

# SAMRC InfoSpace

## Road to elimination of mother-to-child transmission in South Africa

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# Act, Connect and End the Epidemic



20 - 23 June

**2023**

**11<sup>th</sup> SA AIDS**

**CONFERENCE**

**Durban ICC**

[www.saids.co.za](http://www.saids.co.za)

# Road to the Elimination of Mother-To-Child HIV Transmission in South Africa

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21 June 2023





The South African Medical Research Council

recognizes the catastrophic and persisting consequences of colonialism and apartheid, including land dispossession and the intentional imposition of educational and health inequities.

Acknowledging the SAMRC's historical role and silence during apartheid, we commit our capacities and resources to the continued promotion of justice and dignity in health research in South Africa.



# OVERVIEW

Definition of  
eMTCT

Current  
landscape in  
South Africa

Evolution of the  
PMTCT  
programme in SA




4-prong  
approach  
towards eMTCT

Challenges in  
progress

Current and  
future  
interventions

**DEFINITION OF eMTCT: An HIV infection case rate of  $\leq 50/100\ 000$  live births is needed to validate a country's elimination of vertical transmission as a public health problem and a transmission rate of  $< 5\%$  in breastfed infants for at least a year <sup>1</sup>**

## FULL VALIDATION <sup>1</sup>

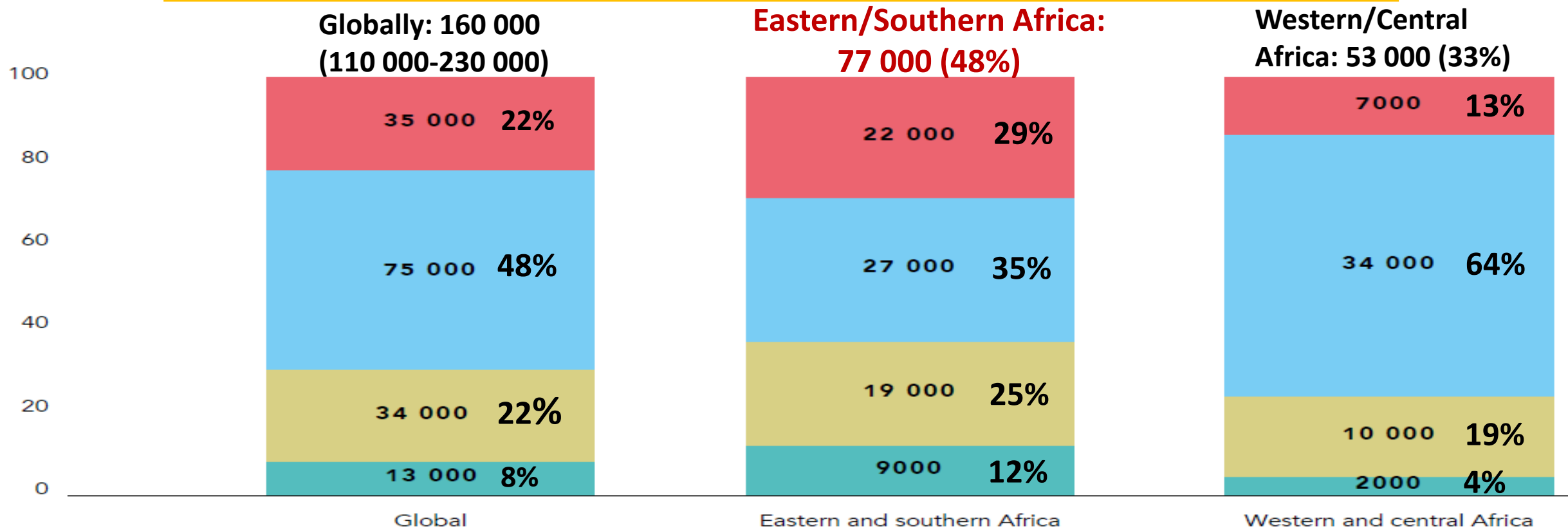
-  95% antenatal care coverage (at least one visit)
  -  95% HIV testing coverage among pregnant women
  -  95% antiretroviral therapy coverage among pregnant women living with HIV
- 2017: intrauterine MTCT rate 0.9% <sup>2</sup>
- = 240 per 100 000 live births <sup>3</sup>**
- (does not include intra and postpartum transmissions)

1. World Health Organization. Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV and syphilis. 2014.

2. Goga et al. S Afr Med J. 2018;108(3a)

3. Moyo et al. S Afr Med J. 2022;112(3)

# DESPITE GREAT PROGRESS SINCE THE EARLY DAYS, THE HIV RESPONSE IS STILL FAILING CHILDREN

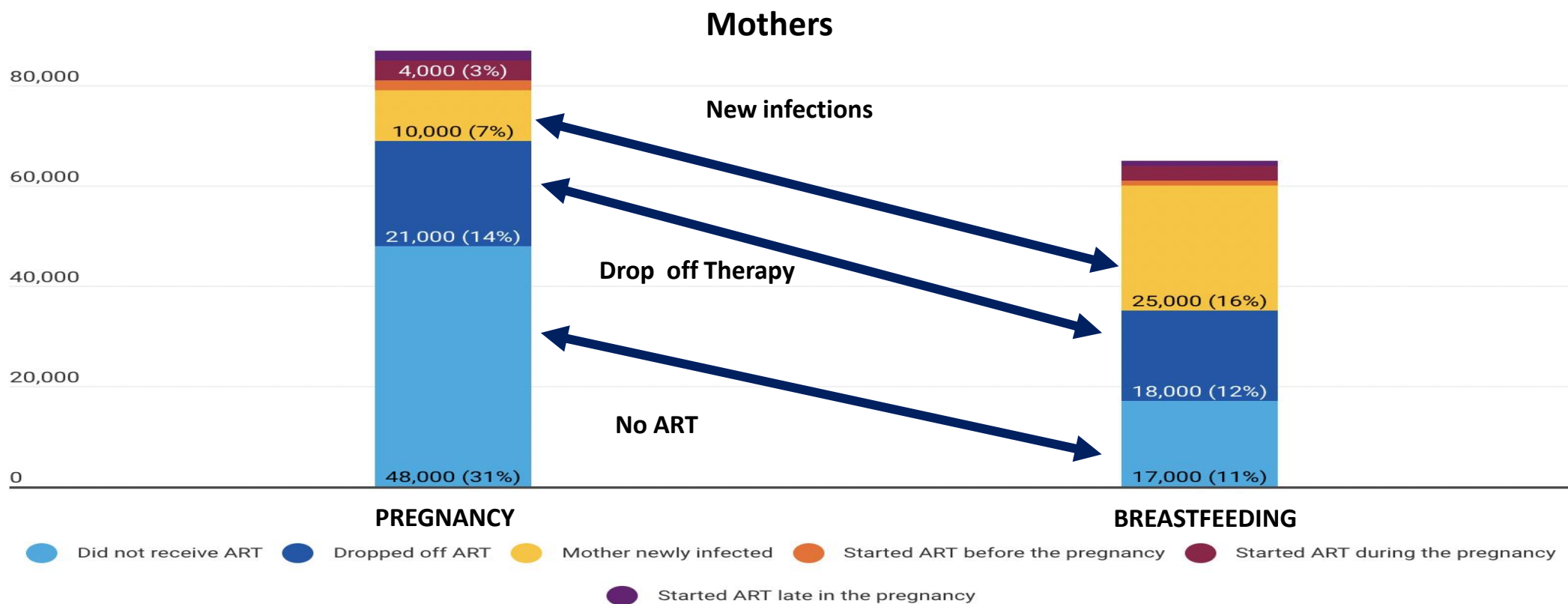


- MOTHER NEWLY INFECTED WITH HIV WHILE PREGNANT OR BREASTFEEDING
- MOTHER DID NOT RECEIVE ANTIRETROVIRAL THERAPY DURING PREGNANCY OR BREASTFEEDING
- MOTHER DROPPED OFF ANTIRETROVIRAL THERAPY DURING PREGNANCY OR BREASTFEEDING
- MOTHER WAS ON ANTIRETROVIRAL THERAPY BUT NOT VIRALLY SUPPRESSED

# REASONS FOR VERTICAL HIV TRANSMISSION

The majority of paediatric HIV infections are due to new mothers not receiving ART, dropping off ART, or becoming infected during breastfeeding

Number of new HIV infections among children by source of infection, 2020



<https://data.unicef.org/topic/hiv aids/emtct/>

# PERINATAL AND POSTNATAL VERTICAL HIV TRANSMISSION (VHT): SOUTH AFRICA

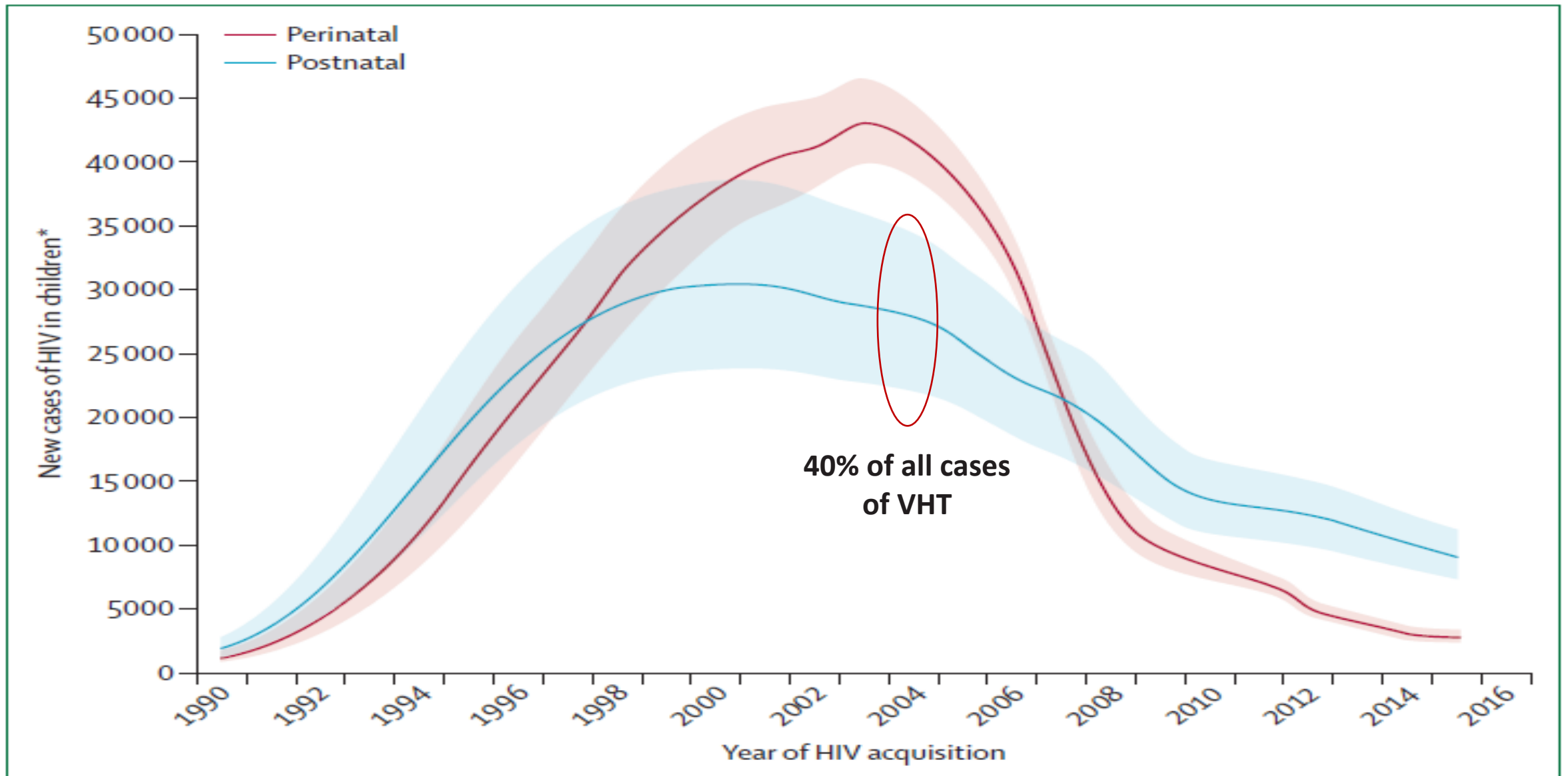
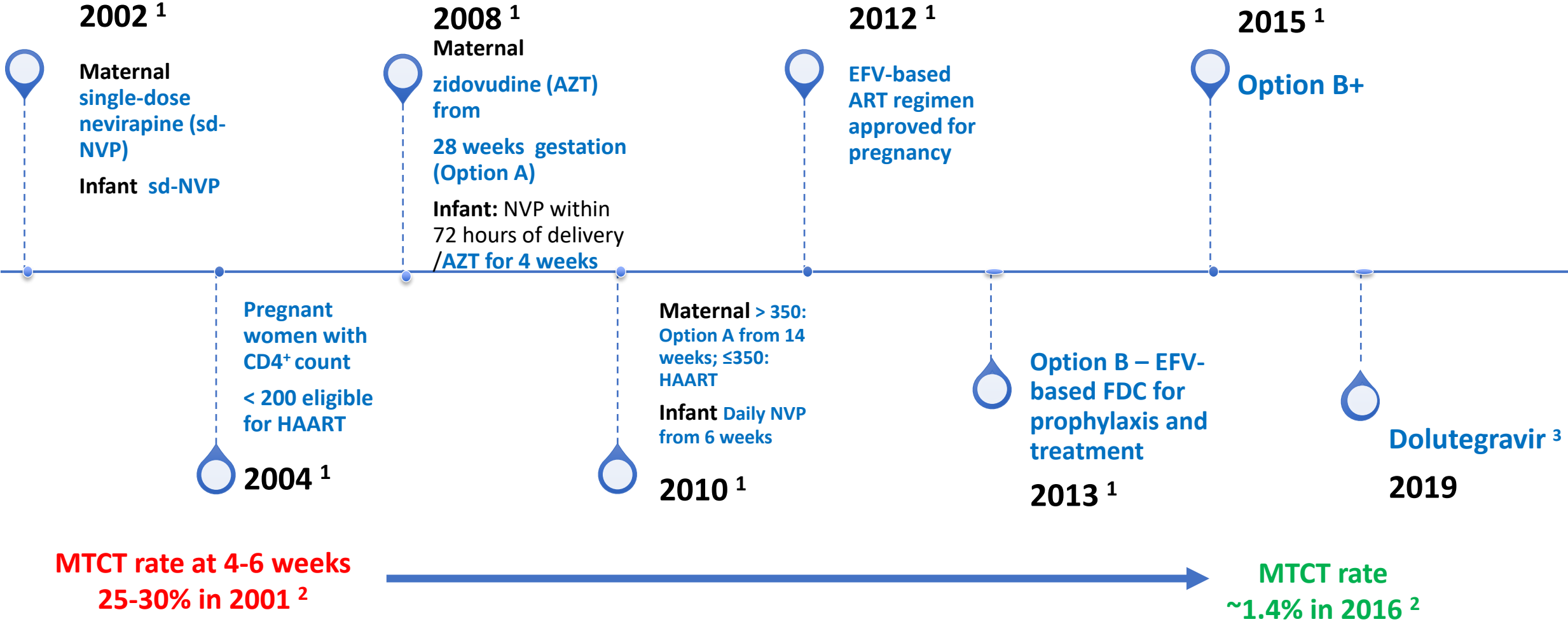


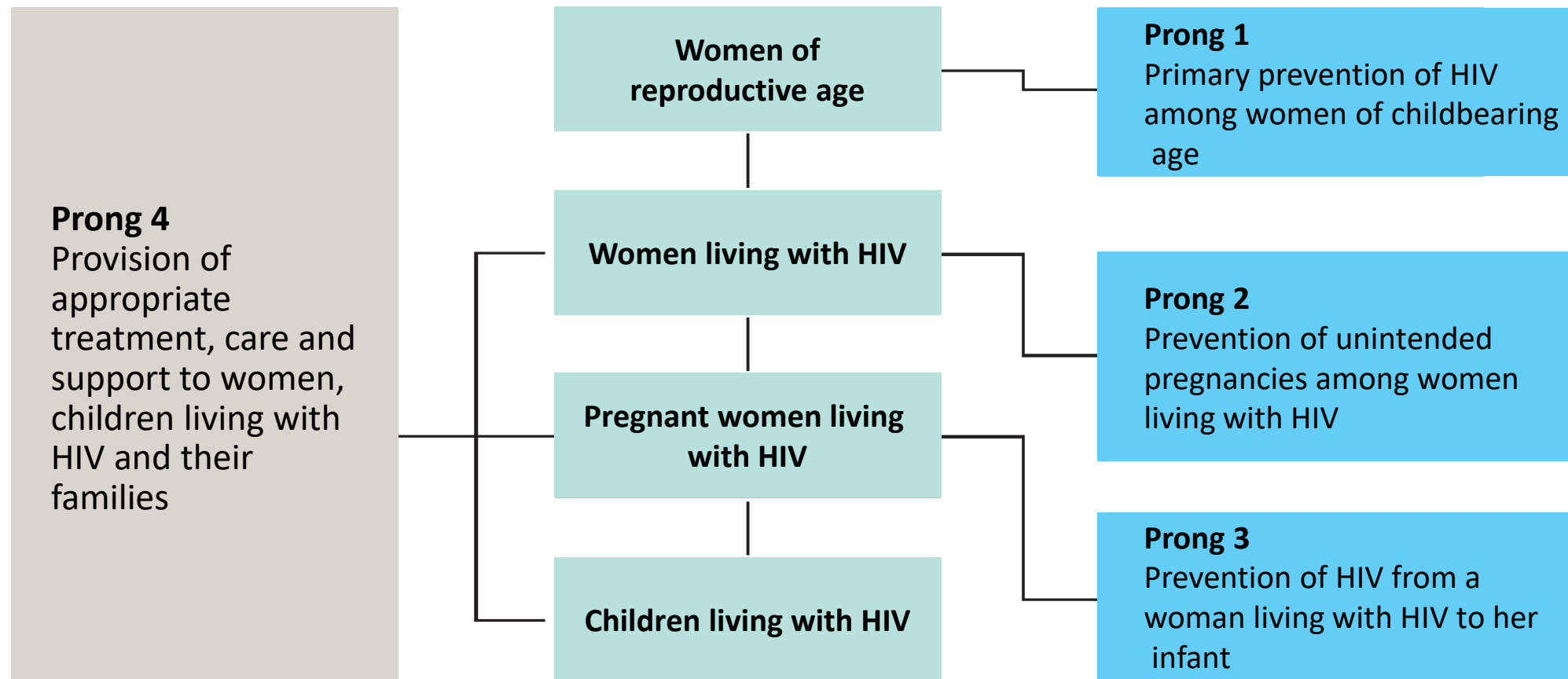
Figure from Van de Perre and Goga et al. The Lancet, 2021, Thembisa model

# EVOLUTION OF THE PMTCT PROGRAMME IN SOUTH AFRICA



1. Mnyani et al. Globalization and Health. 2014.;10:36  
 2. Goga A et al. South African Health Review. 2017: 137-146  
 3. Republic of South Africa. 2019 ART Clinical Guidelines for the Management of HIV in Adults, Pregnancy, Adolescents, Children, Infants and Neonates. October 2019. Updated March 2020. <https://www.health.gov.za/wp-content/uploads/2020/11/2019-art-guideline.pdf>

# FOUR PRONGS TO ELIMINATE MOTHER-TO-CHILD TRANSMISSION OF HIV AND IMPROVE MATERNAL HEALTH



# INTERVENTIONS TO TARGET FOR EMTCT

## MISSED OPPORTUNITIES FOR EMTCT

Mothers infected during pregnancy/BF ●

Mothers did not receive ART during pregnancy or BF ● ● ● ●

Mothers dropped off ART during pregnancy or BF ● ●

Mothers started ART late in pregnancy ● ● ● ● ●

Mothers started ART during pregnancy ● ● ● ●

Mothers started ART before pregnancy ●

## INTERVENTION DOMAINS

● HIV prevention services for women

● Timely access to HIV testing

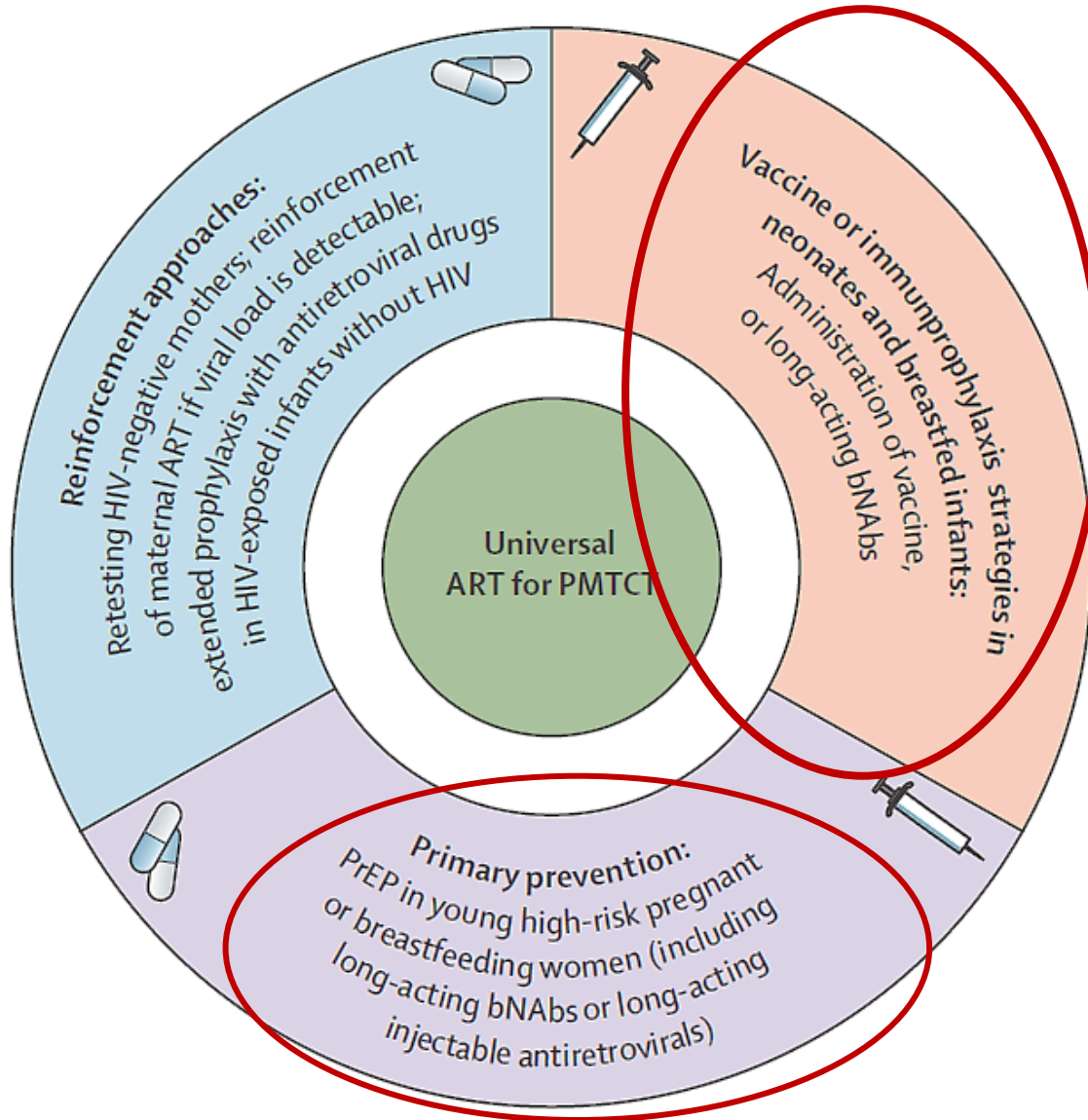
● Timely ART initiation

● Programme retention and adherence support

● Timely engagement in antenatal care

● Services for infants at highest risk of HIV acquisition

# INTERVENTIONS TO OPTIMIZE ELIMINATION OF MTCT



- Reinforce current approaches
- New strategies for primary prevention in mothers:
  - Oral PrEP
  - Long-acting PrEP
  - Dapivirine ring
- New strategies in infants:
  - Vaccination
  - Immunoprophylaxis

Figure from Van de Perre and Goga et al. The Lancet, 2021

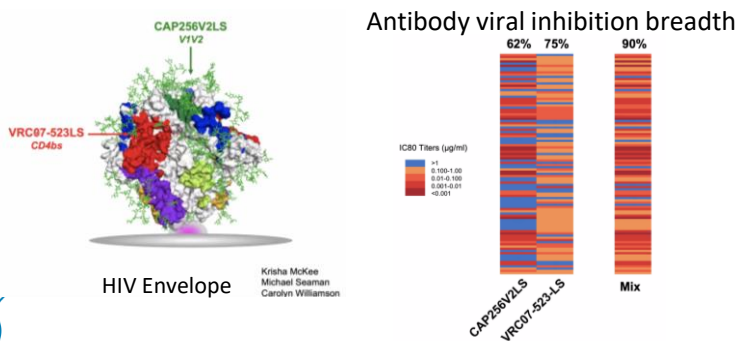
# FUTURE STRATEGIES FOR INFANTS

## Vaccines or broadly neutralising antibodies (bNAbs):

- Vaccine study: HVTN 135 - Avy Violari – led from Soweto (PHRU)
- bNAb studies:
  - IMPAACT P1112 study - Phase 1 bNAb study
  - IMPAACT 2037 study – 3 bNAbs – protocol under development
  - 2 SAMRC-sponsored studies: **PedMAB1**, PedMAB2 and SAMBULELO

**PedMAB:** 2 HIV-1 bNAbs given alone or in combination in breastfeeding HIV-exposed, uninfected infants in SA

- **Phase I** clinical trial: dose finding, safety and pharmacokinetics (PedMAB1)
- **Phase II** clinical trial: safety and pharmacokinetics (PedMAB2)

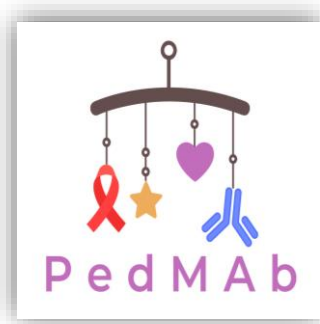


## **PedMAB hypothesis:**

Complementarity: two bNabs is better than one

- **VRC07.523LS** (directed to CD4 binding site)
- **CAP256.V2LS** (to V1V2 Glycan region)

# TRIALS CONDUCTED OR PLANNED: PedMab1



## Single blind, three-step, proof-of-concept, Phase I study:

Safety, tolerability and PK of HIV-1 bNAbs (LS version) administered s.c. in breastfeeding HIV exposed uninfected (HEU) neonates and infants receiving standard-of-care ARV.

### Step 1 : single bNAb

Group 1 : CAP256 (@<72h)

Arm 1: Dose 5  
Arm 2: Dose 10  
Arm 3: Dose 20

Group 2: VRC07-523 (@<72h)

Arm 4: Dose 20  
Arm 5: Dose 30

### Step 2 : combined bNAbs

Group 3: CAP256 + VRC07-523 (@<72h)

Arm 6: 10 + 30  
Arm 7: 20 + 30

### Step 3 : combined bNAbs multiple administrations

Group 3 continued: CAP256 + VRC07-523 (@8 weeks)

Arm 6b: 10 + 20  
Arm 7b: 20 + 20

Group 4: (upon PK of arms 2,3 for min 4 mos and arms 6,7 for min 2 mos) CAP256 + VRC07-523

Arm 8: 10 + 30 (@<72h) and 10 + 20 (TBD @ between 3 and 6 months)  
Arm 9: 20 + 30 (@<72h) and 20 + 20 (TBD @ between 3 and 6 months)

**Study population** is 8 HEU infants per Dose arm, but target 6 with full dataset.

**Doses** are in mg/kg body weight.

### **Recruitment**

**Step1** In each arm recruitment will proceed according to set inclusion/exclusion criteria, and sequentially with increasing doses

**Step 2** Group 3 will be initiated after completion of safety assessment of the single bNAb administration of Groups 1 and 2

**Step 3** In each arm recruitment will proceed according to inclusion/exclusion criteria and will be sequential

**Randomization** will occur sequentially, and will occur between Arms (i) 2 & 4, (ii) 3 & 5, (iii) 6 & 7 and (iv) 8 & 9.

Followed by **PedMab 2**

# SAMBULELO

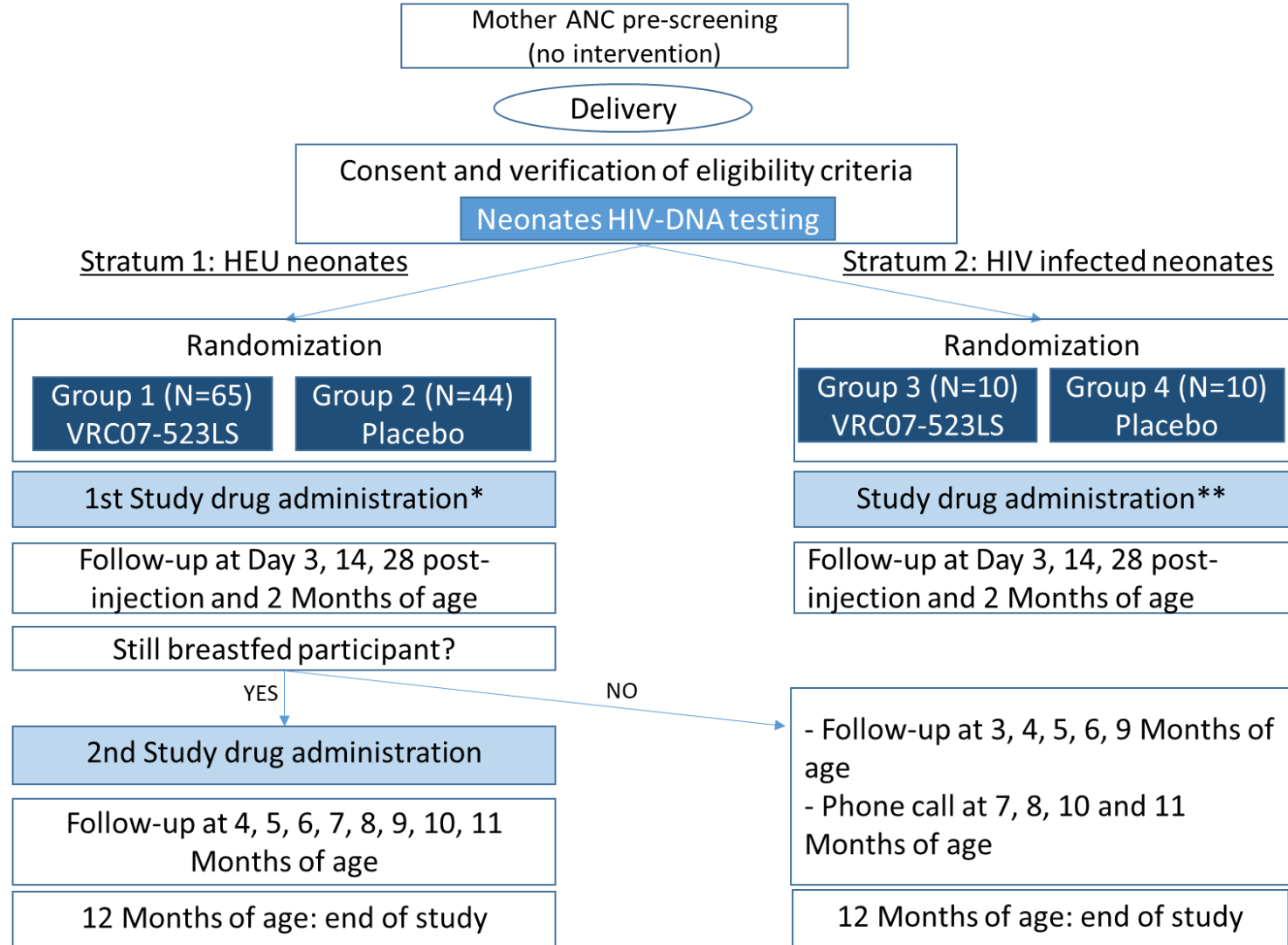
Source: Phillipe van der Perre and Ameena Goga; 2023

ANC visit  
(from 34 weeks  
gestation)

Within first 72  
hours of birth

Week 12

\*ARV prophylaxis initiation  
\*\*ARV initiation



# CONCLUSION



## Main issue or key question(s)?

- Intense efforts are needed to eliminate vertical HIV transmission (VHT)
- Comprehensive approach to address breastmilk transmission
- Remaining gaps relate to **delayed maternal HIV diagnosis, delayed referral into ART care and poor retention in ART care.**

# ACKNOWLEDGEMENTS



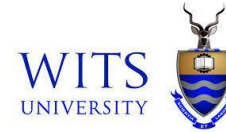
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