being diagnosed in general practice, which increased 19%, from 73% (169/230) in 2005 to 92% (358/388) in 2014 (Figure 2).
- In 2014, linkage to care was relatively high across all diagnosis settings ( $\geq 90\%$ ).

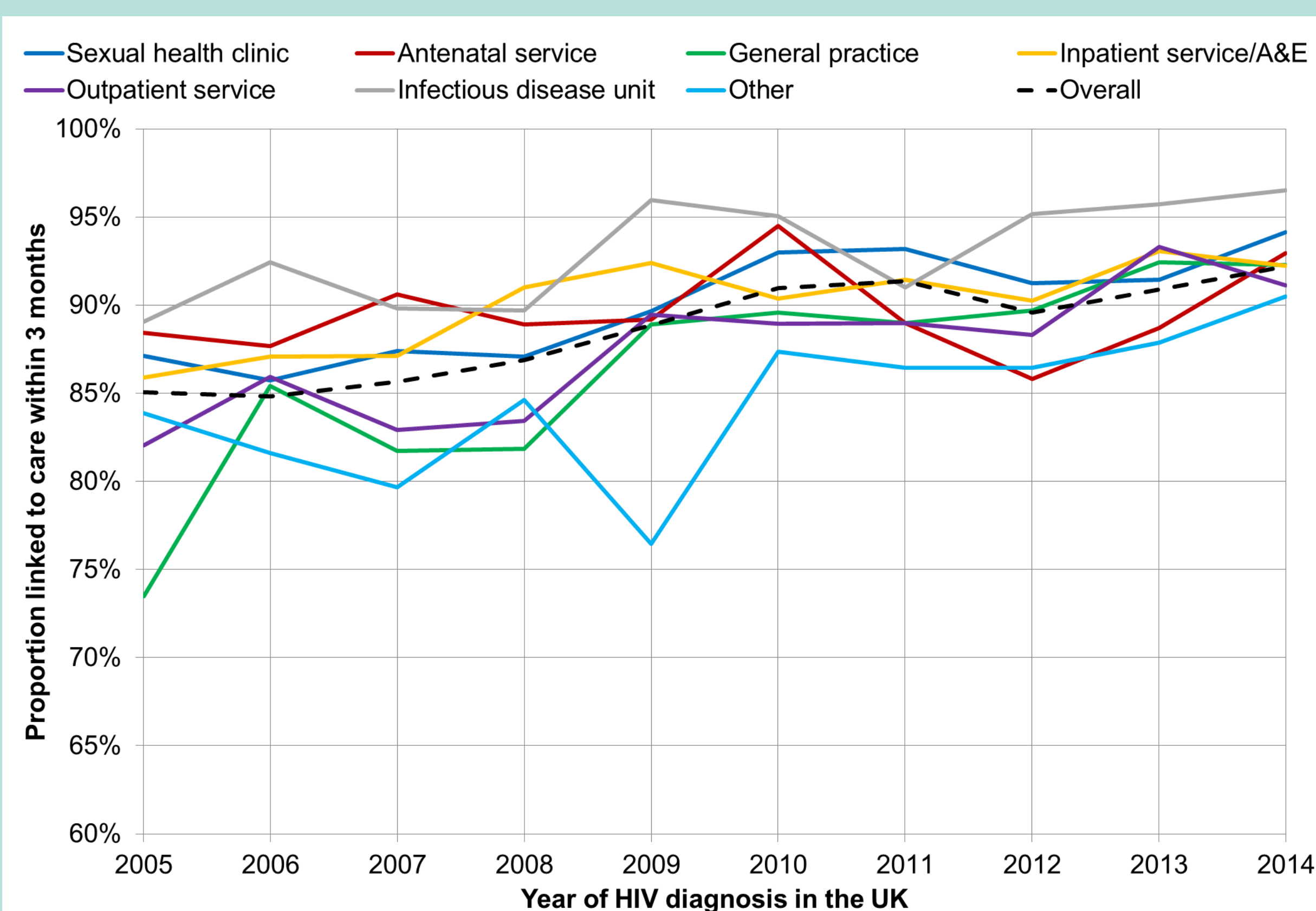


Figure 2. Prompt linkage by setting of diagnosis: England, Wales & Northern Ireland, 2005-2014

### Linkage to care in recent years

- Overall linkage to care was prompt across all demographic factors in recent years (2012-2014) ( $> 80\%$ ) (Figure 3).
- In multivariable analysis (Table 1), delayed linkage to care was associated with:
  - Acquiring HIV through injecting drug use, heterosexual contact or other exposure routes
  - Being diagnosed in earlier years
  - Having a first CD4 count  $\geq 200$  cells/mm<sup>3</sup>
  - Being diagnosed outside of healthcare settings, including prisons, drug services, the community and other settings not specified.
  - Gender, age at diagnosis and ethnicity did not significantly impact time to care.

Table 1. Factors for delayed linkage to HIV care after diagnosis: England, Wales & Northern Ireland, 2012-2014

Variables	Unadjusted odds ratio			Adjusted odds ratio			
	OR	95% CI	p value <sup>a</sup>	OR	95% CI	p value <sup>a</sup>	
Gender	Men	1.00	-	-	-	-	
	Women	1.35	1.20-1.52	<0.001	-	-	N.S.
Age at diagnosis	15-24	1.00	-	-	-	-	
	25-34	0.92	0.77-1.09	-	-	-	
	35-49	0.88	0.74-1.04	-	-	-	
	$\geq 50$	0.82	0.67-1.01	0.259	-	-	
Diagnosis year	2012	1.00	-	1.00	-	-	
	2013	0.86	0.76-0.98	0.86	0.74-1.00	-	
	2014	0.83	0.64-0.83	<0.001	0.62	0.52-0.72	<0.001
	Sexual health services	1.00	-	-	1.00	-	-
Setting of diagnosis	Antenatal services	1.52	1.11-2.07	-	1.14	0.82-1.60	-
	Outpatient services	1.24	0.94-1.63	-	0.99	0.73-1.36	-
	Inpatient services/A&E	1.07	0.86-1.32	-	1.13	0.89-1.43	-
	General practice	1.12	0.89-1.40	-	1.02	0.80-1.29	-
	Infectious disease unit	0.52	0.28-0.99	-	0.53	0.28-1.00	-
Other	1.59	1.23-2.05	<0.001	1.49	1.14-1.95	0.026	
Exposure	Sex between men	1.00	-	1.00	-	-	
	Heterosexual contact	1.39	1.23-1.55	-	1.53	1.33-1.76	-
	Injecting drug use	2.26	1.64-3.12	-	2.84	1.98-4.05	-
	Other	2.80	1.96-4.00	<0.001	3.69	2.46-5.54	<0.001
Ethnicity	White	1.00	-	-	-	-	
	Black African	1.28	1.12-1.45	-	-	-	
	Black Caribbean	0.79	0.55-1.14	-	-	-	
	Asian	1.12	0.88-1.41	-	-	-	
	Other	1.06	0.87-1.31	0.002	-	-	N.S.
First CD4 count (cells/mm <sup>3</sup> )	<200	1.00	-	1.00	-	-	
	200-349	1.49	1.25-1.77	-	1.51	1.22-1.87	-
	350-499	1.44	1.21-1.71	-	1.66	1.34-2.05	-
	$\geq 500$	1.49	1.27-1.73	<0.001	1.77	1.46-2.15	<0.001

<sup>a</sup> Chi<sup>2</sup> test; † Likelihood ratio test

N.S. - Not significant

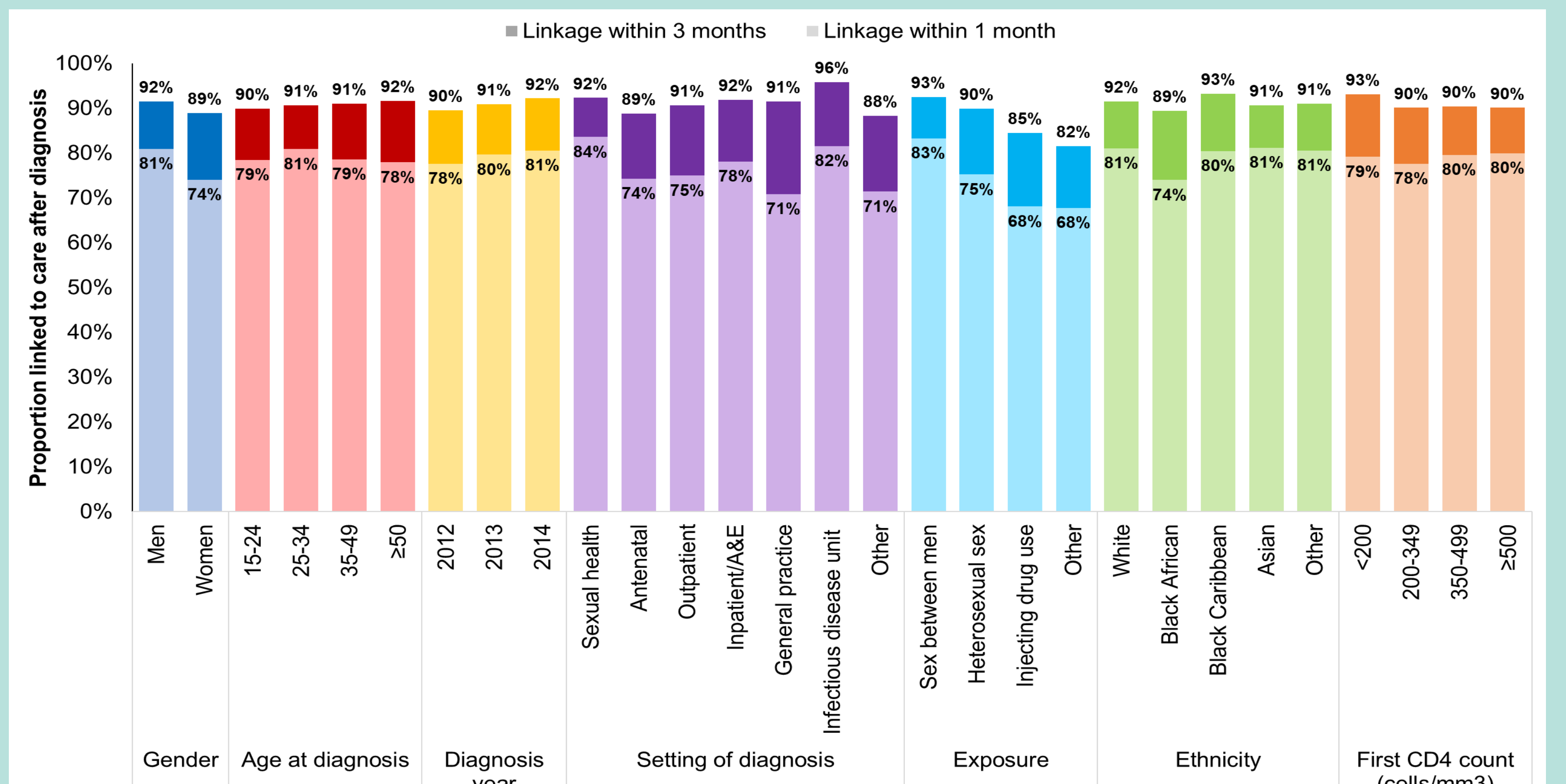


Figure 3. Linkage to HIV care within 1 and 3 months of diagnosis by population group: England, Wales & Northern Ireland, 2012-2014

## DISCUSSION

- Linkage to care is an essential outcome indicator of all HIV testing programmes and is a key metric in the NHS England HIV Clinical Dashboard, which is used to inform HIV service provision.
- Encouragingly, linkage to care following HIV diagnosis was timely across all healthcare settings.
- However, our findings highlight a need to ensure testing venues outside of healthcare have well-defined referral pathways in place to facilitate access to care and treatment following a positive HIV test result.
- These analyses indicate there are inequalities in timely linkage to care across exposure groups.
- Known barriers to accessing care include: stigma, discrimination, concerns about confidentiality, financial and time pressures and a lack of awareness of available services and the healthcare system.
- Limitations to these analyses:
  - Retrospective study - limited patient information and no data on trans people due to historical data collection mechanisms
  - Linkage described is to outpatient HIV care only; no information on inpatient care
  - CD4 count as a marker of linkage - though CD4 is a well-established proxy for care, this may have underestimated time to link for those who had a CD4 test done on their diagnosis blood sample

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