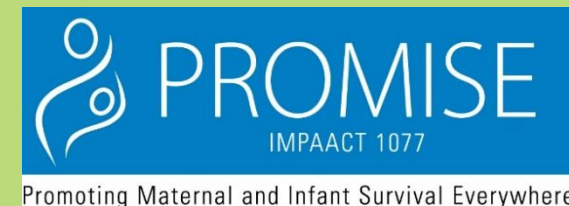


# Impact of tenofovir-containing triple antiretroviral therapy (ART) on bone mineral density in HIV-infected breastfeeding women in sub-Saharan Africa

Lynda Stranix-Chibanda for the PROMISE P1084s Study Team





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# Background and Rationale

- HIV-infected mothers in resource limited settings are at risk of low bone mineral density (BMD)
  - HIV infection increases risk of low BMD
  - BMD declines during lactation (3-10% at 12 months)
- Antiretroviral drug (ARV) use is also known to decrease BMD
  - Concern about adverse tenofovir (TDF) impact on bones
    - Low BMD reported in children, adolescents & adults on TDF-ART
    - Significant BMD declines seen even without HIV (on PrEP)

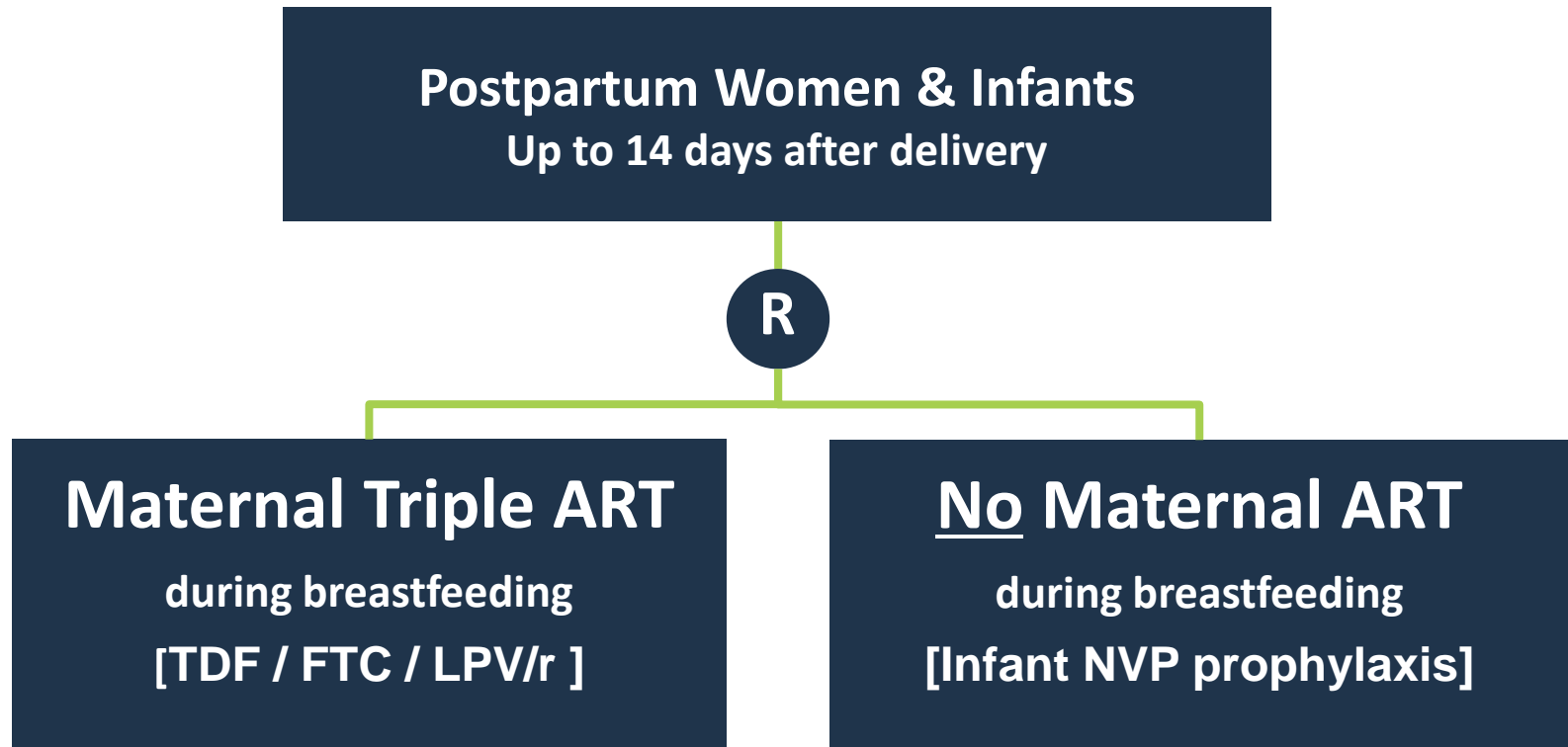
# Objective

- To address concerns about the potential adverse impact on BMD of ARV use during breastfeeding, we evaluated the effect of postnatal ARV exposure on BMD among HIV-infected breastfeeding women enrolled in the bone and kidney health sub-study of the PROMISE trial
  - IMPAACT P1084s : Postpartum Component

# Study design – Postpartum Component

- Sub-study of PROMISE
- Zimbabwe, Uganda, South Africa and Malawi
- A sub-set of HIV-infected women and their uninfected healthy infants who had been randomized in the PROMISE Postpartum Component were offered co-enrolment in P1084s
  - Did not meet existing criteria for ART initiation
  - ART not standard at the time

# PROMISE Postpartum Randomization



# Maternal BMD assessments

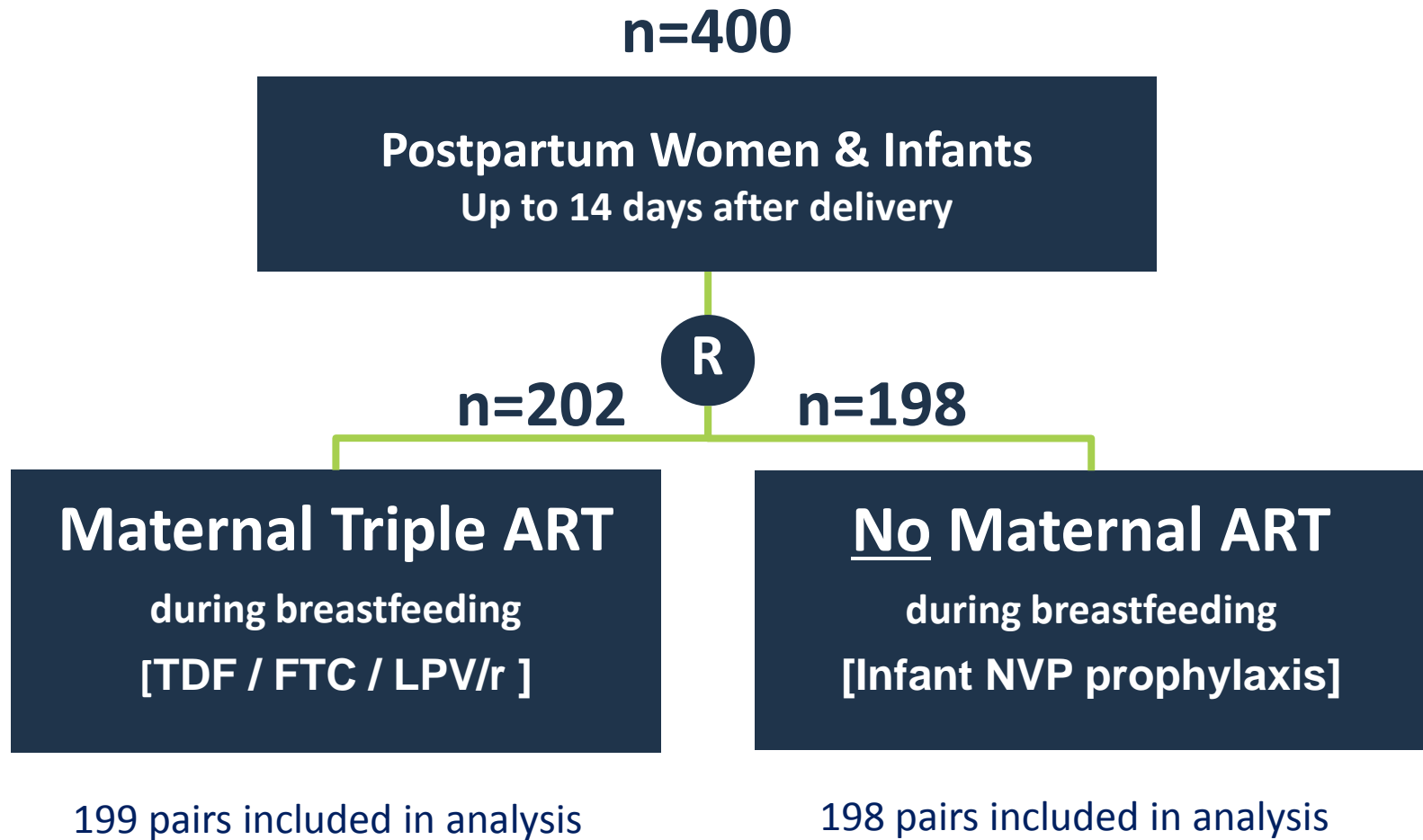
- BMD lumbar spine and hip
  - Baseline measurement soon after delivery (day 5-21, “week 1”)
  - 74 weeks after delivery (+/-6 weeks)
- Dual-energy x-ray absorptiometry (DXA)
- Standard procedures followed to minimise differences between the study sites
  - Webinar training and quality review/approval of first scan for each technician
  - Hologic scanners at all sites
  - Cross-calibration with phantom
  - DXA scans were read centrally

# Data Analysis

- Compare Maternal ART to no maternal ART for percent change in BMD between week 1 and week 74 at the lumbar spine (primary outcome) and hip
- Analysed by assigned strategy with a t-test
- Mean and 95% confidence interval (CI) are presented



# P1084s Postpartum Accrual

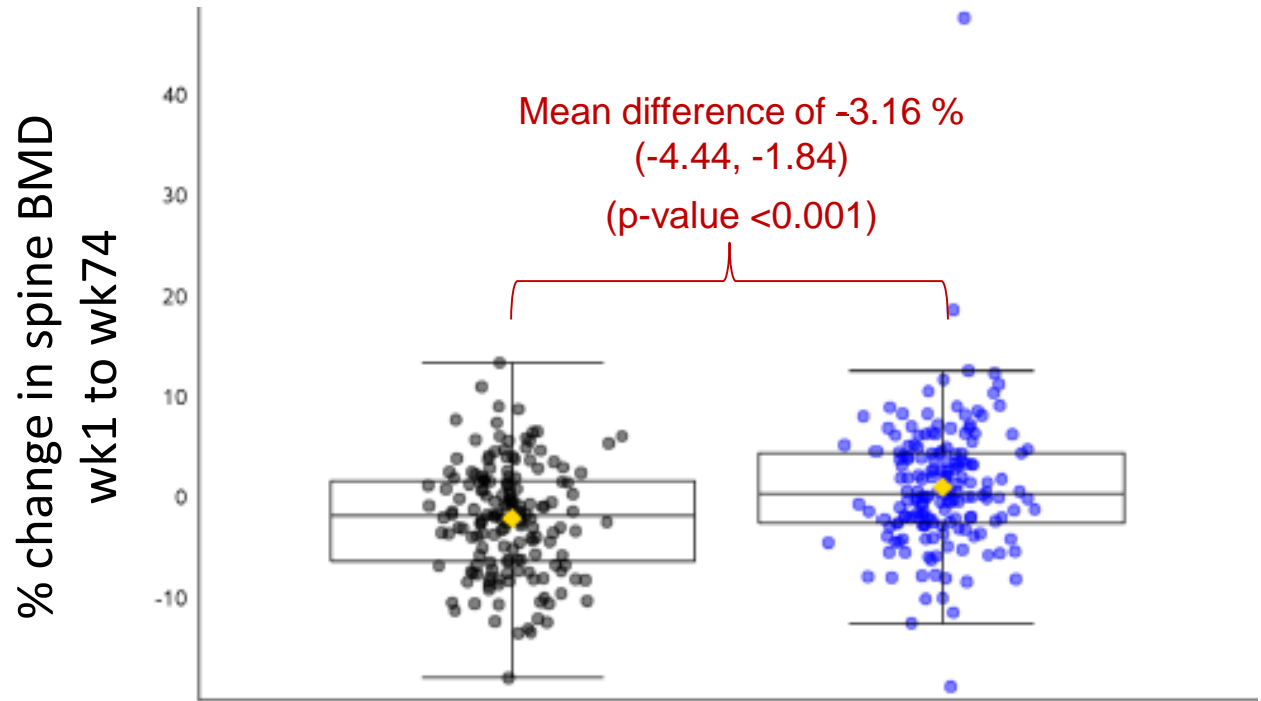


# Baseline Characteristics

Characteristic	Median	Q1 – Q3
Age	26.5 years	23.2 – 30.0
Body Mass Index	24.7 kg/m <sup>2</sup>	22.3 – 28.0
CD4 count	671.5 cells/mm <sup>3</sup>	544.0 – 857.5
Viral Load	400 copies/mL	86 – 2289

- At week 1 postpartum (6-14 days)
- Prior use of alcohol/tobacco 12%
- Median duration of breastfeeding 61 weeks
- No significant difference between study arms

# Lumbar spine BMD % decline week 1 to 74 greater in maternal ART study arm



**Maternal Triple ART**

N=167

**-2.06**  
(-2.9, -1.23)

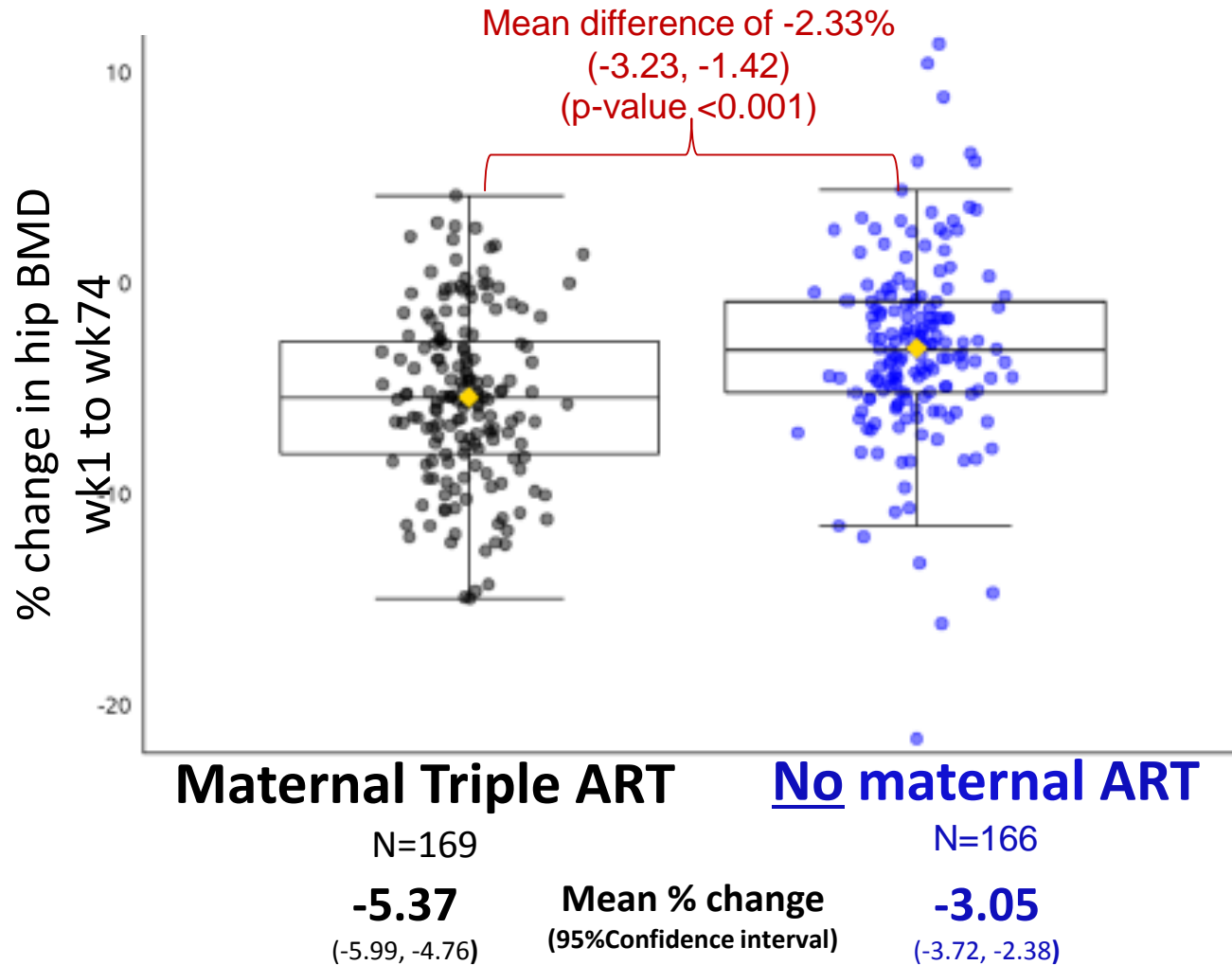
**No maternal ART**

N=170

**Mean % change**  
(95% Confidence Interval )

**+1.09**  
(0.11, 2.07)

# Hip BMD % decline week 1 to 74 greater in maternal ART study arm



# Conclusions

- BMD decline between week 1 and week 74 postpartum was statistically significantly greater among HIV-infected women receiving ART during breastfeeding compared to no ART
- These data indicate a negative effect on BMD of maternal ART use in the postpartum period
  - Not able to show if BMD returned to baseline after cessation of breastfeeding
- Highlight the importance of BMD in settings where breastfeeding is standard as we enter the Treat All era

# P1084s Protocol Team and Site Investigators

*The PROMISE study team gratefully acknowledges the dedication and commitment of the more than 3,500 mother-infants pairs without whom this study would not have been possible.*

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## PROMISE Parent Study Protocol Chairs

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