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Review article

Belgian guidance 2026 on management of pregnancy and breastfeeding in women living with HIV and their infants

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ABSTRACT

Introduction: In 2021, a call was made to write a guidance for the management of pregnancy in women living with HIV (WLWH) in Belgium.
Methods: The call was sent to BREACH (Belgium Research on AIDS and HIV Consortium), a network of Belgian HIV Reference Centers, Laboratories and interest organizations in the field of HIV. The first working group (30 healthcare workers from 13 institutions) reviewed literature and had online discussions. This Guidance is an expert consensus document designed to answer real life clinical situations; it was presented at BREACH symposium in November 2023 and then updated annually.
Results: Antiretroviral drugs prescribed to women considering pregnancy or during pregnancy are classified as 'recommended', 'not recommended', or 'insufficient data. If viral load (VL) at week 36 of pregnancy is ≤50 copies/ml, vaginal delivery without intrapartum zidovudine (IPZ) is recommended but if ≥1000 copies/ml, a scheduled caesarean section (SCS) and IPZ are indicated. In case of VL between 50 and 1000 copies/ml at week 36, IPZ should be given. If maternal VL is ≤50 copies/ml before and throughout pregnancy, antiretroviral prophylaxis for the newborn is not indicated. Benefits and potential risk of breastfeeding should be discussed with the future mother: fully suppressed maternal VL from conception to delivery is considered at very low risk of HIV transmission during breastfeeding. Maternal VL control every 6 weeks and close follow-up by a multidisciplinary team should be offered during exclusive breastfeeding of maximum 6 months to minimize risk of HIV transmission. Shared decision making with the future mother is advised for antiretroviral treatment preference, SCS if VL is between 50 and 1000 copies/ml and infant feeding choices.
Conclusion: The Belgian Guidance on management of pregnancy and breastfeeding in WLWH and their infant can be used as a reference for Belgian clinicians and is freely available online.

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Introduction

The World Health Organization estimates that 1.3 million women living with HIV (WLWH) aged 15–49 years become pregnant each year [1]. In the absence of intervention, the rate of transmission of HIV from a WLWH to her child during pregnancy, labor, and delivery ranges from 15 to 20% in European countries and up to 45% in African countries with breastfeeding [2]. Historically, different interventions such as administration of antiretroviral therapy (ART) to the mother during pregnancy, intrapartum zidovudine administration (IPZ), scheduled caesarean section (SCS), breastfeeding avoidance and antiretrovirals administered to the infant have led to a significant decrease of vertical HIV transmission. In the absence of breastfeeding, different groups in high income countries have shown that a sustained undetectable HIV viral load (VL) present before pregnancy and maintained throughout pregnancy and delivery, was associated with absence of HIV transmission to the infant [3,4].

The Belgium Research on AIDS and HIV Consortium (BREACH) is a collaborative network of the Belgian HIV Reference Centers and Laboratories, scientific research groups and interest organizations in the field of HIV infection and AIDS [5]. During the annual BREACH symposium in November 2021, a comparison of the main existing international guidelines on WLWH and pregnancy was presented. Some of these guidelines did not fully cover all the subjects and some discrepancies were noted: for example, the maternal HIV VL threshold to prescribe IPZ was 50 copies/ml in the European AIDS Clinical Society (EACS) guidelines, but 1000 copies/ml in the British HIV Association (BHIVA) or in the American DHHS (Department of Health and Human Services) guidelines [6–8]. Consequently, a call was made to write a guidance for Belgian healthcare workers (HCW) taking care of WLWH before and during pregnancy and their infants in the Belgian context. In Belgium, it is estimated that around 3200 women between 15- and 49-years-old are followed-up for HIV and around 200 infants are born each year from a WLWH [9].

Methods

A call to participate in a working group (WG) was emailed to the 1752 BREACH members in December 2021. The first WG consisted of 30 HCW (infectious diseases specialists, obstetricians, pediatricians, neonatologists, virologists, midwives, psychologist and public health scientists) from 13 hospitals/institutions (supplement 1).

The WG compared existing guidelines (EACS, BIHVA and DHHS guidelines) and defined several questions when guidelines differed between them or didn't bring a clear answer (supplement 2) [6–8]. The group also agreed on giving very practical answers that could help in real life clinical situations.

Three subgroups addressing these questions for respectively 1/ women considering pregnancy and pregnant women, 2/ infants born from a WLWH and 3/ breastfeeding were constituted.

In addition to existing guidelines, a literature review was added including randomized trials, cohorts and pharmacokinetics studies, pregnancy register, reviews and surveys from the last 15 years. The WG created a shared drive with literature and consensus drafts. The different questions were presented by different volunteering participants and discussed by the WG during 8 online meetings between 2022 and 2023.

This work is an expert consensus document rather than a formal evidence-graded guideline, which is why we have called it "Guidance".

The first Belgian Guidance draft was emailed to all BREACH members in September 2023 to collect any comments or questions during a two-month period. The Belgian Guidance was then orally presented at the annual BREACH symposium on November 30th, 2023, and then put on the BREACH website with free access [10].

Following the release of the first Guidance, new members joined the WG which in 2025, including 51 HCW from 14 Belgian hospitals/institutions (supplement 1).

An annual online WG meeting was scheduled in October in 2024 and 2025 to update the existing Belgian Guidance based on publications that were released after the first and second Guidance edition. Here, the updated 2025 Belgian Guidance is presented.

As this publication is a summary of Belgian Guidance, no ethic committee agreement was required.

Results

Management of pregnancy in WLWH

Ideally, the maternal VL should be ≤50 copies/ml before and throughout the whole pregnancy. When HIV is diagnosed at time of pregnancy or the WLWH is not treated for HIV at time of pregnancy, triple ART should be started as soon as possible according to EACS guidelines table [6] with an Integrase Strand Transfer Inhibitor (INSTI) such as dolutegravir or bictegravir which allows reaching an undetectable VL more rapidly [11–14].

In this Guidance, antiretroviral drugs are classified in three categories based on recommendations for their use in women considering pregnancy and in pregnant women (Table 1) [15,16].

For categories 3 (ART with currently insufficient data during pregnancy) and 2 (ART not recommended because of risk of plasma low drug concentrations), the Guidance proposes to discuss with the future mother and to make a shared decision taking into account antiretroviral efficacy, tolerance and the balance between benefit and risk of changing the regimen. For example, if the VL is ≤50 copies/ml under a well-tolerated therapy, and the patient wishes to continue her therapy, more frequent VL monitoring is recommended during pregnancy. This guidance is based on a study showing that 20% of women who were switched from their "not recommended-" to a "recommended-" regimen had VL rebound because of lack of tolerance or lower compliance to the new regimen [17]. If the VL is >50 cp/ml, or if the patient prefers to have ART with sufficient background data or reliable pharmacodynamics during pregnancy, the guidance proposes to switch to recommended ART (category 1).

Table 2 delineates the recommended parameters (such as VL, genotypic resistance typing, therapeutic drug monitoring and drug-drug interactions) to be monitored across various pregnancy-related clinical scenarios.

In case the week 36 VL is ≤50 copies/ml, we recommend vaginal delivery without IPZ (Table 3). If VL is ≥1000 copies/ml, we recommend IZA and SCS at week 38 because, at this threshold, SCS decreases significantly the risk of HIV transmission during delivery [18]. In case of a maternal VL ≥51 but <1000 copies/ml, we advise IPZ and shared decision making with the patient between vaginal delivery and SCS, taking into account the low risk of vertical transmission (between 1 and 3%), and the risk of adverse events associated with current SCS and future pregnancies. Indeed, the expected gain from an SCS at this VL level is a maximum 1% reduction in the risk of vertical transmission, whereas the increase in maternal and fetal morbidity after a SCS during the current and future pregnancies is >1% [19]. In the French perinatal cohort, VL between 400 and 1000 copies/ml were associated with a trend for higher HIV transmission, so we would consider an SCS above 400 copies/ml and favor vaginal delivery below 400 copies/ml [20–22].

Management of infants/children born from a mother living with HIV

Indication and type of post-exposure prophylaxis (PEP) to the newborn vary according to three risk stratification scenarios. In case of lowest risk (maternal VL ≤50 copies/ml before and throughout pregnancy including delivery), PEP is not recommended anymore. If there is an intermediate risk (VL detectable at >50 cp/ml at some point(s) during pregnancy but ≤50 copies/ml at 36 weeks or delivery), infant PEP with zidovudine is recommended for 4 weeks. In the highest risk situation (maternal VL known or suspected >50 cp/ml at delivery),

Table 1
Recommendation on antiretroviral (ARV) drugs before and during pregnancy (in 2025–2026) VL (viral load), cp/ml (copies/ml), T (trimester).

ARV in women considering pregnancy		
1. Drugs that are allowed	Dolutegravir based triple or double regimen Bictegravir based triple regimen Raltegravir 400 bid based triple regimen Darunavir **800/ritonavir 100** based triple regimen Rilpivirine or Nevirapine based triple regimen	
2. Drugs that are Not recommended – Pharmacokinetics – Risk of viral rebound	Elvitegravir Cobicistat (significant decrease in blood concentrations at T3) Atazanavir (risk of hyperbilirubinemia, risk of viral failure)	Discussion with the patient to inform her about the risks during pregnancy: **shared decision** and based on a case-to-case evaluation • Propose to **switch to another regimen** (as there are a lot of alternatives) • If VL ≤50 cp/ml and well tolerated, continue and during pregnancy: monitoring VL frequently (at least at T1, T2, every month during T3)
3. Drugs or regimens with Insufficient data (Safety, Pharmacokinetics, dual as opposed to the triple therapy dogma)	Doravirine Raltegravir 1200 mg QD Cabotegravir/rilpivirine Dolutegravir/ lamivudine Dolutegravir/rilpivirine	Discussion with the patient to inform her about the missing data on potential risks during pregnancy: **shared decision** • If VL ≤50 cp/ml, therapy well tolerated, and the patient wishes to continue her therapy, continue during pregnancy: monitoring VL frequently (at least at T1, T2, every month during T3) • If VL >50 cp/ml, or if the patient prefers to have ARV with sufficient data background: switch for a recommended therapy
ARV therapy DURING pregnancy		
1. Drugs that are recommended	To initiate ARV therapy To be continued:	Dolutegravir based- or Bictegravir based-triple drugs regimen [13,14] Dolutegravir based triple or Bictegravir triple regimens Raltegravir 400 bid based triple regimen Darunavir /ritonavir 800/100 based triple regimen [15] Rilpivirine based triple regimen (Nevirapine or efavirenz based triple regimen)
2. Drugs that are Not recommended – Pharmacokinetics	Elvitegravir Cobicistat	Discussion with the patient to inform her about the risks during pregnancy: **shared decision** and based on a case-to-case evaluation
– Risk of viral rebound	Atazanavir (risk of hyperbilirubinemia, risk of viral failure)	• Propose to switch to another regimen **BEFORE T3** (as there are a lot of alternatives)
3. Drugs or regimens with Insufficient data (Safety, Pharmacokinetics, dual as opposed to the triple therapy dogma)	Raltegravir 1200 mg QD Cabotegravir/rilpivirine Dolutegravir/ lamivudine Dolutegravir/rilpivirine	Discussion with the patient to inform her about the missing data on potential risks during pregnancy: **shared decision** • If VL ≤50 cp/ml, therapy well tolerated, and the patient wishes to continue her therapy, continue during pregnancy: monitoring VL frequently (at least at T1, T2, every month during T3) • If VL >50 cp/ml, or if the patient prefers to have ARV with sufficient data background: switch for a recommended therapy

Table 2
Testing and ARV in women living with HIV during pregnancy according to different scenarios (in 2025–2026) T (trimester), VL (viral load), ARV (antiretrovirals), TDM therapeutic drug monitoring.

Patient diagnosed during pregnancy T1 or T2 or lost to follow-up before pregnancy	• VL + genotypic resistance typing at diagnosis; Start ARV including Dolutegravir or Bictegravir before genotyping results • VL 1 month after treatment initiation then VL every 1 to 2 months • At 36 weeks and at birth
Patient diagnosed during late pregnancy T3	• VL+ genotypic resistance typing at diagnosis; Start ARV including Dolutegravir or Bictegravir before genotyping results • VL every 1–2 weeks until undetectable VL reached • At 36 weeks and at birth
Patient under regular follow-up and VL controlled (≤50 cp/ml)	• VL at least once per trimester; monthly in T3 if on not recommended ARV • At 36 weeks and at birth
Patient under regular follow-up and VL not controlled	• Check for tolerability, nausea, pill size, drug interaction, observance, etc… • VL+ genotypic resistance typing; TDM • Consider adding INSTI or switching to INSTI (Dolutegravir or Bictegravir) before genotyping results • Recheck VL at 1 month if T1 or T2 or after 2 weeks if T3 • If VL ≤50 cp/ml, recheck every 1–2 months thereafter • At 36 weeks and at birth

triple ART zidovudine/lamivudine(for 4 weeks)/nevirapine(for 2 weeks because of long half-life) for the infant is recommended. In case of maternal resistance to nevirapine, dolutegravir/zidovudine/lamivudine should be given to the infant for 4 weeks (Table 4 [23].

Infant testing is detailed in Table 5. Interpretation and limitations of these different tests are explained by the group of AIDS reference laboratories on a website dedicated to this question [24].

Table 3
Intrapartum preventive measures according to week 36 maternal HIV viral load (in 2025–2026).

Viral Load	Vaginal delivery	Scheduled caesarean section at 38 weeks	Intrapartum IV ZDV 2 mg/kg loading dose followed by continuous iv infusion of 1 mg/kg/hour until delivery (stop when cord clamped) If scheduled caesarean delivery: start ZDV 3 h before surgery
≤50 cp/ml	Recommend	No	No
51–400 cp/ml	Favor*	Consider*	Yes
400–1000 cp/ml	Consider*	Consider*	Yes
>1000 cp/ml	No	Recommend	Yes

Cp (copies); IV (intravenous); ZDV (Zidovudine); * decision on a case-by-case basis after shared decision with the patient.

Table 4
Oral dosing of antiretrovirals in infants (in 2025–2026).

Zidovudine (AZT): duration 4 weeks	
Birth at <30 weeks gestation	Until 4 weeks: 2 mg/kg per dose × 2/day From 4–6 weeks: 3 mg/kg per dose × 2/day
Birth at ≥30 to <35 weeks gestation	From birth to 2 weeks: 2 mg/kg per dose × 2/day From 2 to 6 weeks: 3 mg/kg per dose × 2/day
Birth at ≥35 weeks gestation	From birth to ≤6 weeks: 4 mg/kg per dose × 2/day
Lamivudine (3TC): duration 4 weeks	
Birth at ≥32 weeks gestation	From birth to <4 weeks: 2 mg/kg per dose × 2/day From ≥4 to ≤6 weeks: 4 mg/kg per dose × 2/day
Nevirapine (NVP): duration 2 weeks	
Birth at ≥32 to <34 weeks gestation	From birth to <2 Weeks: 2 mg/kg per dose × 2/day From ≥2 to <4 Weeks: 4 mg/kg per dose × 2/day From ≥4 to ≤6 Weeks: 6 mg/kg per dose × 2/day
Birth at ≥34 to <37 weeks gestation	From birth to <1 Week: 4 mg/kg per dose × 2/day From ≥1 to ≤6 Weeks: 6 mg/kg per dose × 2/day
Birth at ≥37 weeks gestation	From birth to ≤6 weeks: 6 mg/kg per dose × 2/day
Dolutegravir: duration 4 weeks (in case of resistance to nevirapine)	
Birth at ≥37 Weeks Gestation and weight ≥3 kg (range in the PETITE-DTG study 2365–4330 kg) [23]	From day 0 to 14 of life: 5 mg every 48h From day 15 up to 28 of life: 5 mg daily (dispersible pill)

Management of breastfeeding in women living with HIV

In Belgium, breastfeeding is not routinely recommended due to concerns regarding the risk of HIV transmission. Indeed, this risk of HIV transmission during breastfeeding is <1% (but is not equal to zero) in the ideal situation (sustained undetectable VL in the mother during pregnancy, delivery and breastfeeding) but potentially increases to 10–15% in case of detectable maternal VL.

However, there are numerous benefits of breastfeeding including bonding with the child, being an easy and affordable way of child feeding, passive transfer of antibodies to the infant decreasing infection risk, reduced risks of postpartum depression and breast cancer. On the other hand, formula feeding, in high resources countries such as Belgium, is safe and healthy for the baby.

The Guidance advises that all pregnant WLWH should be informed on the potential benefits and risks of breastfeeding. After that, if a woman decides to breastfeed, it is the duty of HCW, as professionals, to offer proper guidance and follow-up in a supportive environment to minimize risk of HIV transmission.

The optimal scenario, where risk of transmission is estimated to be <1%, would be when a woman who chooses to breastfeed has been on long-term follow-up with documented undetectable VL under ART and proof of excellent adherence.

Women who had previously a detectable VL (either during pregnancy or before) should be informed of the higher risk of HIV transmission; however, they should be supported and followed closely if they decide to breastfeed. If the father-to-be or the partner is involved in the pregnancy and childcare, they should be part of the discussion and decision-making regarding breastfeeding.

The mother and her infant should be supported by a multidisciplinary health care team including a gynecologist, infectious diseases specialist, pediatrician, HIV reference nurse, lactation mid-wife, psychologist, social worker and general practitioner. Maternal VL and infant HIV PCR testing should be performed every 6 weeks during breastfeeding up to three months after breastfeeding has stopped.

Breastfeeding should be exclusive (only breastmilk, no solid food) with infant formula supplements exceptionally allowed for maximum 24 to 48 h in case of no other possibilities (for example, establishing breastfeeding that might be difficult at the start or hypoglycemia) [25]. Breastfeeding should be interrupted in case of infant gastroenteritis or severe candidiasis and in case of nipple crackles or mastitis. In these situations, use of previously frozen expressed breast milk or donor human milk from a milk bank is recommended.

The newborn should receive PEP if there is intermediate risk as described in the previous chapter. In case of high risk, breastfeeding should be strongly discouraged but if the mother decides to breastfeed, PEP should be continued during breastfeeding (Table 5)".

Breastfeeding should be limited to a maximum duration of six months and discontinued abruptly. In this context, support from a lactation-specialized midwife is essential to adequately prepare for weaning: expressed breast milk should be frozen in advance, and bottle feeding should be established prior to weaning.

In case maternal VL becomes detectable >50 copies/ml, breastfeeding should be stopped and infant PEP be considered. In case of minor blip between 50 and 100 copies/ml and immediate control of VL is undetectable ≤50 copies/ml again, resuming breastfeeding could be considered on a case-by-case discussion by the multidisciplinary team caring for the patient.

All the tests to be performed in the infant during and after breastfeeding are in Table 5.

As there are currently no data in premature infants, breastfeeding is not recommended in premature infants <35 weeks [26].

Discussion

The Belgian Guidance on the management of pregnancy and breastfeeding in WLWH and their infant has been developed to fill in some gaps between the different guidelines and current clinical practice. One notable distinction is that PEP in infants is not indicated anymore when maternal VL is undetectable throughout pregnancy and delivery. Indeed, although infant PEP was shown to significantly reduce HIV transmission in uncontrolled maternal viremia, the added benefit of infant PEP has never been proved in case of undetectable maternal VL starting before conception [27]. Although EACS, DHHS, BIHVA and French guidelines continues to recommend PEP in all infants even when maternal VL suppression started before conception, other countries like

Table 5
Neonatal post exposure prophylaxis (PEP) and testing strategy according to risk categories and breastfeeding (in 2025–2026).

Definition	Low risk Full viral load suppression before and throughout pregnancy	Intermediate risk Maternal viral load detectable at some point during the pregnancy but ≤50 copies/mL before delivery	High risk Maternal viral load known or suspected >50 copies/mL at delivery
In case of neonatal PEP: Start within 4 h after delivery if possible	**No PEP***	**AZT 4 weeks**	**Triple therapy:** AZT + 3TC + NVP 2 weeks Followed by AZT + 3TC 2 weeks In case of resistance to NVP: AZT + 3TC + DTG 4 weeks
Neonatal follow-up without breastfeeding	**DNA + RNA testing** – At birth (0–2 days) – 6 weeks – 12 weeks **Serology screen** test (HIV antigen + antibody) at ≥20 months	**DNA + RNA testing** – At birth (0–2 days) – 6 weeks – 12 weeks At least 2 tests after completion of preventive treatment, ≥4 weeks apart **Serology screen** test (HIV antigen + antibody) at ≥20 months	**DNA + RNA testing** – At birth (0–2 days) – 2 to 3 weeks – 6 weeks – 12 weeks – 6 months At least 2 tests after completion of preventive treatment, ≥4 weeks apart **Serology screen** test (HIV antigen + antibody) At ≥20 months
Neonatal follow-up in case of breastfeeding**	**DNA + RNA testing** – At birth (0–2 days) – every 6 weeks during breastfeeding – continue every 6 weeks until 3 months after stop breastfeeding **Serology screen** test (HIV antigen + antibody) at ≥20 months **No PEP**	**DNA + RNA testing** – At birth (0–2 days) – every 6 weeks during breastfeeding – continue every 6 weeks until 3 months after stop breastfeeding **Serology screen** test (HIV antigen + antibody) at ≥20 months **AZT 4 weeks**	**Breastfeeding is NOT recommended, and HIGHLY DISCOURAGED** But if breastfeeding is decided anyway, same test schedule as intermediate risk. **Continue PEP during breastfeeding with regimen and duration according to multidisciplinary team discussion.**

*When maternal viral load is not available at birth, AZT can be started and discontinued when result of maternal viral load <50 cp/ml is obtained.
AZT: zidovudine, 3TC: lamivudine, NVP: nevirapine, DTG: dolutegravir.
**Breastfeeding is not routinely recommended but opened to a shared decision process: risks & benefits should be discussed before delivery. A multidisciplinary team should offer guidance and follow-up.

Switzerland, since 2016, Portugal and Latvia, have made similar recommendations to ours based on the "undetectable equals untransmissible" equation that is applicable for pregnancy with maternal VL undetectable already before conception and throughout pregnancy and delivery [7,8,28–30]. Moreover, avoiding PEP in infants at lowest risk could decrease unnecessary medicalization and exposure to zidovudine that can give severe hematological adverse effects [31]. This observation is not applicable to breastfeeding where HIV transmission has been reported, although rarely, in WLWH with undetectable VL under ART. These HIV transmissions might be linked with cell associated HIV contained in breastmilk [32]. In the Promise study, where sub-Saharan African WLWH were under ART, transmission was 3/1000 breastfed infant after 6 months of breastfeeding and 7/1000 after 12 months [26].

This Guidance has evolved and has been updated annually. Indeed, breastfeeding was "strongly not recommended" in the first edition in 2023 in all cases but, similarly to other European countries guidelines, it proposes now in its latest version a discussion with the future mother if she is in the optimal scenario of sustained undetectable VL, taking into account both the numerous benefits of breastfeeding and potential risk of HIV transmission expected to be low [26,33].

We have placed informing, discussing and shared decision making with the future mother at the center of our Guidance regarding ART preference, SCS at 38 weeks in case of detectable VL between 50 and 1000 copies/ml and feeding choices. We believe that supporting WLWH before, during and after pregnancy and breastfeeding, ideally by a multidisciplinary team, will decrease the risk of vertical HIV transmission and, at the same time, improve well-being and self-empowerment of WLWH. Indeed, studies performed in Belgium showed that a substantial part of pregnant WLWH desires to breastfeed for different reasons (child's health, maternal bounding, cultural reasons or to avoid HIV disclosure) while, at the same time, being concerned about potential HIV vertical transmission [34,35]. The latter study showed that Belgian HCW interviewed in 2024 were not always aware of the transition between "no breastfeeding in any case" to "shared decision process with the future mother after well balanced information on breastfeeding benefits and potential risk of HIV transmission". This supports the need for the present Guidance and its regular annual update process.

We have chosen the title "guidance" rather than "guidelines" to include both evidence-based results and practical field issues such as practical tables on infant PEP dosing or calendars on what and when to test in pregnant women and newborns.

This Guidance is interactive within the Belgian HIV HCW (through the BREACH network) allowing all practitioners on the field to feedback their questions, comments and suggestions.

Conclusion

The Belgian Guidance on management of pregnancy and breastfeeding in WLWH and their infant has been presented in November 2023, is updated annually since then and is freely available online [10].

CRediT authorship contribution statement

Deborah Konopnicki: Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Formal analysis, Data curation, Conceptualization. **Marc Hainaut:** Writing – review & editing, Validation, Supervision, Methodology, Formal analysis, Data curation. **Catherine Adler:** Writing – review & editing, Validation, Supervision, Methodology, Formal analysis, Data curation. **Julien De Greef:** Writing – review & editing, Validation, Formal analysis, Data curation. **Leila Belkhir:** Writing – review & editing, Validation, Data curation. **France Laurent:** Writing – review & editing, Validation, Formal analysis, Data curation. **Jens Van Praet:** Writing – review & editing, Validation, Data

curation. **Julie Nagel:** Writing – review & editing, Validation, Supervision, Formal analysis, Data curation. **Severine Caluwaerts:** Writing – review & editing, Formal analysis, Data curation. **Veronique Schmitz:** Writing – review & editing, Formal analysis, Data curation. **Dimitri Vander Linden:** Writing – review & editing, Validation, Supervision, Methodology, Formal analysis, Data curation. **Olga Chatzis:** Writing – review & editing, Validation, Formal analysis, Data curation. **Karolien Stoffels:** Writing – review & editing, Validation, Methodology, Formal analysis, Data curation. **Jolanda Pelgrom:** Writing – review & editing, Formal analysis, Data curation. **Patricia Barlow:** Writing – review & editing, Validation, Formal analysis, Data curation.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

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