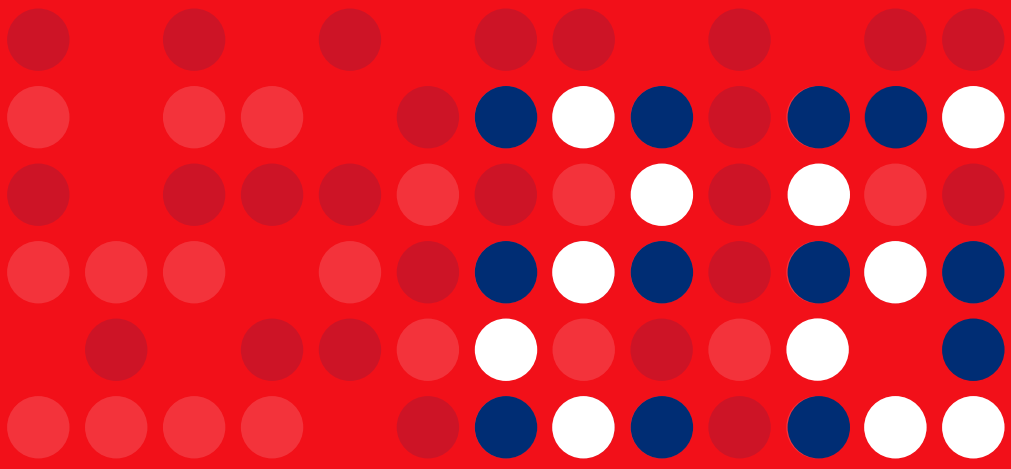
Human Immunodeficiency Virus (HIV)
Infection in the Netherlands

hiv Monitoring

HIV Monitoring Report 2026

Chapter 10: Pregnancies in women with HIV



10. Pregnancies in women with HIV

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Introduction

Worldwide, vertical transmission is the most common mode of HIV acquisition in children aged 0–15 years. Without intervention, the risk of vertical transmission ranges from 15% to 45%[1-3]. Combination antiretroviral therapy (ART) during pregnancy has reduced the risk to less than 1%[4,5].

Treatment recommendations have evolved over time: since 2015, ART is recommended for all individuals with HIV, regardless of CD4 cell count[6]. Consequently, most women with HIV are already on ART at conception and are advised to continue therapy throughout pregnancy and postpartum. Timely knowledge of a woman's HIV status is essential to initiate ART and minimize the risk of vertical transmission. In the Netherlands, pregnant women are offered opt-out HIV antibody testing in the first trimester[7], and newborns perinatally exposed to HIV receive post-exposure prophylaxis (PEP) as soon as possible after birth[39].

This chapter describes women who were pregnant during the years 2016 to 2025, a population treated according to the current treatment guidelines. The follow-up and therapy outcomes of all pregnant women in care during the period 1996 to 2018 were described in detail in the 2019 *SHM Monitoring report*[8].

Demographics

Maternal characteristics

Geographical region of origin

Between 2016 and 2025, 735 women with HIV with at least one registered pregnancy received care in the Netherlands (*Table 10.1A*).
These women were born in:

- the Netherlands: 188 (26%)
- sub-Saharan Africa: 327 (45%)
- the Caribbean/Latin America region: 100 (14%)
- and other regions: 120 (16%), including 64 women from Central or Eastern Europe, and 26 women from South and Southeast-East Asia.

Diagnosis

Most women (n=626, 85%) were aware of their HIV diagnosis before becoming pregnant; this proportion did not differ between women of Dutch and non-Dutch origin. The remaining 109 women were diagnosed during pregnancy, mostly through the national pregnancy screening programme. The proportion of women newly diagnosed during pregnancy varied between 7% and 13% per year over 2016-2025. These 109 women were born in:

- the Netherlands: 24/188 (13%)
- sub-Saharan Africa: 52/327 (16%)
- the Caribbean/Latin America region: 15/100 (15%)
- and other regions: 18/120 (15%)

Among newly diagnosed women, the median time from conception to diagnosis was 13 weeks (IQR: 11-18):

- 56% were diagnosed in the first trimester,
- 36% in the second,
- and 8% in the third.

Fifty-seven of these 109 women reported a previous negative HIV test, the remaining 52 did not report ever having tested for HIV before. The SHM database does not record whether these earlier tests were part of the national pregnancy screening.

For newly diagnosed pregnant women, the median time from blood sampling to first contact with an HIV treatment centre was 8 days (5-17), and from first visit to ART initiation 8 days (IQR 1-15). The timing of diagnosis by the obstetric caregiver and referral to an HIV treatment centre is not recorded.

Clinical characteristics

The median CD4 cell count at the first measurement after conception was 570 cells/mm^3 (IQR 380-770); 7% of the women had a CD4 cell count below 200 cells/ mm^3. Women who were newly diagnosed (and starting ART) during pregnancy had a lower median CD4 cell count(330 cells/mm^3, IQR 212-459). Because haemodilution lowers CD4 cell counts during pregnancy[9], CD4 cell percentages may be a more reliable parameter; these were also lower among the group of women newly diagnosed during pregnancy (*Table 10.1A*).

Mode of HIV acquisition

The self-reported mode of HIV acquisition among the 735 women was (*Table 10.1A*):

- Heterosexual contact: 641 (87%)
- Vertical transmission: 45 (6%)
- Other: 49 (7%), including exposure to contaminated blood or medical procedures (n=18), injecting druguse (n=4), and unknown mode (n=27).

Population no longer in care

In total 69 (9%) women were no longer in care in the Netherlands

- 27 (4%) were known to have moved abroad; one woman moved during pregnancy
- 33 were lost to follow-up (4%) and
- 9 (1%) women were documented to have died during follow up.

All but two women were lost to follow-up after their pregnancy ended; with a median of 31 months (IQR: 8-59) between delivery and last clinical visit; and 31 women had at least one clinical visit after pregnancy.

Of the women who were lost to follow-up:

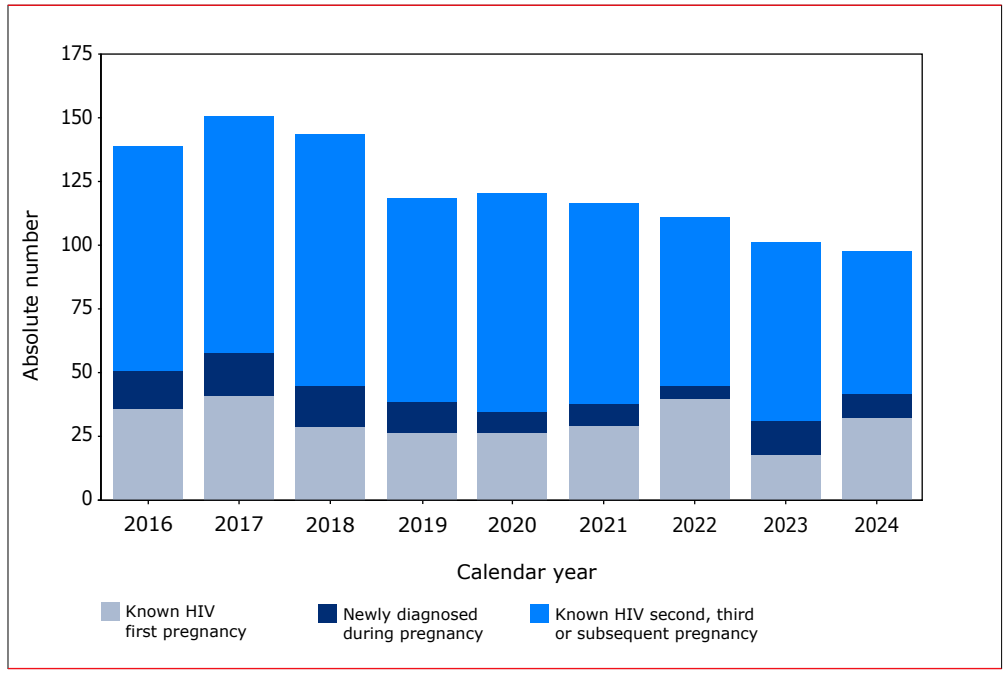
- 13 women started ART during their pregnancy, 10 were newly diagnosed with HIV;
- all but three women had a documented ART regimen at their last clinical visit.
- five women had detectable HIV RNA (660-177710 copies/ml) during the last clinical visit.
- of the 33 pregnancies among these women, 26 resulted in a live-birth, seven pregnancies ended before 24 weeks.
- vertical transmission was not reported in any of these pregnancies.

Nine women died during follow up, all after their pregnancy at a median age of 40 years (IQR: 39-46). Three had delivered a child and in the other women the pregnancy was terminated by induced abortion or miscarriage. Two women died of aids-related causes, the cause of death was a non-aids-related in six women and in one woman the cause was unknown.

Number of pregnancies in women with HIV over time

Between 2016 and 2025, 1,142 pregnancies were reported among 735 women. The annual number of pregnancies declined from 151 in 2017 to 98 in 2024 (*Figure 10.1*). The number of women newly diagnosed during pregnancy varied between 17 in 2017 and five in 2022, corresponding 5-13% of all pregnancies among women living with HIV per year. Each year, approximately 80 women with a previous pregnancy, became pregnant again (*Figure 10.1*).

Figure 10.1: *Absolute number of first and subsequent pregnancies per year, stratified by whether HIV status was already known before pregnancy, or newly diagnosed during pregnancy.*



Note: *there is backlog in data collection of pregnancy related data for pregnancies starting in the most recent year in the SHM database (2025). Therefore, the most recent calendar year is not shown in the figure.*

Pregnancy-related characteristics

The 735 women accounted for 1,142 registered pregnancies:

- 22% of women had one registered pregnancy,
- 27% two,
- 52% three or more (*Table 10.1B*).

Table 10.1A: *Maternal characteristics: of pregnant women with HIV registered and monitored by stichting hiv monitoring between 2016-2025.*

	Total	Nether-lands	Sub-Saharan Africa	Caribbean/ South America	Other	p
Total number of women N (%)	735	188 (25.6)	327 (44.5)	100 (13.6)	120 (16.3)	
HIV diagnosis before pregnancy	626 (85.2)	164 (87.2)	275 (84.1)	85 (85.0)	102 (85.0)	0.817
Newly diagnosed during pregnancy	109 (14.8)	24 (12.8)	52 (15.9)	15 (15.0)	18 (15.0)	
Age at start of first pregnancy following HIV diagnosis						
Median (IQR)	33.2 (29.1 to 36.9)	32.2 (28.0 to 35.8)	33.3 (29.2 to 36.9)	34.3 (29.7 to 37.6)	34.3 (29.8 to 38.4)	0.004
HIV transmission route						
Heterosexual contact	641 (87.2)	165 (87.8)	297 (90.8)	95 (95.0)	84 (70.0)	<0.001
Other~	49 (6.7)	9 (4.8)	8 (2.4)	1 (1.0)	31 (25.8)	
Vertical transmission	45 (6.1)	14 (7.4)	22 (6.7)	4 (4.0)	5 (4.2)	
First CD4 count in pregnancy						
Median (IQR)	570.0 (380.0 to 770.0)	650.0 (500.0 to 830.0)	501.5 (330.0 to 727.0)	588.0 (350.0 to 790.0)	550.0 (418.5 to 833.5)	<0.001
CD4 percentage						
Median (IQR)	32.6 (23.6 to 40.0)	37.6 (27.6 to 42.8)	29.2 (20.6 to 37.9)	29.8 (24.8 to 37.8)	32.6 (26.3 to 41.1	0.002
First CD4 count when newly diagnosed during pregnancy						
Median (IQR)	330.0 (211.5 to 459.0)	352.5 (298.2 to 530.0)	270.0 (182.0 to 443.2)	320.0 (200.0 to 470.0)	360.0 (290.0 to 423.0)	0.304
CD4 percentage when newly diagnoses during pregnancy						
Median (IQR)	22.5 (16.1 to 25.8)	25.6 (23.3 to 31.4)	20.9 (12.5 to 23.0)	17.3 (13.9 to 29.2)	23.5 (18.6 to 24.6)	0.078

~ Mode of HIV transmission was exposure to contaminated blood or medical procedures (n=18), injecting drug use (n=4), or unknown (n=27).

Table 10.1B: Pregnancy-related characteristics of pregnant women with HIV registered and monitored by stichting hiv monitoring between 2016-2025.

	Total	Nether-lands	Sub-Saharan Africa	Caribbean/ South America	Other	p
Total number of pregnancies N (%)	1142	297 (26.0)	521 (45.6)	149 (13.0)	175 (15.3)	
Total number of pregnancies ever after 2016						
3	589 (51.6)	136 (45.8)	300 (57.6)	78 (52.3)	75 (42.9)	<0.001
2	305 (26.7)	100 (33.7)	109 (20.9)	43 (28.9)	53 (30.3)	
1	248 (21.7)	61 (20.5)	112 (21.5)	28 (18.8)	47 (26.9)	
Pregnancy outcome						
Delivery after at least 24 weeks	749 (65.6)	199 (67.0)	337 (64.7)	92 (61.7)	121 (69.1)	0.643
Miscarriage or stillbirth,	246 (21.5)	57 (19.2)	120 (23.0)	32 (21.5)	37 (21.1)	
Induced abortion,	144 (12.6)	40 (13.5)	62 (11.9)	25 (16.8)	17 (9.7)	
Unknown	3 (0.3) [a]					
Mode of delivery						
Vaginal	510 (44.7)	153 (51.5)	213 (40.9)	58 (38.9)	86 (49.1)	0.045
Caesarean, secondary	115 (10.1)	27 (9.1)	57 (10.9)	13 (8.7)	18 (10.3)	
Caesarean, elective	117 (10.2)	18 (6.1)	61 (11.7)	21 (14.1)	17 (9.7)	
Pregnancy duration was	394 (34.5)	98 (33.0)	185 (35.5)	57 (38.3)	54 (30.9)	
<24 weeks						
Unknown	6 (0.5) [a]					
Pregnancy duration						
≥37 weeks	659 (57.7)	167 (56.2)	305 (58.5)	79 (53.0)	108 (61.7)	0.140
34-36 weeks	60 (5.3)	21 (7.1)	18 (3.5)	11 (7.4)	10 (5.7)	
28-33 weeks	22 (1.9) [a]					
26-27 weeks	3 (0.3) [a]					
24-25 weeks	4 (0.4) [a]					
<24 weeks	394 (34.5)	98 (33.0)	185 (35.5)	57 (38.3)	54 (30.9)	
Birth weight (grams)						
Median (IQR)	3120.0 (2768.8 to 3481.2)	3135.0 (2692.5 to 3422.5)	3130.0 (2805.0 to 3517.0)	3036.5 (2737.5 to 3475.0)	3075.0 (2820.0 to 3495.0)	0.489
Perinatal death	5 (0.4) [a]					

[a] *Counts <5 are not reported separately for the regions of origin.*

Table 10.1C: ART initiation among pregnant women with HIV registered and monitored by stichting hiv monitoring between 2016-2025.

	Total	Nether-lands	Sub-Saharan Africa	Caribbean/ South America	Other	p
Total number of births N (%)	749	199 (26.6)	337 (45.0)	92 (12.3)	121 (16.2)	
Antiretroviral therapy started						
Before pregnancy	630 (84.1)	174 (87.4)	276 (81.9)	77 (83.7)	103 (85.1)	0.394
During pregnancy	119 (15.9)	25 (12.6)	61 (18.1)	15 (16.3)	18 (14.9)	
Latest available plasma HIV RNA level prior to delivery						
<50 copies/ml	723 (96.5)	195 (98.0)	322 (95.6)	88 (95.7)	118 (97.5)	0.617
50-500 copies/ml	17 (2.3) [a]					
>500 copies/ml	5 (0.7) [a]					
no HIV RNA	4 (0.5) [a]					
Time between delivery and latest HIV RNA measurement (weeks)						
Median (IQR)	2.4 (0.9 to 4.1)	2.4 (1.0 to 4.4)	2.3 (0.9 to 3.9)	2.4 (1.0 to 4.1)	2.6 (0.9 to 4.3)	0.859

[a] *Counts <5 are not reported separately for the regions of origin.*

Pregnancy outcome

Of the 1,142 pregnancies, 749 (66%) resulted in a birth after ≥24 weeks (including 14 twin pregnancies), 246 (22%) pregnancies ended in miscarriage, 144 (13%) in induced abortion, and three (<1%) had an unknown outcome (*Table 10.1B*).

Pregnancy duration, preterm birth and perinatal death

Of the 749 births (Table 10.1B):

- 659 (88%) occurred at or after 37 weeks,
- 89 (12%) were preterm (defined as a pregnancy duration of 24-37 weeks, these included 50 spontaneous deliveries (including vacuum assisted deliveries) and 38 deliveries by caesarean section (15 elective, 21 secondary, 2 unknown).
- Out of the 89 preterm births: 60 births (5%) had a pregnancy duration of 34-36 weeks, 22 (2%) 28-33 weeks, 3 (<0.5%) 26-27 weeks and 4 (<0.5%) 24-25 weeks (*Table 10.1B*).
- one live birth had an unknown pregnancy duration.

The prevalence of preterm birth is higher than in the general population (7%)[29]. Perinatal death, including antepartum death, occurred in five (<1%) births and congenital disorders were registered for 21 infants.

Mode of delivery

Vaginal delivery is recommended for women with HIV who achieve viral suppression during pregnancy [10,11]. In the presence of detectable HIV RNA levels at, or near delivery, elective Caesarean section is recommended to minimise the risk of vertical transmission: the European AIDS Clinical Society (EACS) guidelines recommend elective Caesarean section when HIV RNA concentration is above 50 copies/ml in weeks 34-36 of pregnancy[12], whereas Dutch guidelines allow vaginal delivery with HIV RNA below 500 copies/ml and declining viral loads[13], with intravenous zidovudine given during labour.

Overall, 68% (n=510) of newborns were delivered vaginally; 77% of women of Dutch origin compared with 63% of women of SSA origin, and 63% of women of Latin America or Caribbean origin. Sixteen percent of newborns were delivered by elective (n=117) and 15% (n=115) by secondary Caesarean section (*Table 10.1B*).
The indication for a secondary caesarean section was not documented for all deliveries. Where documented, reasons were fetal distress (n=43) and failure to progress in labour (n=44).

Antiretroviral therapy and response in pregnant women

Therapy uptake

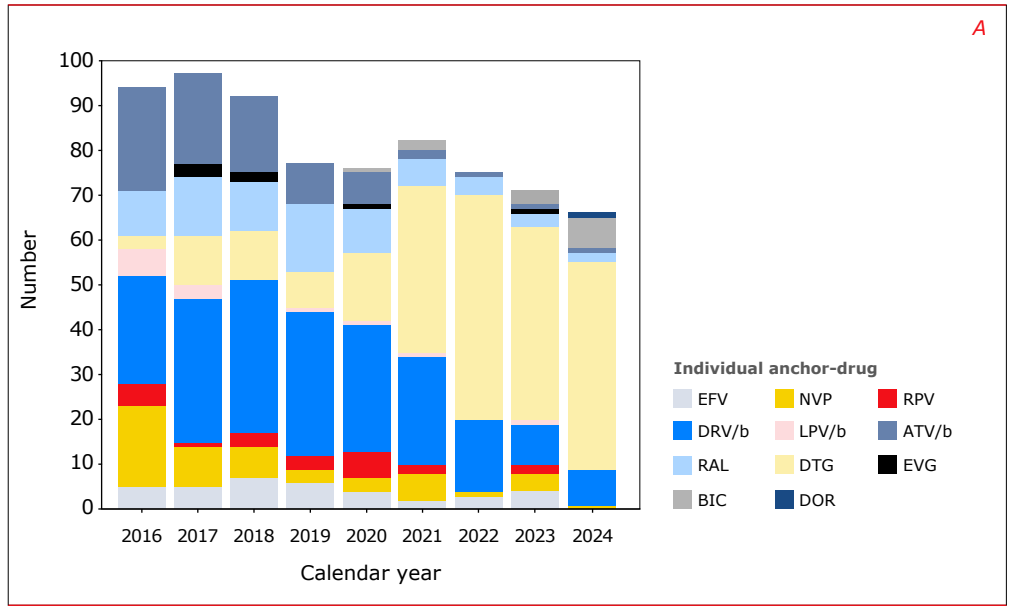
During the 749 pregnancies lasting at least 24 weeks, all women received ART during the pregnancy:

- in 630 (84%) pregnancies, ART was initiated before pregnancy
- and in 119 (16%) pregnancies during pregnancy, including 20 women diagnosed before pregnancy (*Table 10.1C*). One woman discontinued treatment before delivery.

Figure 10.2A shows the most commonly used third-drug additions to the nucleoside analogue reverse transcriptase inhibitor (NRTI) backbone between 2016 and 2024.

- Integrase inhibitors (INSTI) use increased from 4% in 2016 to 74% in 2024.
- NNRTI use decreased from 30% in 2016 to 4% in 2024
- PI use decreased from 57% to 15% (*Figure 10.2C*).
- In 21 pregnancies a two-drug regimen was used, which were mainly INSTI-based combinations.

Figure 10.2A: *The most commonly used third-drug additions to the nucleoside analogue reverse transcriptase inhibitor (NRTI) backbone used as part of ART regimens during pregnancies in 2016-2024 with a minimum duration of 24 weeks.*



Note: *there is backlog in data collection of pregnancy related data for pregnancies starting in the most recent year. Therefore, the most recent calendar year is not shown in the figure.*

Figure 10.2B: *The nucleoside reverse transcriptase (NRTI) backbone used as part of ART regimens during pregnancies in 2016–2024 with an minimum duration of 24 weeks.* ***Note:*** *there is backlog in data collection of pregnancy related data for pregnancies starting in the most recent year in the SHM database (2025). Therefore, the most recent calendar year is not shown in the figure.*

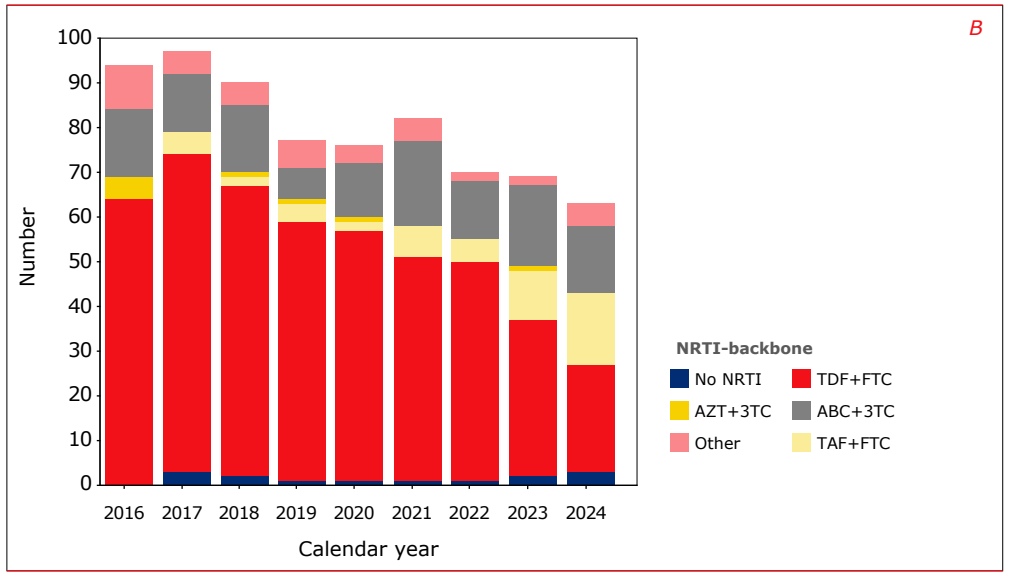
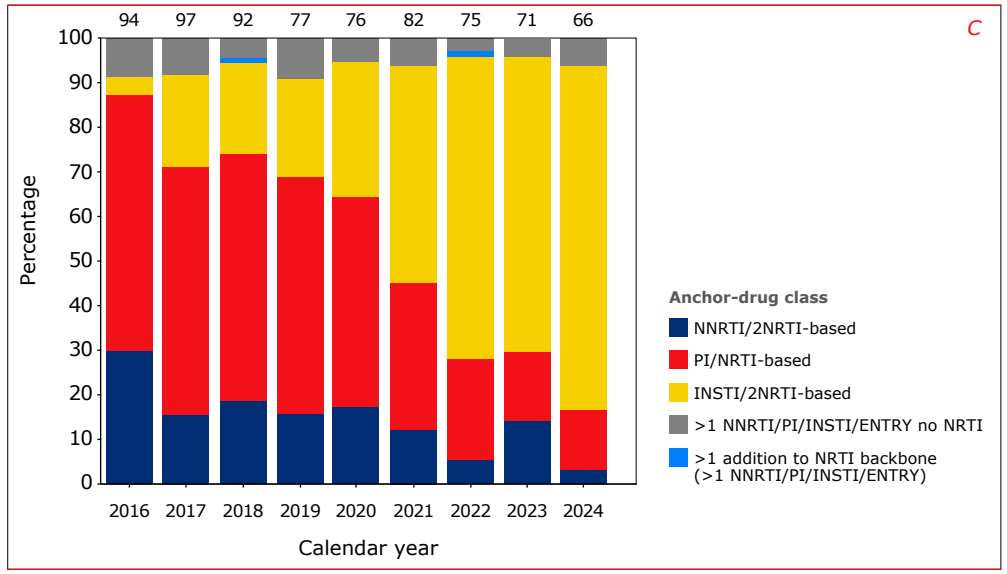


Figure 10.2C: *Antiretroviral class use stratified by calendar year period regimens during pregnancies in 2016–2024, with aminimum duration of 24 weeks.* ***Note:*** *there is backlog in data collection of pregnancy related data for pregnancies starting in the most recent year in the SHM database (2025). Therefore, the most recent calendar year is not shown in the figure.*



Legend: *ENTRY = entry inhibitor; INSTI = integrase inhibitor; NRTI = nucleoside reverse transcriptase inhibitor; NNRTI = non-NRTI; PI = protease inhibitor; 3TC = lamivudine; /b = boosted (cobicistat or ritonavir); ABC = abacavir; ATV = atazanavir; AZT = zidovudine; DRV = darunavir; DTG = dolutegravir; BIC = bictegravir; EFV = efavirenz; EVG = elvitegravir; FTC = emtricitabine; IDV = indinavir; LPV = lopinavir; NFV = nelfinavir; NVP = nevirapine; RAL = raltegravir; RPV = rilpivirine; SQV = saquinavir; TDF = tenofovirdisoproxil fumarate; TAF = tenofovir alafenamide; NRTI = nucleoside analogue reverse transcriptase inhibitor.*

Figure 10.2B provides an overview of the components of the NRTI backbone used during pregnancy between 2016 and 2024. The most commonly prescribed backbones were:

- Tenofovir disoproxil fumarate and emtricitabine (TDF+FTC) (63%).
- Abacavir and lamivudine (ABC+3TC) (17%).
- Tenofovir alafenamide and emtricitabine (TAF+FTC) (7%).

A switch in ART regimen was reported during 370 pregnancies. The most commonly documented reason was pregnancy-related (n=170). In 27% of pregnancy-related switches, a cobicistat-boosted regimen was replaced. Other common pregnancy-related switches included a switch to dolutegravir or from an integrase-containing regimen to a protease inhibitor (darunavir or atazanavir) and switches within the class of integrase inhibitors, particularly from elvitegravir to raltegravir or dolutegravir.

Because cobicistat levels are reduced during the second and third trimesters, with reductions in darunavir and elvitegravir levels when boosted with cobicistat, regimens containing cobicistat were no longer recommended during pregnancy from 2018 onwards[15]. In the Netherlands, cobicistat was used in six pregnancies between 2018 and 2025, all with HIV RNA below 50 copies/ml at the time of delivery.

Therapy response

Figure 10.3 shows the latest available plasma HIV RNA level prior to delivery, in 73% of deliveries this measurement was taken within 4 weeks prior to delivery. HIV RNA levels were categorised as below 50 copies/ml, 50-500 copies/ml, and above 500 copies/ml***a***.

- Overall 97% of the mothers had an HIV RNA below 50 copies/ml, and 3% had an HIV RNA level above 50 copies/ml.
- The proportion of women with an HIV RNA below 50 copies/ml at the time of delivery was above 95% in all years.

In total, 22 women had HIV RNA levels above 50 copies/ml (50-500 copies/ml: n=17, >500 copies/ml: n=5, median RNA=128 copies/ml; minimum=53, maximum=15500) prior to delivery (*Table 10.2*).

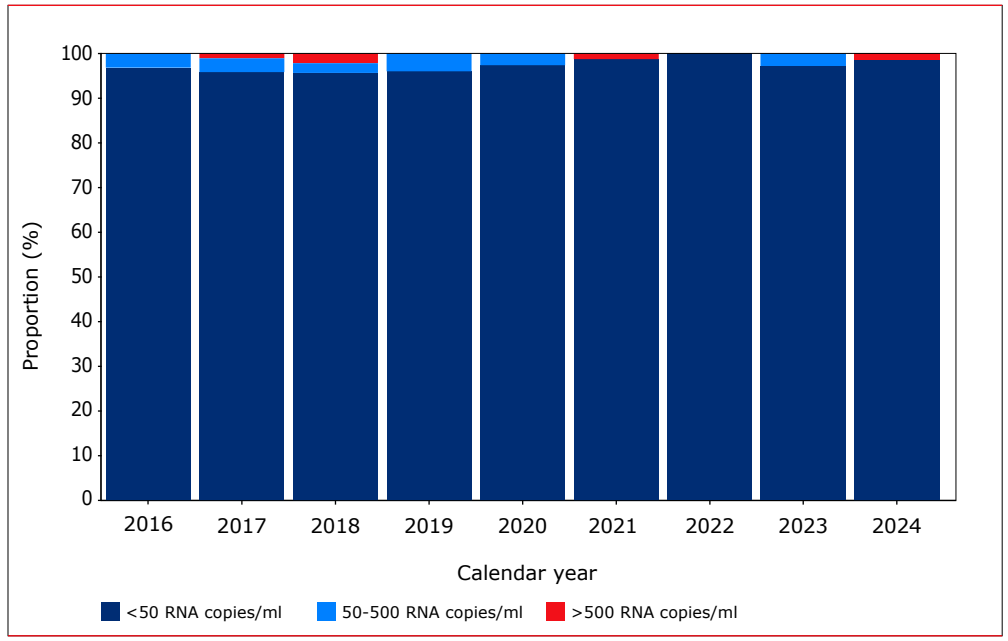
a Dutch guidelines allow a vaginal delivery with HIV RNA below 500 copies/ml and declining viral loads13 or with a undetectable HIV RNA <50 or <20 copies/ml, depending on the used assay.

Table 10.2: *Overview of characteristics of 22 women with a detectable HIV RNA level prior to delivery.*

Women with detectable HIV RNA	22 (3%)	
Age (median, IQR)	32 (27–36)	
Newly diagnosed during pregnancy	7 (32)	4 women were diagnosed after the first trimester.
ART initiated during pregnancy	7 (32)	
ARV at time of detectable HIV RNA*		
INSTI-containing	12 (55)	
NNRTI-containing	2 (9)	
PI-containing	6 (27%)	
unknown	2 (9)	
Mode of delivery		RNA (minimum; maximum)
Caesarean section	15 (68)	53, 15500 copies/ml
Vaginal	4 (18)	73, 1003 copies/ml
Unknown	3 (14)	
Zidovudine during delivery		
Yes	16 (73)	
No	4 (18)	
Unknown	2 (9)	
Evaluation of drug resistance	16	5 women had evidence of low-level resistance or greater (i.e. low, intermediate, high) before or during pregnancy. Of these: • 3 women had high level resistance to at least one NNRTI, • 1 woman had low level resistance to at least one NRTI, • 1 woman had high level multiclass resistance to at least one NRTI, NNRTI and INSTI.

**None of the women used a two-drug regimen at time of detectable HIV RNA.*

Figure 10.3: Distribution of women using ART with their latest HIV RNA levels prior to delivery: <50 copies/ml, 50-500 copies/ml, or >500 copies/ml for pregnancies with a minimum duration of 24 weeks.



Note: there is backlog in data collection of pregnancy related data for pregnancies starting in the most recent year in the SHM database (2025). Therefore, the most recent calendar year is not shown in the figure.

Vertical transmission rate in the Netherlands

Between 2016 and 2025, 749 births were registered among mothers known to be living with HIV before conception or diagnosed during pregnancy. All received ART during their pregnancy and in 97% of pregnancies HIV RNA was below 50 copies/ml. Vertical transmission has become extremely rare in the Netherlands, which is in line with low reported vertical transmission rates in other western European countries[16,17,18,19]. To avoid inadvertent identification of individuals in the case of rare events (defined as fewer than five), the vertical transmission rate is not reported.

Postpartum follow up

Postpartum follow-up was defined as the first 12 months after delivery and considered all pregnancies with a minimum duration of 24 weeks. Therapy, virological suppression, and breastfeeding rates during the postpartum follow-up are described below.

Therapy

Of the 749 pregnancies, 65 were excluded from this analysis: 40 because of insufficient follow-up between delivery and database closure; and 25 because the women were no longer in care (6 had moved abroad and 19 were reported as lost to care during the postpartum period).

For the remaining 684 pregnancies in 528 women, ART was initiated before conception or during pregnancy in 80% and 20% of cases, respectively. The majority of women used an integrase inhibitor-containing regimen during the postpartum period (53%). The use of integrase inhibitor increased from 24% in 2016, to 57% in 2020 and 79% in 2025.

In 41 (6%) of these 684 pregnancies, ART was discontinued postpartum:
The most common documented reasons were:

- patient decision (n=27)
- documented reason was end of pregnancy (n=8)
- In 3 cases the documented reason was experienced ART toxicity

In two cases the documented reason was elite controller or long-term non- progressor[b].

In 17 out of the 41 cases, treatment was restarted after a median of 5.3 weeks (IQR 2.9-9.3). In the remaining 24 cases, ART was not restarted postpartum, however 14 women did start again after the postpartum period had ended. Ten women did not have a documented restart of ART at the time of database closure.

b Elite controller or long-term non-progressor refers to an individual with HIV who is able to control HIV without ART and maintain a CD4 cell count in normal range.

Virological outcome

Detectable viremia postpartum was defined as at least one HIV RNA measurement above 50 copies/ml during the postpartum period. On the basis of this definition:

- Detectable HIV RNA >50 copies/ml was observed in 88 (13%) of the 684 pregnancies analysed. When considering >200 copies/ml as a detection margin, 8% of the pregnancies had a detectable HIV RNA.

For the 643/684 (94%) women with documented continued use of ART postpartum:

- 68 (11%) had at least one episode of an HIV RNA level above 50 copies/ml (median HIV RNA=217 copies/ml, minimum=51 and maximum=85900 copies/ml)
- 35 (5%) had a HIV RNA level above 200 copies/ml,
- 29 had more than one episode of an HIV RNA level above 50 copies/ml during the postpartum period.
- 13 of the 68 women with an HIV RNA above 50 copies/ml were newly diagnosed with HIV during the pregnancy.
- 55/68 women were diagnosed and treated before conception, of whom 54% (n=37) had earlier episodes of detectable HIV RNA levels more than 6 months after the start of initial ART.

In the 41/684 (6%) women who discontinued the use of ART postpartum:

- One woman did not have HIV RNA measurements;
- 20 (49%) had at least one episode of an HIV RNA level above 50 copies/ml (median HIV RNA=18,400 copies/ml, minimum 617 and maximum 450000 copies/ml).
- in 20 pregnancies women remained virally suppressed during the postpartum period:
  - 12 women eventually restarted ART;
  - 1 woman who became virally unsuppressed after the postpartum period;
  - 5 women with 7 pregnancies continued to report high CD4 cell counts and HIV RNA levels <50 copies/ml in the absence of ART.

Breastfeeding

In the Netherlands, pregnant women with sustained virological suppression are informed about the possibility of breastfeeding. The final decision about the baby feeding is a result of a shared decision by the patient and health care professional. Breastfeeding in such cases is recommended for a maximum of six months.

Data about the baby feeding were available for 607 of the 684 pregnancies, and breastfeeding was reported in 68 pregnancies (the duration of breastfeeding was not documented). The proportion of deliveries with reported breastfeeding varied between 2% in 2016 to 21% in 2023. It is noteworthy that all women had documented use of ART and that all except 2 women had HIV RNA levels below 50 copies/ml and all women had HIV RNA levels below 200 copies/ml during the first 6 months of the postpartum period. The median number of HIV RNA measurements during the first 6 months after delivery among the 68 pregnancies with reported breastfeeding was 2 HIV RNA measurements (IQR 1-4 measurements). No cases of vertical transmission were documented.

Summary and conclusions

Between 2016 and 2025, all pregnant women with HIV in the Netherlands received ART and vertical transmission became very rare, in line with rates in other western European countries[16,17,18,19].

A small proportion of women had detectable HIV RNA levels near the time of delivery, this occurred more often in women newly diagnosed during pregnancy and women with a history of detectable HIV RNA levels. This underscores the importance of timely diagnosis, multidisciplinary care, and close monitoring especially in women newly diagnosed and those with a history of virological failure.

Although 85% of women were aware of their HIV status before conception, 15% were newly diagnosed during pregnancy, mostly through the first trimester national pregnancy screening (PSIE)[21]. Some diagnoses occurred in the second or third trimester, this may be a result of late booking of the first antenatal clinical visit, which may delay ART initiation. Between 2016 and 2024, timely screening within PSIE was achieved between 74% and 83% of the general population[22] and PSIE reports a decline in timely screening since the introduction of the non-invasive prenatal testing (NIPT) [21 20]. This test was allowed after 11 weeks of pregnancy and may have result in taking a single blood sample to test for HIV, HBV and syphilis as well as the NIPT test, at the same time. Due to technical improvements, the NIPT is offered from 10 weeks of pregnancy onwards as from April 2023 as part of the national pre- and neonatal screening programme[20].

Preterm birth (12% versus 7%) and Caesarean sections (31%-19%) were more common than in the general population[29]. Other studies have also reported a high prevalence of caesarean sections in women with undetectable HIV RNA levels[30 31], and higher rates of premature delivery[40]. As invasive perinatal procedures, such as foetal blood sampling or placement of a foetal scalp electrode, are contraindicated in women with HIV [13], the threshold for performing a Caesarean section is generally lower; however, it is not clear whether this contributed to the higher number of Caesarean sections observed. The aetiology of preterm delivery is complex and multifactorial. Premature delivery has been linked to ART use in earlier reports, especially in the first 12 weeks of pregnancy[32,33,34], but it is unclear whether ART use or other demographic or socio-economic factors, can explain the high proportion of preterm births[35]. Associations between various antiretrovirals and adverse pregnancy outcomes such as low birthweight remain conflicting[36].

Postpartum treatment adherence requires close attention: 11% of women who continued ART after delivery had at least one episode of viraemia, consistent with earlier reports of deteriorating adherences during the postpartum period[23,24,25,26,27,28]. Women who start ART during pregnancy require a high degree of support; both to achieve viral suppression at delivery and to maintain postpartum adherence, especially if they wish to breastfeed. Women who decide to breastfeed should be closely monitored clinically and virologically, along with their infants as described in the national HIV exposure follow-up protocol for newborns [37,38 39].

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