

Patterns and use of antiretroviral therapy in pregnancy: the era of integrase inhibitors

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1. BACKGROUND

- Lifelong antiretroviral therapy (ART) is recommended for people living with HIV, with **INSTI-based regimens preferred for first line** for both non-pregnant and pregnant people
- Antenatal ART is essential** for prevention of vertical HIV transmission and ensuring optimal maternal and child health outcomes
- We aimed to **explore patterns in ART use in pregnancy** in recent years in **England**, with a focus on anchor drug classes

2. METHODS

- The **Integrated Screening Outcomes Surveillance Service (ISOSS)** carries out population-based surveillance of **HIV in pregnancy in England** on behalf of the NHS Infectious Diseases in Pregnancy Screening Programme (commissioned by NHS England)
- Surveillance covers all pregnancies in people living with HIV diagnosed by the point of delivery
- Analyses included **pregnancies** in people living with HIV-1 **reported to ISOSS** with estimated date of delivery (EDD) in **2019-2022**
- Routine surveillance includes reports of all **antiretroviral drugs received during pregnancy**, along with timing of exposure

3. RESULTS

- There were **2618 pregnancies** included among 2272 people
 - 2245 (85.8%) live birth or stillbirth: 2230 live births, 15 stillbirths
 - 305 (11.6%) with other outcomes: 257 miscarriages, 45 terminations of pregnancy (TOP), 3 ectopic pregnancies
 - 68 (2.6%) with unknown outcome: 30 pending, 38 gone abroad/lost to follow-up
- Antenatal ART** was used in 98.7% (2568/2602) of pregnancies overall (ART data missing for 16 pregnancies, of which 14 miscarriages/TOP) and in **99.9%** (2242/2243) of pregnancies **resulting in live birth or stillbirth**
- Maternal characteristics of all pregnancies with ART use are in Table 1
- 82.4%** (2134/2557) of pregnancies were **conceived on ART**; first antenatal viral load was <50 copies/ml in 89.5% (1761/1968)

Table 1. Maternal characteristics by timing of diagnosis and ART (N=2557*)

	Diagnosed pre-conception		Newly diagnosed	TOTAL
	Conceived on ART, n=2134	Started ART in pregnancy, n=165	Started ART in pregnancy, n=258	
	n (%) or median (IQR)	n (%) or median (IQR)	n (%) or median (IQR)	n (%) or median (IQR)
Maternal age at EDD, years	35.0(31.0-39.0)	33.0(29.0-37.0)	31.0(28.0-36.0)	35.0(30.0-39.0)
Maternal age at EDD, years				
<20	8(0.4%)	0(0.0%)	7(2.7%)	15(0.6%)
20-29	360(16.9%)	46(27.9%)	98(38.0%)	504(19.7%)
30-39	1297(60.8%)	97(58.8%)	130(50.4%)	1524(59.6%)
≥40	469(22.0%)	22(13.3%)	23(8.9%)	514(20.1%)
Region of birth (n=2546)				
Africa	1355(63.7%)	103(62.8%)	151(59.0%)	1609(63.2%)
Asia	81(3.8%)	5(3.0%)	12(4.7%)	98(3.8%)
UK	414(19.5%)	35(21.3%)	41(16.0%)	490(19.2%)
Eastern Europe	148(7.0%)	7(4.3%)	34(13.3%)	189(7.4%)
Rest of Europe	60(2.8%)	5(3.0%)	12(4.7%)	77(3.0%)
Other	68(3.2%)	9(5.5%)	6(2.3%)	83(3.3%)
First CD4 count in pregnancy, cells/mm ³ (n=2132)				
≥500	1,146(66.0%)	56(36.8%)	71(29.1%)	1,273(59.7%)
350-499	367(21.1%)	35(23.0%)	53(21.7%)	455(21.3%)
200-349	146(8.4%)	30(19.7%)	66(27.0%)	242(11.4%)
<200	77(4.4%)	31(20.4%)	54(22.1%)	162(7.6%)

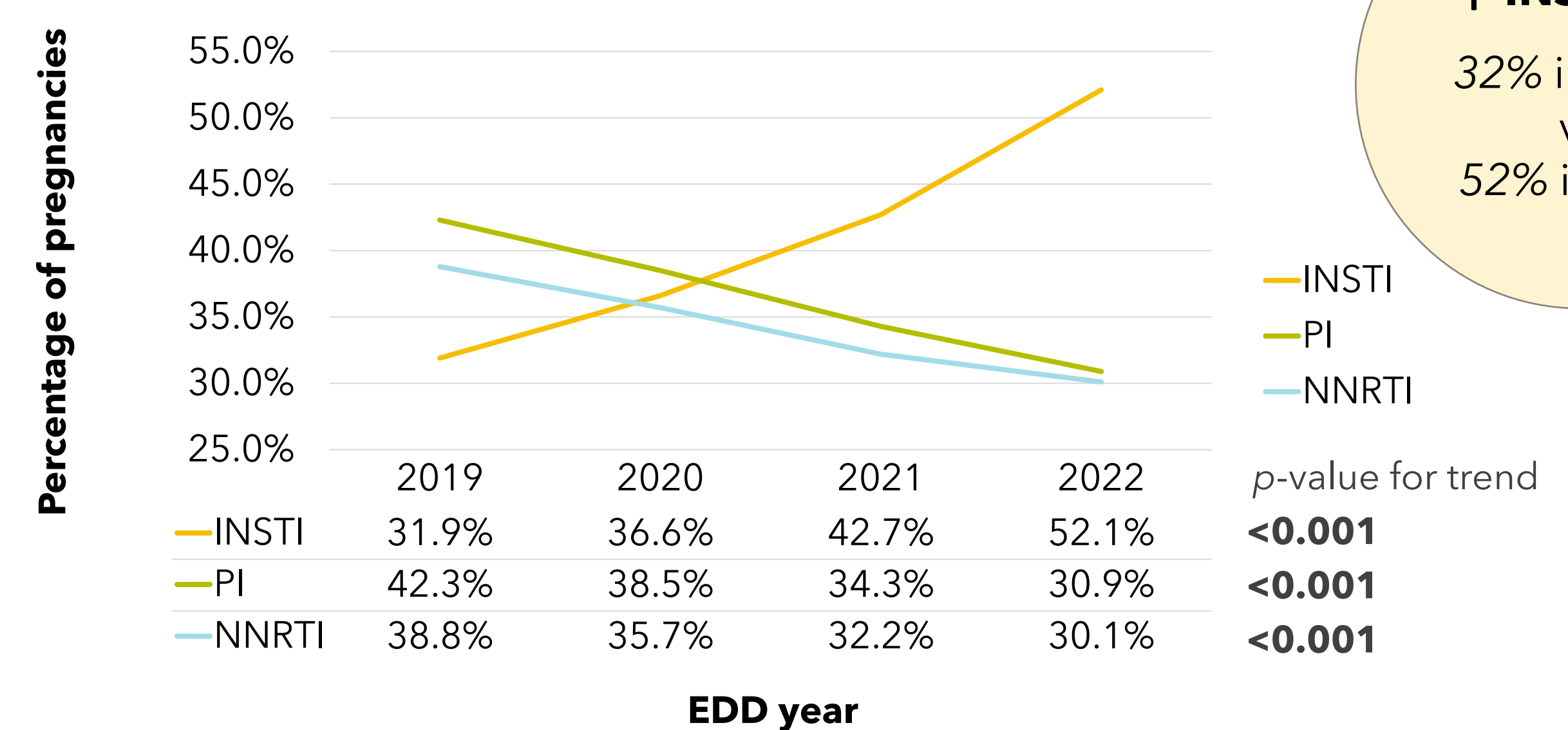
* Excludes 11 pregnancies missing timing of ART initiation

- Among those diagnosed in pregnancy (n=258), median gestational age at diagnosis was **12 weeks** (IQR: 9-17); **9.3% (24)** were **diagnosed at ≥26 weeks (i.e., 3rd trimester)** (in 10/24, diagnosis occurred less than four weeks before delivery)
- 39.0%** (165/423) of those initiating ART in pregnancy **had pre-conception HIV diagnosis**
- Median gestational age at **ART start among those initiating ART** (n=418) was **15 weeks** (IQR: 12-20); ART initiated at **≥26 weeks in 50** (12.0%) pregnancies (excludes 5 missing ART start week)

ANCHOR DRUGS USED IN PREGNANCY (AT ANY POINT)

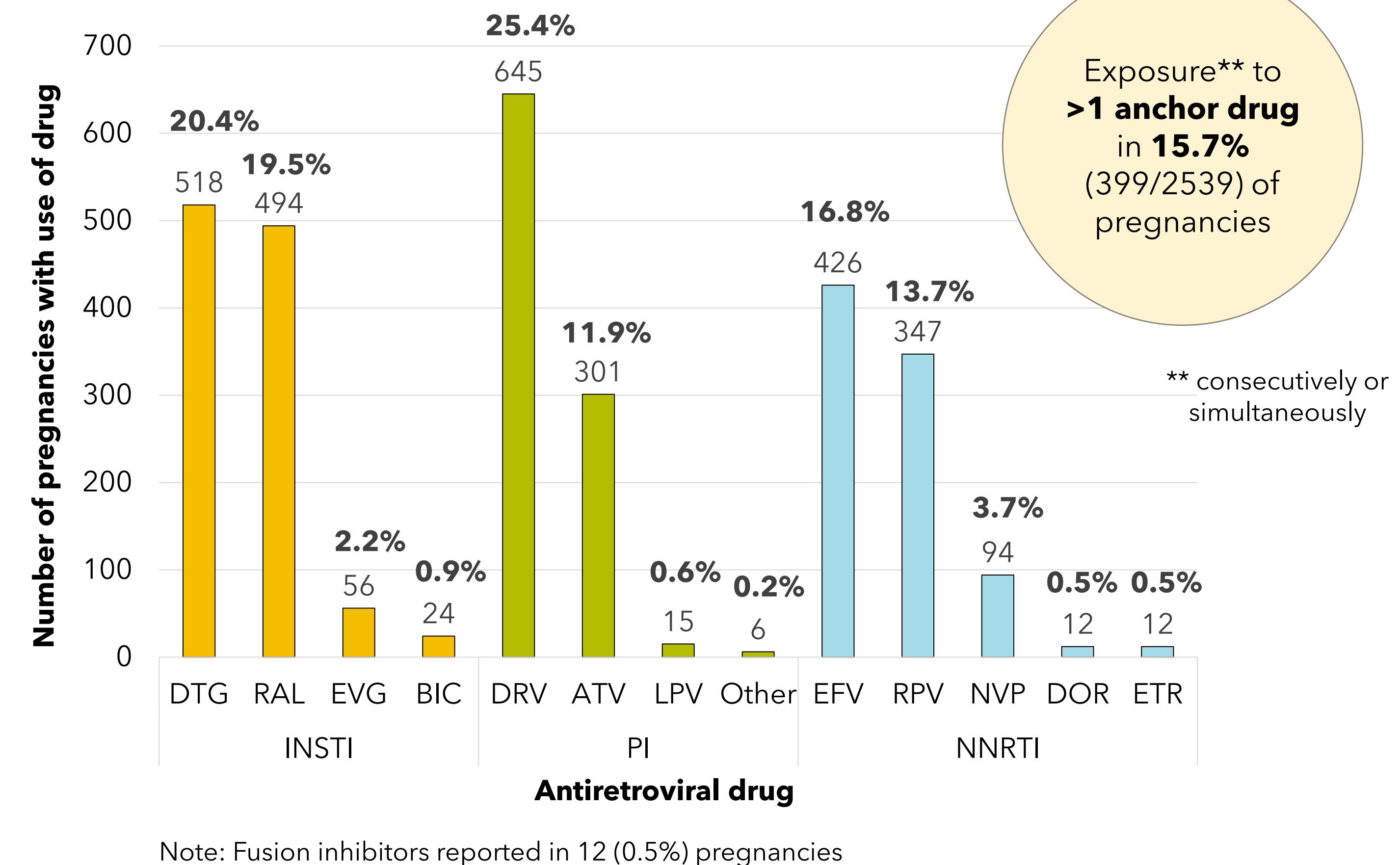
- Of 2539 with data on antiretrovirals used, 39.5% (1004) received INSTI(s); 37.3% (947) received PI(s); 34.8% (884) received NNRTI(s); **trends in use of anchor drug classes** are shown in **Figure 1**
- Frequency of use of **individual agents** is presented in **Figure 2**

Figure 1. Anchor drug classes used in pregnancy over time, N=2539



↑ INSTI use
32% in 2019
vs
52% in 2022

Figure 2. Antiretroviral agents used in pregnancy by anchor class, N=2539



Exposure** to >1 anchor drug in 15.7% (399/2539) of pregnancies

** consecutively or simultaneously

BACKBONES AND BOOSTERS (AT ANY POINT)

- TDF/FTC and ABC/3TC** were the most common NRTI backbones
- TAF** was reported in **8.5%** (215/2539) of pregnancies
- Ritonavir was reported in 33.5% (851/2539) of pregnancies overall and in 87.6% (830/947) of those with PIs reported (21 missing PI data)
- Cobicistat** was reported in **8.5%** (216/2539) of pregnancies

ANCHOR DRUGS AMONG THOSE INITIATING ART (N=423)

- Most common anchor agents used among those initiating ART** (n=423) were RAL (124, 29.3%), DTG (115, 27.2%), DRV (111, 26.2%), and ATV (88, 20.8%)
- DTG use among those initiating ART increased** from 12.9% (19/147) in 2019 to 48.1% (38/79) in 2022 (p<0.001)
- INSTIs were reported in 82.0% (41/50) of pregnancies where ART was initiated at ≥26 weeks**, rising from 71.4% (10/14) in 2019 to 93.3% (14/15) in 2022

4. CONCLUSIONS

- Experience of **INSTI use in pregnancy increased over time** (driven by DTG), mirroring global trends
- Despite high ART coverage, **opportunities remain to close treatment gaps** (e.g., expanding pre-conception diagnosis and ART, improving viral suppression among those conceiving on ART)
- In line with recent calls for action to accelerate study of new drugs** for HIV in pregnancy, further **work is needed to understand patterns in use in England as well as outcomes in more depth**

Drug abbreviations | 3TC: lamivudine; ABC: abacavir; ATV: atazanavir; BIC: bictegravir; DOR: doravirine; DRV: darunavir; DTG: dolutegravir; EFV: efavirenz; ETR: etravirine; EVG: elvitegravir; FTC: emtricitabine; INSTI: integrase strand transfer inhibitor; LPV: lopinavir; NRTI: nucleoside reverse transcriptase inhibitor; NVP: nevirapine; PI: protease inhibitor; RAL: raltegravir; RPV: rilpivirine; TAF: tenofovir alafenamide; TDF: tenofovir disoproxil fumarate; ZDV: zidovudine

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The ISOSS Annual Report is available on gov.uk

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