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SHORT COMMUNICATION

Residential and healthcare mobility during pregnancy among women living with HIV in the UK, 2009–2019

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Abstract

Introduction: The extent to which individuals living with HIV experience residential and healthcare mobility during pregnancy in the UK is unknown. We aimed to determine a minimum estimate of residential and healthcare mobility during pregnancy in people living with HIV in the UK in 2009–2019 to explore patterns of and factors associated with mobility and to assess whether mobility was associated with specific HIV outcomes.

Methods: We analyzed data from the Integrated Screening Outcomes Surveillance Service to assess pregnancies with HIV in the UK and included livebirths and stillbirths with estimated delivery in 2009–2019. Residential mobility was defined as changing residential postcode between notification and delivery, and healthcare mobility was defined as changing NHS Trust or Strategic Health Authority (SHA) in that same timeframe. We used logistic regression to determine factors associated with residential and healthcare mobility and with detectable delivery viral load.

Results: Among 10 305 pregnancies, 19.6% experienced residential mobility, 8.1% changed NHS Trust, and 4.5% changed SHA during pregnancy. Mobility was more likely to be experienced by younger women, migrants, and those with new antenatal diagnosis; residential but not healthcare mobility declined over time. In a fully adjusted model, mobility was not associated with having a detectable viral load at delivery. Higher proportions of infants were lost to follow-up after mobile pregnancies than after non-mobile pregnancies.

Conclusions: This analysis provides new knowledge on mobility during pregnancy in the context of HIV, but further research is needed to understand its broader impacts and its utility as a marker to help identify families requiring additional follow-up and support.

KEYWORDS

healthcare access, HIV, pregnant, residential mobility, UK

INTRODUCTION

Around 900 pregnancies occur in people living with HIV in the UK annually, but little is known about the extent to which this population experiences residential and/or healthcare mobility (i.e., changing home address or healthcare provider) during pregnancy. However, around 82% of pregnant women with HIV are migrants, mostly from sub-Saharan Africa but with an increasing proportion from Eastern Europe, including some arriving in the UK while pregnant and who may experience additional challenges in accessing timely healthcare [1–3].

Residential mobility, which could result in changing healthcare providers, is common among young adults and may occur more frequently in pregnancy or after giving birth [4]. Data on mobility in pregnancy and its impact on health outcomes in general are limited, although around 10%–15% of pregnant women in the UK change residence [4, 5]. Relocation can be a stressful life event, particularly if moving country, with potential acute disruption to healthcare access, continuity of care, health behaviours, and social support networks alongside possible longer-term impacts [6–8]. Mobility in pregnancy may thus be associated with adverse parental and child outcomes, particularly in the presence of chronic conditions, such as diabetes or HIV, where optimum management requires regular monitoring and/or sustained treatment [6–8].

No research has been conducted to date in the UK to investigate residential or healthcare mobility during pregnancy in the context of HIV. Our objectives were to determine a minimum estimate of the proportion of people living with HIV in the UK experiencing residential and healthcare mobility during pregnancy in 2009–2019 to explore patterns of and factors associated with mobility and to assess whether mobility was associated with key outcomes, including delivery with detectable HIV RNA viral load (VL) and loss-to-care (LTC) among infants exposed to HIV.

MATERIALS AND METHODS

The Integrated Screening Outcomes Surveillance Service (ISOSS) is commissioned by NHS England as part of the NHS Infectious Diseases in Pregnancy Screening Programme to conduct comprehensive population-based active surveillance of all pregnancies with HIV diagnosed in the UK since 1989 (formerly the National Study of HIV in Pregnancy and Childhood) [1]. Since 2020, ISOSS is an England-only service. Reports of all pregnancies in people living with HIV diagnosed by delivery are submitted to ISOSS by maternity and paediatric NHS respondents at each unit nationally via a secure online portal, including data on sociodemographics, treatment, pregnancy management, delivery, and outcomes. Data are collected under legal permissions granted under Regulation 3 of the Health Service (Control of Patient Information) Regulations 2002 [2].

Data on gender have been routinely collected since April 2023, with no reports of pregnancies to non-binary or transgender people to date. Therefore, the data presented in this paper only refer to 'women' in the context of pregnancy.

Analyses were restricted to pregnancies ending in livebirth or stillbirth with an estimated date of delivery between 1 January 2009 and 31 December 2019; all had known residential partial postcode and hospital at notification and delivery. Residential mobility was defined as changing residential postcode between ISOSS notification and delivery and/or arrival of non-UK-born woman during pregnancy. Two healthcare mobility groups were defined using the same interval: changing NHS Trust and changing Strategic Health Authority (SHA); changing SHA was restricted to England deliveries ($n = 9759$), since SHAs are within NHS England only. Pregnancies where women arrived in the UK while pregnant were counted as 'mobile' cases for healthcare mobility. 'Delivery VL' results were those measured from 36 weeks' gestation to 7 days postpartum. Children were classified as LTC if their HIV status was indeterminate and they were older than 3 years or if reported as LTC by respondents.

We used logistic regression models to identify factors associated with mobility; initial models adjusted for delivery year, and a multivariable model adjusted for maternal region of birth, age group, parity, and HIV diagnosis timing. Further logistic regression models were used to explore whether mobility was associated with detectable delivery VL (>50 copies/mL); adjusted models included delivery year, maternal birth region, maternal age group, timing of antiretroviral treatment (ART) start, and mobility (model 1: residential, model 2: NHS Trust, model 3: SHA). In a sensitivity analysis, residential mobility was included in models 2 and 3, and healthcare mobility was included in model 1. Data were analysed using STATA (StataCorp, v17.0, College Station, TX, USA).

RESULTS

Descriptive analysis

Among the included 10 305 pregnancies, 84.4% (8695/10305) of mothers were born outside the UK (of whom most [7331/8584] were born in sub-Saharan Africa). Median age at delivery was 33 years (interquartile range [IQR] 29–37) and in two-thirds of pregnancies

(4935/7202; 68.5%) the woman had experienced at least one previous pregnancy (ranging from 1 to 7). Most pregnancies were conceived on ART, although 3744 (37.4%) women ART started antenatally (380 in the first trimester, 2955 in the second trimester, and 409 in the third trimester), including 1674 with an antenatal HIV diagnosis. There were 89 stillbirths and 10 216 livebirths.

Residential mobility was identified in 2022 (19.6%) pregnancies, including 225 (3.7%) pregnancies where a non-UK-born mother arrived in the UK during pregnancy. A change in NHS Trust occurred in 8.1% (834/10 305) of pregnancies, including 237 where hospital country (i.e., England, Scotland, Wales, and Northern Ireland) changed between notification and delivery. Among England deliveries, the SHA changed between notification and delivery in 4.5% (443/9759) of pregnancies. Overall, 448 women changed both postcode and NHS Trust; of the women who changed postcode, 22.2% (448/2022) also changed NHS Trust, whereas 46.3% (386/834) of women changing NHS Trust did not have a residential move (Figure S1).

Residential mobility during pregnancy decreased between 2009 (25.9%) and 2019 (9.3%), with a peak in 2015 (30.6%), whereas healthcare mobility remained stable over time (Table S1, Figure S2). Changing SHA was highest among pregnancies booked in South Central (6.1%) and South-East Coast (8.1%) regions and lowest for the North West (2.9%) and Yorkshire and the Humber (3.0%) (Figure S3).

Factors associated with residential and healthcare mobility

Maternal characteristics of mobile and non-mobile women are presented in Table 1. Maternal age (younger), region of birth (non-UK), and lower parity were associated with both residential and healthcare mobility, as was timing of arrival in the UK for migrant women. A higher proportion of mobile than non-mobile women received their HIV diagnosis during the pregnancy, started ART later in pregnancy, and had a detectable delivery VL.

In analyses adjusted for delivery year only, maternal age, region of birth, parity, and timing of HIV diagnosis and ART start were significantly associated with all three mobility types (data not shown). In the fully adjusted models, delivery year was associated with decreased odds of residential mobility and increased odds of healthcare mobility (Table 2). Older women had lower odds of residential mobility, but maternal age was not associated with changing NHS Trust or SHA during pregnancy. Women born outside the UK were more likely to experience any mobility than were UK-born women; strengths of association were greatest for healthcare mobility, particularly change in SHA, with women born in sub-Saharan Africa having 4.6 (95% confidence interval [CI] 2.70–7.86) times the odds of changing SHA than UK-born women. Women who had previously given birth were less likely to have residential and healthcare mobility than were nulliparous women. Antenatal HIV diagnosis was associated with two-fold increased odds for changing Trust and nearly three-fold increased odds for changing SHA.

Viral load at delivery

Of 6953 mobile and non-mobile pregnancies with available data on delivery VL (67.5% of 10 305 pregnancies), it was detectable in 937 (13.5%); the proportions with detectable VL were 16.3% (227/1396), 17.8% (111/622), and 21.1% (72/341) for those experiencing residential mobility, changing NHS Trust, and changing SHA, respectively. The proportions with detectable VL among those not experiencing each type of mobility were 12.8% (710/5557), 13.0% (826/6331), and 13.0% (804/6198), respectively. In a model adjusted for year of delivery only, women who changed NHS Trust (adjusted odds ratio [AOR] 1.49 [95% CI 1.19–1.86]) or changed SHA (AOR 1.93 [95% CI 1.46–2.55]) were more likely to deliver with a detectable VL than women who did not change; however, this association was not significant for residential mobility (AOR 1.16 [95% CI 0.98–1.37]; $p = 0.0811$). Further investigation of associations between mobility in pregnancy and detectable delivery VL, adjusting for year, maternal age, origin (born in or outside UK), and timing of ART start, showed that no mobility types were associated with this outcome (Table S2). Results from sensitivity analyses including both types of mobility did not change from the simpler model presented (data not shown).

Vertical transmission and children lost to care

Overall, vertical transmission occurred for 30 (0.3%) of 9617 infants with known HIV status. Of 9856 livebirths, 157 (1.6%) children were classified as LTC. Mobility was higher among pregnancies resulting in children LTC. Of these 157 children LTC, 29.3% (46/157) of their mothers changed postcode, 17.2% (27/157) changed Trust, and 14.2% (22/155) changed SHA during pregnancy, compared with 19.6% (1905/9700), 7.8% (755/9700), and 4.3% (395/9200), respectively, among 9700 children not LTC.

TABLE 1 Descriptive characteristics of pregnant women living with HIV in the UK by mobility status, 2009–2019.

	Residential mobility[a] (change in postcode)					Healthcare mobility[a] (change in NHS Trust)					Healthcare mobility[a,b] (change in SHA)				
	Non-mobile, $n = 8283$		Mobile, $n = 2022$			Non-mobile, $n = 9471$		Mobile, $n = 834$			Non-mobile, $n = 9316$		Mobile, $n = 443$		
Characteristic	***N***	**%**	***N***	**%**	***p* value**	***N***	**%**	***N***	**%**	***p* value**	***N***	**%**	***N***	**%**	***p* value**
Maternal age, years[c]															
<20	*69*	0.8	*27*	1.30	<0.001	*84*	0.9	*12*	1.40	0.014	*82*	0.90	*8*	1.8	<0.001
20–24	*530*	6.4	*194*	9.6		*651*	6.9	*73*	8.80		*646*	6.90	*45*	10.2	
25–29	*1506*	18.2	*454*	22.5		*1788*	18.9	*172*	20.6		*1760*	18.90	*94*	21.2	
30–34	*2669*	32.2	*723*	35.8		*3106*	32.8	*286*	34.3		*3037*	32.60	*159*	35.9	
35–39	*2518*	30.4	*465*	23.0		*2773*	29.3	*210*	25.2		*2727*	29.30	*97*	21.9	
≥40	*990*	12.0	*159*	7.90		*1068*	11.3	*81*	9.7		*1063*	11.40	*40*	9.0	
Maternal ethnicity[d]															
White	*1466*	17.7	*337*	16.7	0.208	*1682*	17.8	*121*	14.5	0.097	*1532*	16.5	*46*	10.4	0.001
Black African	*6028*	73.0	*1490*	73.8		*6881*	72.8	*637*	76.6		*6874*	74.0	*355*	80.3	
Caribbean	*278*	3.4	*72*	3.6		*326*	3.5	*24*	2.9		*334*	3.6	*11*	2.5	
Asian/Indian sub-continent	*120*	1.5	*18*	0.9		*131*	1.4	*7*	0.8		*133*	1.4	*2*	0.5	
Other Asian/Chinese	*133*	1.6	*31*	1.5		*148*	1.6	*16*	1.9		*138*	1.5	*11*	2.5	
Other	*237*	2.9	*70*	3.5		*280*	3.0	*27*	3.2		*282*	3.0	*17*	3.8	
Mother born outside UK/Ireland															
Yes	*6943*	83.80	*1752*	86.6	0.002	*7943*	83.9	*752*	90.2	<0.001	*7895*	84.7	*423*	95.5	<0.001
When arrived in UK[e,f]															
During pregnancy	*0*	0.0	*225*	17.2	<0.001	*0*		*225*	35.4	<0.001	*0*		*225*	58.7	<0.001
1 year before conception	*219*	4.5	*90*	6.9		*273*	5.0	*36*	5.7		*277*	5.0	*9*	2.3	
1–5 years before conception	*932*	19.3	*264*	20.2		*1123*	20.4	*73*	11.5		*1114*	20.1	*32*	8.4	
>5 years before conception	*3678*	76.2	*730*	55.8		*4106*	74.6	*302*	47.5		*4157*	74.9	*117*	30.5	
Maternal region of birth[g]															
UK/Ireland	*1340*	16.4	*270*	13.5	0.005	*1528*	16.3	*82*	9.9	<0.001	*1421*	15.4	*20*	4.5	<0.001
Rest of Europe and North America	*172*	2.1	*44*	2.2		*196*	2.1	*20*	2.4		*192*	2.1	*11*	2.5	
Eastern Europe	*317*	3.9	*102*	5.1		*372*	4.0	*47*	5.7		*351*	3.8	*26*	5.9	
Sub-Saharan Africa	*5861*	71.6	*1470*	73.2		*6697*	71.5	*634*	76.4		*6694*	72.7	*356*	80.4	
Rest of the world	*497*	6.1	*121*	6.00		*571*	6.1	*47*	5.7		*555*	6.0	*30*	6.8	
Parity															
0	*1670*	29.3	*597*	39.7	<0.001	*1986*	30.2	*281*	44.5	<0.001	*1980*	30.6	*167*	49.9	<0.001
1	*1866*	32.8	*462*	30.7		*2149*	32.7	*179*	28.4		*2102*	32.5	*86*	25.7	
2	*1322*	23.2	*280*	18.6		*1499*	22.8	*103*	16.3		*1467*	22.7	*46*	13.7	
3+	*839*	14.7	*166*	11.0		*937*	14.3	*68*	10.8		*920*	14.2	*36*	10.7	
Maternal HIV diagnosis[h]															
Before pregnancy	*7084*	85.60	*1540*	76.2	<0.001	*8047*	85.0	*577*	69.4	<0.001	*7911*	85.0	*262*	59.1	<0.001

TABLE 1 (Continued)

Characteristic	Residential mobility[a] (change in postcode)					Healthcare mobility[a] (change in NHS Trust)					Healthcare mobility[a,b] (change in SHA)				
	Non-mobile, $n = 8283$		Mobile, $n = 2022$			Non-mobile, $n = 9471$		Mobile, $n = 834$			Non-mobile, $n = 9316$		Mobile, $n = 443$		
	N	%	*N*	%	*p* value	*N*	%	*N*	%	*p* value	*N*	%	*N*	%	*p* value
During pregnancy	*1193*	14.40	*481*	23.8		*1419*	15.0	*255*	30.6		*1398*	15.0	*181*	40.9	
ART in pregnancy[i]															
Yes	*8212*	99.8	*2003*	99.8	0.544	*9395*	99.9	*820*	99.3	<0.001	*9239*	99.8	*435*	99.3	0.013
Timing of ART start[j,k]															
Before pregnancy	*5249*	65.0	*1033*	52.9	<0.001	*5860*	63.5	*422*	52.7	<0.001	*5754*	63.5	*192*	45.4	<0.001
1st trimester	*299*	3.7	*81*	4.2		*348*	3.8	*32*	4.0		*344*	3.8	*17*	4.0	
2nd trimester	*2253*	27.9	*702*	36.0		*2697*	29.2	*258*	32.2		*2650*	29.2	*138*	32.6	
3rd trimester	*274*	3.4	*135*	6.9		*320*	3.5	*89*	11.1		*316*	3.5	*76*	18.0	
First viral load in pregnancy[l]															
<50 copies/ml	*4375*	53.5	*929*	46.5	<0.001	*4921*	52.6	*383*	46.5	0.001	*4802*	52.2	*193*	44.2	0.001
Delivery viral load[m]															
<50 copies/ml	*4847*	87.2	*1169*	83.7	0.001	*5505*	87.0	*511*	82.2	0.001	*5394*	87.0	*269*	78.9	<0.001
First antenatal CD4 count[n]															
≥500 cells/mm^3	*3612*	46.7	*781*	40.6	<0.001	*4069*	45.9	*324*	40.9	0.002	*3985*	45.6	*157*	37.6	<0.001
350–499 cells/mm^3	*2070*	26.7	*514*	26.7		*2375*	26.8	*209*	26.4		*2354*	26.9	*109*	26.1	
200–349 cells/mm^3	*1407*	18.2	*444*	23.1		*1660*	18.7	*191*	24.1		*1649*	18.9	*111*	26.6	
<200 cells/mm^3	*653*	8.4	*184*	9.6		*769*	8.7	*68*	8.6		*755*	8.6	*40*	9.6	
Preterm delivery															
Yes (<37 weeks)	*1000*	12.1	*229*	11.3	0.352	*1109*	11.7	*120*	14.4	0.022	*1119*	12.0	*49*	11.1	0.547

Note: The italicised text are numbers, and non-italicised are percentages.

Abbreviations: ART, antiretroviral therapy;

[a]Among all livebirths and stillbirths to pregnant women living with HIV in the UK between 2009 and 2019.

[b]Excluded 546 pregnancies due to missing information.

[c]Excluded one pregnancy due to missing information.

[d]Excluded 25 pregnancies due to missing information.

[e]Among those born outside of the UK.

[f]Excluded 4137 pregnancies due to missing information/women not being born abroad.

[g]Excluded 111 pregnancies due to missing information.

[h]Excluded seven pregnancies due to missing information.

[i]Excluded 70 pregnancies due to missing information.

[j]Among women who received ART in pregnancy.

[k]Excluded 280 pregnancies due to missing information.

[l]Excluded 124 pregnancies due to missing information.

[m]Excluded 3352 pregnancies due to missing information.

[n]Excluded 640 pregnancies due to missing information.

TABLE 2 Characteristics associated with residential and healthcare mobility among pregnant women living with HIV in the UK, 2009–2019.

				Healthcare mobility					
	Residential mobility			Change in NHS Trust			Change in SHA		
Characteristic	% mobile[a]	AOR[b]	95% CI	% mobile[a]	AOR[c]	95% CI	% mobile[a]	AOR[d]	95% CI
Calendar year, per year	-	0.93	(0.91–0.95)	-	1.03	(1.00–1.06)	-	1.06	(1.02–1.10)
Maternal age group, years									
20	28.1	0.98	(0.57–1.66)	12.5	0.99	(0.48–2.06)	8.9	1.39	(0.57–3.41)
20–24	26.8	1.29	(1.03–1.62)	10.1	1.13	(0.81–1.56)	6.5	1.36	(0.89–2.07)
25–29	23.2	1.00		8.8	1.00		5.1	1.00	
30–34	21.3	1.01	(0.86–1.19)	8.4	1.01	(0.80–1.27)	5.0	1.08	(0.79–1.48)
35–39	15.6	0.74	(0.62–0.89)	7.0	0.90	(0.70–1.16)	3.4	0.86	(0.61–1.23)
40+	13.8	0.66	(0.51–0.85)	7.0	1.01	(0.72–1.42)	3.6	0.95	(0.59–1.52)
Maternal region of birth									
UK/Ireland	16.8	1.00		5.1	1.00		1.4	1.00	
Rest of Europe & North America	20.4	1.31	(0.86–2.00)	9.3	1.87	(1.05–3.34)	5.4	4.53	(1.92–10.68)
Eastern Europe	24.3	1.50	(1.11–2.05)	11.2	1.63	(1.04–2.55)	6.9	3.57	(1.76–7.26)
Sub-Saharan Africa	20.1	1.33	(1.12–1.59)	8.6	1.83	(1.39–2.42)	5.0	4.60	(2.70–7.86)
Rest of World	19.6	1.33	(1.00–1.76)	7.6	1.33	(0.86–2.07)	5.1	3.74	(1.89–7.41)
Parity									
0	26.3	1.00		12.4	1.00		7.8	1.00	
1	19.8	0.74	(0.64–0.85)	7.7	0.69	(0.56–0.84)	3.9	0.61	(0.46–0.81)
2	17.5	0.69	(0.58–0.82)	6.4	0.58	(0.45–0.75)	3.0	0.50	(0.35–0.72)
3+	16.5	0.70	(0.57–0.86)	6.80	0.64	(0.48–0.86)	3.8	0.67	(0.45–1.00)
Timing of HIV diagnosis									
Before pregnancy	17.9	1.00		6.7	1.00		3.2	1.00	
During pregnancy	28.7	1.32	(1.14–1.53)	15.2	2.10	(1.73–2.55)	11.5	2.97	(2.31–3.81)

Abbreviation: AOR, adjusted odds ratio (adjusted for year of delivery, maternal region of birth, maternal age group, parity, and timing of HIV diagnosis); CI, confidence interval; SHA, Strategic Health Authority.

[a]Row percentages among pregnancies (leading to livebirths and stillbirths) with information on the sociodemographic measure and mobility outcome. Pregnancies with missing information are excluded from the denominator.

[b]Model 1: residential mobility as the outcome, adjusted for year of delivery, maternal region of birth, maternal age group, parity, and timing of HIV diagnosis.

[c]Model 2: changed NHS trust as the outcome, adjusted for year of delivery, maternal region of birth, maternal age group, parity, and timing of HIV diagnosis.

[d]Model 3: changed Strategic Health Authority as the outcome, adjusted for year of delivery, maternal region of birth, maternal age group, parity, and timing of HIV diagnosis.

DISCUSSION

About one in five pregnancies from 2009 to 2019 in people living with HIV in the UK experienced residential mobility, and 8% and 4% changed NHS Trust and SHA, respectively. All mobility outcomes were associated with younger age, consistent with results from other studies [4, 5, 9, 10] and being born outside the UK (i.e., migrants). Residential mobility significantly declined over time, albeit with a temporary increase in 2014 and 2015, the reasons for which are uncertain; as our adjusted analysis showed, this decline was independent of maternal age, parity, region of birth, and timing of HIV diagnosis. Meanwhile, healthcare mobility remained stable for much of the study period.

Over 85% of pregnancies were delivered in the context of a suppressed VL, reflected in the very low vertical transmission rate of 0.3%. A significantly higher proportion of women with residential or healthcare mobility had detectable delivery VL, although mobility was not associated with this outcome in adjusted analyses, when taking account of timing of ART start and maternal age, both of which were risk factors. These findings suggest that, although mobility does not seem to increase the risk for

delivering with a detectable VL after considering other risk factors, healthcare providers could still use residential and healthcare mobility to identify women at potentially higher risk for delivering with detectable VL. In the current era of very low vertical transmission rates, identifying those at higher risk of transmission is a key priority. Investigation of the few cases of vertical transmission now occurring in the UK by an expert clinical review panel has identified unstable housing as a contributing factor in several cases, alongside other social issues [1].

Minimizing the number of HIV-exposed infants LTC before diagnosis is an important aspect of HIV prevention and care [1, 11]. Although numbers of infants LTC were small, our findings suggest that women who experience mobility while pregnant may need additional support and monitoring postnatally.

Most pregnancies in the UK with HIV diagnosed before conception are to migrants, a group potentially at increased risk for adverse HIV outcomes [1, 12]. Our findings highlight the importance of enhanced follow-up of pregnant migrants to ensure continued care throughout pregnancy and postnatally, especially as the UK's migrant dispersal policy may contribute to mobility [13], although prevention of vertical HIV transmission is listed as a priority in the Healthcare Needs and Pregnancy Dispersal Policy [14].

Limitations of this study include our inability to examine the impact of gestational age at the time of residential move, which may be important as mobility in the first trimester has been associated with increased risk of adverse birth outcomes across all socioeconomic strata [15, 16]. Misclassification of mobility 'exposure' may have occurred if a move happened before booking. We were also unable to ascertain reasons for moving (which could be positive or negative) and whether residential postcode and healthcare facility were changed more than once, though women with more mobility could be at higher risk for disrupted HIV care. We were also unable to investigate whether antenatal and/or postnatal appointments were missed more frequently in the mobile group. A further limitation was the high level of missingness for some variables, including delivery VL.

Despite these limitations, this analysis benefits from population-based national surveillance data, representative of all pregnancies with HIV diagnosed in the UK and fills a knowledge gap around residential and healthcare mobility during pregnancy. Future analyses will be able to draw on data on social circumstances now collected within ISOSS. However, specific additional studies (potentially using mixed methods) are needed to gain a better understanding of the impact of mobility on health service use and outcomes in this population. Future research could use a similar framework to examine mobility among pregnant women living with hepatitis B or untreated syphilis, and associated outcomes.

AUTHOR CONTRIBUTIONS

ED, HP, and CT conceptualized the study. ED planned and performed the statistical analysis, with contributions from HP and CT. HP was responsible for data acquisition, processing, and verification. ED and CT wrote the initial draft, with contributions from HP and YG. All authors contributed to interpreting the results and reviewing the final draft.

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CONFLICT OF INTEREST STATEMENT

In the last 12 months, YG has received payment for advisory board attendance and educational meetings from ViiV Healthcare. CT has received funding from ViiV Healthcare via the Penta Foundation.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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