



Integrated Screening Outcomes Surveillance Service

Pregnancy characteristics and outcomes of women with vertically-acquired HIV in the UK

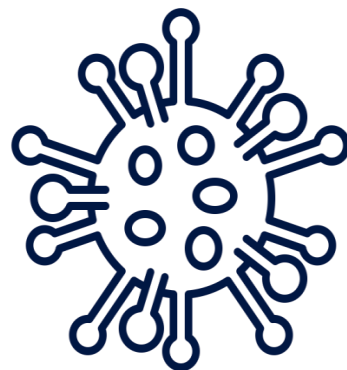
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Background

- As a result of improving health strategies, the number of reproductive-aged women with vertically-acquired HIV (WVHIV) has been increasing globally
- However, knowledge gaps on their characteristics and pregnancy outcomes exist
- In the UK there are approximately 900 pregnancies to women living with HIV every year and the vertical transmission rate is under 0.3%
- Building on previous work¹ we present population-level pregnancy outcome data for this important emerging cohort of pregnant women with vertically acquired HIV



¹ Pregnancy incidence and outcomes in women with perinatal HIV infection. (2017). L Byrne et al. AIDS.

ISOSS methods

- The **Integrated Screening Outcomes Surveillance Service (ISOSS)** conducts surveillance on behalf of the NHS Infectious Diseases in Pregnancy Screening Programme (IDPS)
- **All pregnancies to women living with HIV in the UK, their infants and any children diagnosed with HIV (<16yrs age) are reported to ISOSS.**
- **Long term follow-up of all children living with HIV is carried out by the Children's HIV and AIDS Reporting System (CHARS)**
- Data have been collected for >30 years, and concurrent paediatric and maternity reporting streams offer a unique opportunity to link historical paediatric reports of women diagnosed as children and seen for paediatric care in the UK to pregnancy reports.

ISOSS and CHARs collect patient data under legal permissions granted under Regulation 3 of The Health Service (Control of Patient Information) Regulations 2002

Definitions and analysis objectives

- WVHIV: women diagnosed <14 years of age with no other risk factors apparent
- No pregnancies to women with vertically-acquired HIV reported prior to 2006
- Analysis dataset: pregnancies with known outcomes reported between 01/01/2006 and 31/12/2021

Objectives

- To describe maternal and pregnancy characteristics of WVHIV and trends over time
- To assess birth and infant outcomes of WVHIV
- To compare specific characteristics and outcomes in WVHIV with those in women living with likely heterosexually-acquired HIV (WHHIV)

Results

17,478 pregnancies were reported to ISOSS and among these 96.4% (16,866) were to women with likely heterosexually acquired HIV

Mode of maternal HIV acquisition of pregnancies reported to ISOSS

EDD* year	Vertical	Heterosexual	Other risk
2006-09	15 (0.3%)	5195 (97.0%)	145 (2.7%)
2010-13	41 (0.8%)	5003 (97.3%)	97 (1.9%)
2014-17	63 (1.5%)	4029 (95.9%)	110 (2.6%)
2018-21	83 (3.0%)	2639 (96.5%)	58 (2.3%)
Total	202	16866	410

*EDD= Estimated date of delivery

- 202 (1.6%) pregnancies to 131 women with vertically-acquired HIV reported
- 10-fold increase in proportion of pregnancies to WVHIV over the period ($p < 0.001$)

Maternal socio-demographics (202 pregnancies)

Characteristic	<i>n</i> (%)
Region of birth	
UK	80 (39.6%)
Africa	108 (53.5%)
Other	14 (6.9%)
Ethnicity	
White	25 (13.5%)
Black African	127 (68.7%)
Other	33 (17.8%)
Age at EDD	
<20 years	38 (18.8%)
20-24	73 (36.1%)
25-30	70 (34.7%)
≥30	21 (10.4%)

40% of pregnancies to WWHIV are to those born in UK vs 15% for women with WHHIV, $p < 0.001$

Median age at delivery 24 years (Q1:20 - Q3:27) vs 33yrs (Q1:29- Q3:37) for WWHIV

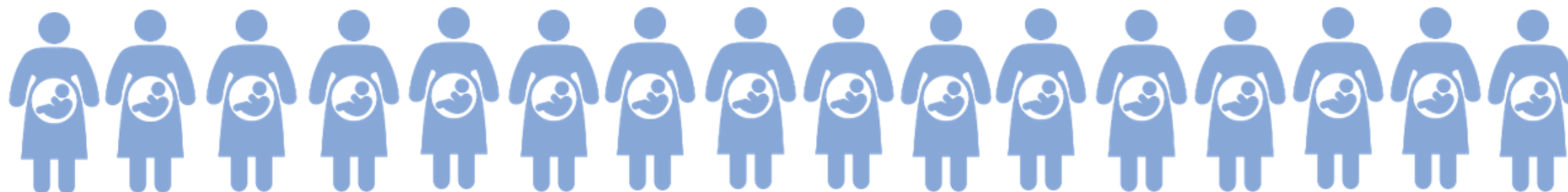
Maternal paediatric diagnosis (n=131)

- Median age at diagnosis was 6 years (Q1:2 -Q3:11) and 22 women were diagnosed at age <1year
- 61.8% (81/131) of women were diagnosed in the UK
- 85.5% (112/131) of women were reported to ISOSS in childhood as part of paediatric surveillance:
 - 37% diagnosed due to symptoms as a child
 - 9% diagnosed following their mother's diagnosis
 - 50% diagnosed following other family member's diagnosis
- Overall 18% of women (23/131) had history of an AIDS-defining illness and of these 12/23 had an AIDS-defining illness at diagnosis

Number of pregnancies

Of 131 women with vertically-acquired HIV:

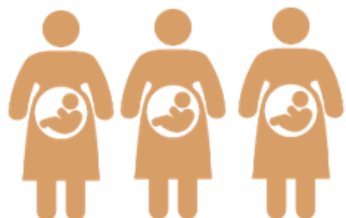
81 women had **one** pregnancy



34 women had **two** pregnancies

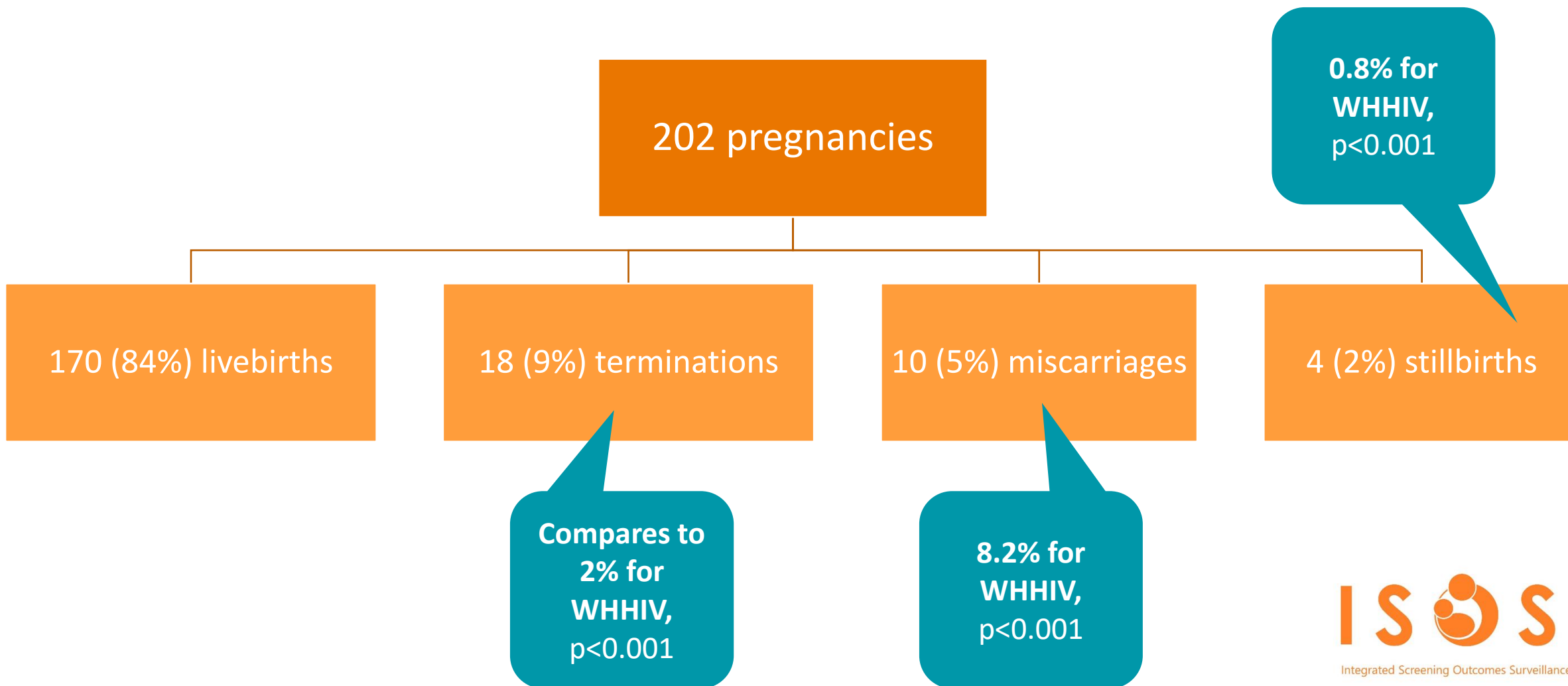


16 women had **≥three** pregnancies

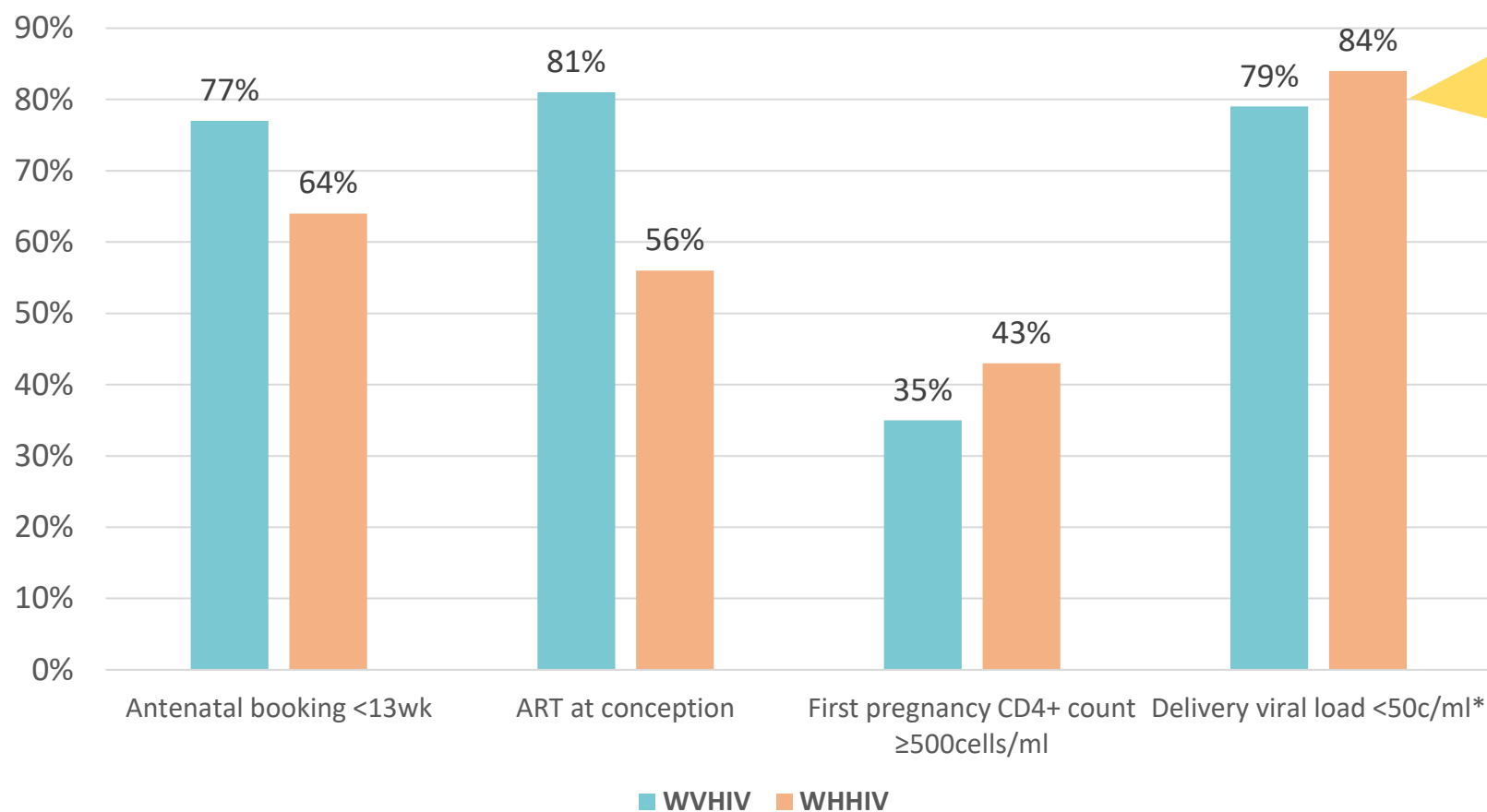


4/16 women had 4 or 5 pregnancies

Pregnancy outcomes



Pregnancy characteristics, 2006-21



Restricting to pregnancies conceived on ART: 82% of WVHIV had delivery VL <50 vs 94% WHHIV, $p < 0.001$

Comparison of characteristics of pregnancies in WVHIV vs pregnancies in WHHIV

*restricted to live and stillbirth deliveries

Pregnancy characteristics - trends over time

Characteristic	WVHIV		WHHIV	
	2006-10	2016-21	2006-10	2016-21
Antenatal booking <13wk	57%	84%	52%	73%
ART at conception	48%	88%	37%	79%
First pregnancy CD4 \geq 500	29%	38%	32%	57%
Delivery viral load <50 c/ml*	55%	87%	74%	93%

- Significant increases over time in proportion of pregnancies where booking <13weeks, ART at conception and delivery viral load <50 for both WVHIV and WHHIV.
- CD4 \geq 500 only significant for pregnancies to WHHIV

* restricted to live and stillbirth deliveries

Pregnancy outcomes: live and stillbirths

Infant outcome	WVHIV	WVHIV	p-value
Gestational age (weeks)			
≥37	142 (81.6%)	13219 (87.5%)	<0.001
35-36	9 (5.2%)	917 (6.1%)	
≤34	23 (13.2%)	964 (6.4%)	
Birthweight (kg)			
≥2.5	126 (75.5%)	12669 (86.3%)	<0.001
1.5-2.5	33 (19.8%)	1605 (10.9%)	
<1.5	8 (4.8%)	400 (2.7%)	
Mode of delivery			
Elective caesarean	55 (32.2%)	5297 (35.3%)	0.291
Emergency caesarean	51 (29.8%)	3702 (24.7%)	
Vaginal	65 (38.0%)	6015 (40.1%)	

Congenital anomaly rate: 5.7% (95% CI: 2.7%, 10.6%) among deliveries to WVHIV vs 4.3% (4.0%, 4.7%) to WWHIV

1 transmission among 150 infants (0.67%) among deliveries to WVHIV with known infection status, compares to 0.88% in WWHIV

Conclusions

In this growing sub-population of women living with HIV in the UK, **HIV-related markers have improved over time**, with one known case of second-generation vertical transmission.

The **antenatal screening programme is key to supporting engagement** in the antenatal period, and successes reflect the strength of existing clinical pathways and specialist paediatric services.

Despite most being on ART at conception, **WVHIV are more likely to have detectable delivery viral load** perhaps reflecting complex clinical history, possible adherence, and drug resistance issues.

Further work is needed to explore adverse birth outcomes including higher preterm delivery rate.

As numbers increase, **ongoing surveillance of this population** through ISOSS and CHARs enables monitoring of emerging trends and exploration of related areas such as sequential pregnancies and longer-term outcomes in children born to WVHIV.

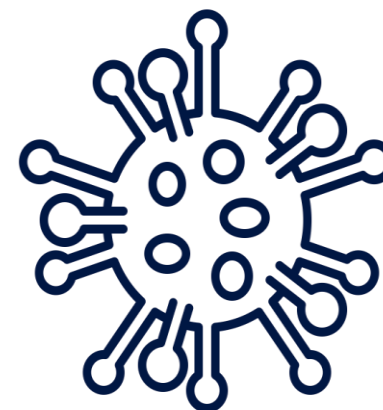
The ISOSS Annual Report 2021 is available on gov.uk

Acknowledgements

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ISOSS carries out this work on behalf of the NHS Infectious Diseases in Pregnancy Screening Programme: www.gov.uk/guidance/infectious-diseases-in-pregnancy-screening-programme-overview

Please do get in touch if you have any questions: helen.peters@ucl.ac.uk
More information on ISOSS: www.ucl.ac.uk/isoss



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