

Vertical HIV infections in the cART era: Data from The European Pregnancy and Paediatric Cohort Collaboration

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BACKGROUND & AIM

- MTCT rates across Western Europe have been lower than 1% for some years, with rates in the East currently around 2%
- However, missed opportunities for preventing new infant HIV infections in European settings still exist and a better understanding of these is required to strengthen service provision
- We aim to describe the circumstances around vertical HIV transmissions that have occurred despite application of prevention of MTCT (PMTCT) interventions in 2002-2015.

MATERIALS & METHODS

- The European Pregnancy & Paediatric Cohort Collaboration (EPPICC) is a collaboration of HIV observational studies in pregnancy and childhood. Nine cohorts across 14 European countries provided individual patient-data on pregnant women diagnosed with HIV before/during pregnancy and their infants delivered 01/01/2002- 30/04/2015.
- Data were provided in standardised formats based on the HIV Collaboration Data Exchange Protocol.
- 323 live-born infants with known infection status and exposure to antenatal and/or intrapartum and/or neonatal prophylaxis/treatment were included; for Ukraine, infants delivered pre-2009 were excluded due to widespread use of Option A prior to 2009.

RESULTS

Maternal demographics

- Two-thirds of infants were born to women **diagnosed during the pregnancy or at delivery**, higher among those from Western Europe (WE) (Table 1)
- Mode of maternal HIV acquisition was heterosexual in 68% of cases, and **injecting drug use** in 21%
- Almost half of women were **migrants** (74% diagnosed antenatally)

Table 1: Maternal characteristics by region

	Western Europe (172)	Eastern/Central (151)
	n (%)	n (%)
Median maternal age (yrs) IQR	30 (26, 34)	27 (23, 30)
Ethnicity (n=266)		
White	23 (20%)	150 (100%)
Black African	80 (69%)	-
Other	13 (11%)	-
Mode of acquisition (n=264)		
Heterosexual	101 (64%)	79 (74%)
Injecting drug use	29 (18%)	26 (24%)
Other	27 (17%)	2 (2%)
Timing of diagnosis (n=323)		
Prior to pregnancy	46 (27%)	66 (44%)
During pregnancy	126 (73%)	85 (56%)
Country of birth (n=319)		
Outside cohort country	145 (86%)	-
In cohort country	23 (14%)	151 (100%)

Missed opportunities for PMTCT

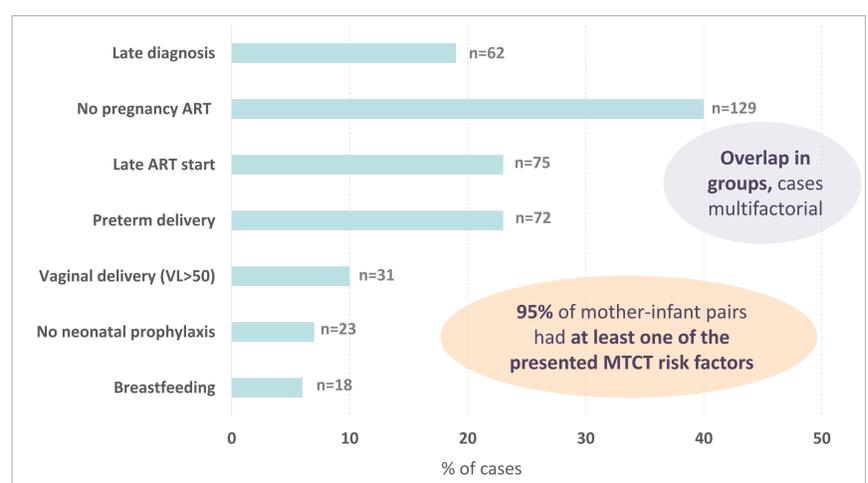


Figure 1: Proportion of cases with incomplete PMTCT interventions

Pregnancy characteristics

- Among women diagnosed during pregnancy, two-fifths (62/153) were **diagnosed late** (in the third trimester), including 34/62 diagnosed in the seven days before delivery (Table 2 & Figure 1)
- 40% of infants were born to women who received **no ART** in pregnancy, and 23% to women who started **ART late** (>28wk)

Table 2: Clinical characteristics of pregnancy

	Timing of maternal diagnosis Before (n=112)	During (n=211)
Pregnancy diagnosis		(n=153)*
1 st /2 nd trimester	-	91 (59%)
3 rd trimester	-	62 (41%)
Timing of ART		
Prior to pregnancy	15 (13%)	-
≤28wk gestation	40 (36%)	64 (30%)
>28wk gestation	15 (13%)	60 (28%)
None	42 (38%)	87 (41%)
Viral load at delivery (c/ml)	(n=58)	(n=90)
≤50	9 (16%)	7 (8%)
51-1000	10 (17%)	18 (20%)
>1000	39 (67%)	65 (72%)

Those without antenatal ART: intrapartum prophylaxis was given for 16/42 diagnosed before and 26/87 diagnosed during

Overall 41% missing viral load measurements in pregnancy

*timing missing for 58 women

- Overall, 59% (190) mothers had ≥1 antenatal viral load (VL) available - Only 16% (31/190) had VL ≤50c/ml at any point, 16/31 near delivery (≤30days)

CONCLUSIONS

- One-third of the infected infants in our study were born to mothers whose HIV had been diagnosed prior to conception, which may partly reflect problems with access to and/or engagement with HIV care
- Among infected infants whose mothers were diagnosed during pregnancy, late maternal diagnosis and late start or lack of ART were common
- Findings highlight potential barriers to access among marginalised and socially deprived groups, such as migrants and women who inject drugs
- Use of elective CS was low, but two-fifths of infants received combination neonatal prophylaxis reflecting their high risk status

Delivery and infant outcomes

- 54% (172/319) were vaginal deliveries. Of these, only 6/172 were known to have a delivery VL<50c/ml; 31/172 had detectable VL (Figure 1) 7/31 had VL 51-1000c/ml. However 135/172 were missing VL at delivery
- 32% (102/319) had an elective caesarean section (CS) and 14% (45/319) an emergency CS
- Overall, 23% (72/310) were born **preterm** (<37 weeks) (Figure 1) . Among these 12/72 started ART late (median time on ART: 6wk (IQR: 2,12wk)); 1/72 delivered with VL<50c/ml, 22/72 with detectable VL (49/72 missing VL)

- 44% (142/323) of deliveries had intrapartum prophylaxis
- Among infants, 7% (23/319) received **no neonatal prophylaxis** (4% in WE and 12% in EE), 42% (133/319) combination (≥2 drugs) prophylaxis, 3 sdNVP only, 150 ZDV only (10 other/unknown type) and 4 unknown
- 27% (88/323) of infants were tested within a week of birth, but 25 were **tested late** (not until >6 months of age). Five babies were known to have died; median age at death was 5mth (range: 3.5, 7mth); 2/5 were born preterm
- Overall 18 infants were known to have **breastfed** (Figure 1)

Timing of transmission

- Timing of infant transmission could be estimated in 71 (22%) cases only; 42 were *in utero*, 9 intrapartum, 18 intrapartum/postnatal and 2 postnatal

