

# Recovery of Bone Mass in Women on Depo-Provera and TDF based ART Switched to B/F/TAF

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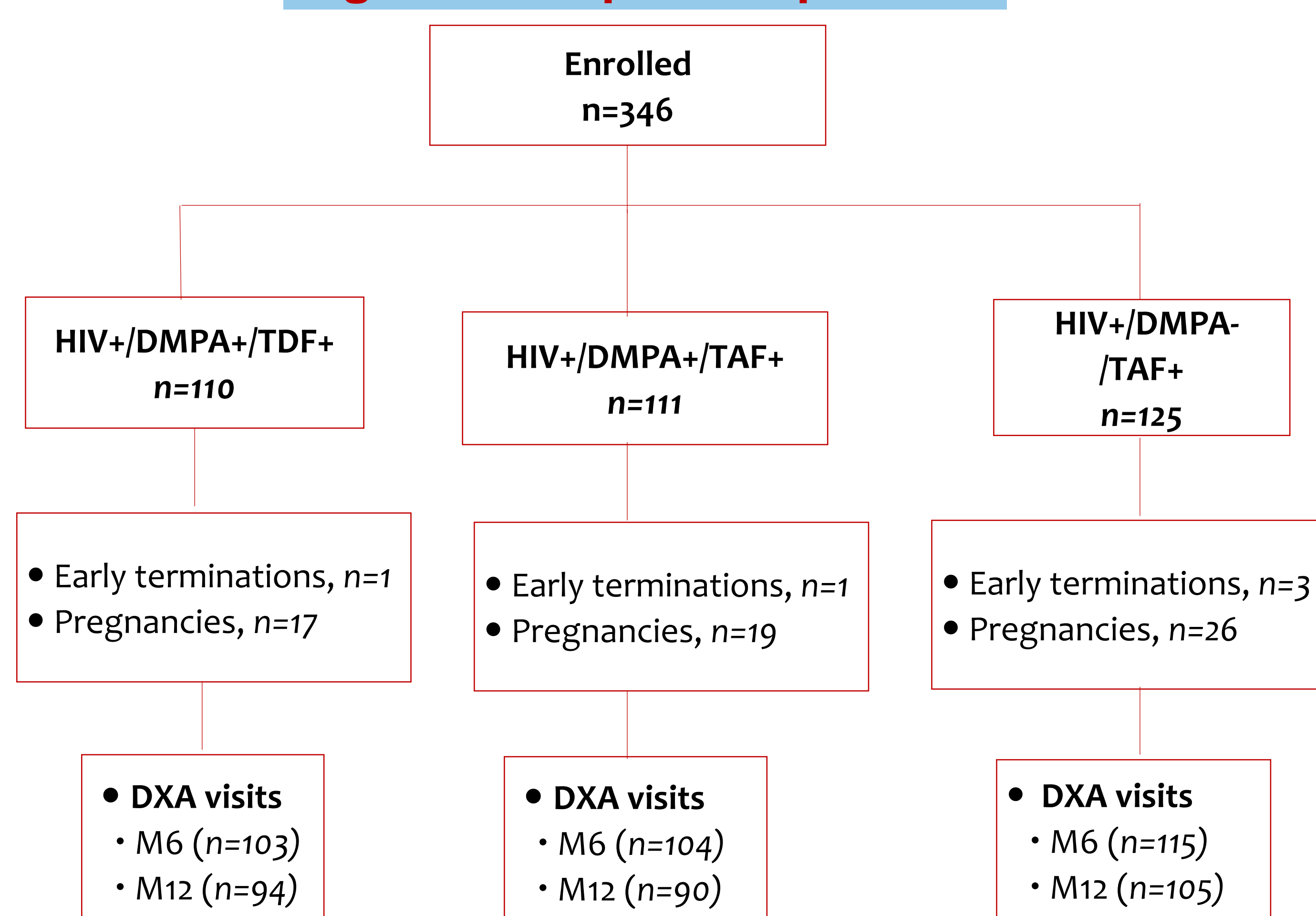
## Background

- We previously found that concomitant depot medroxyprogesterone acetate (DMPA-IM, Depo Provera) contraceptive use resulted in a doubling of BMD loss in women living with HIV (WLWH) initiating Tenofovir Disoproxil Fumarate (TDF) containing ART in the BONE: CARE study.
- We sought to determine whether BMD would recover when these women switched to Bictargravir /Emtricitabine / Tenofovir alafenamide (B/F/TAF; Biktarvy®).

## Methods

- WLWH on TDF and DMPA-IM were randomized in a 1:1 ratio to either continue on a TDF based ART regimen or switch to B/F/TAF (**Fig 1**).
- A third group of WLWH on TDF and using non-hormonal contraception were all offered B/F/TAF.
- Dual energy x-ray absorptiometry was used to measure BMD (lumbar spine (LS), total hip (TH) and femoral neck (FN)) at enrollment and at 6 and 12 months.
- Multivariable linear regression was used to assess differences in mean percent (%) change in BMD and BMD Z-scores

**Fig 1: Participant disposition**



## Results

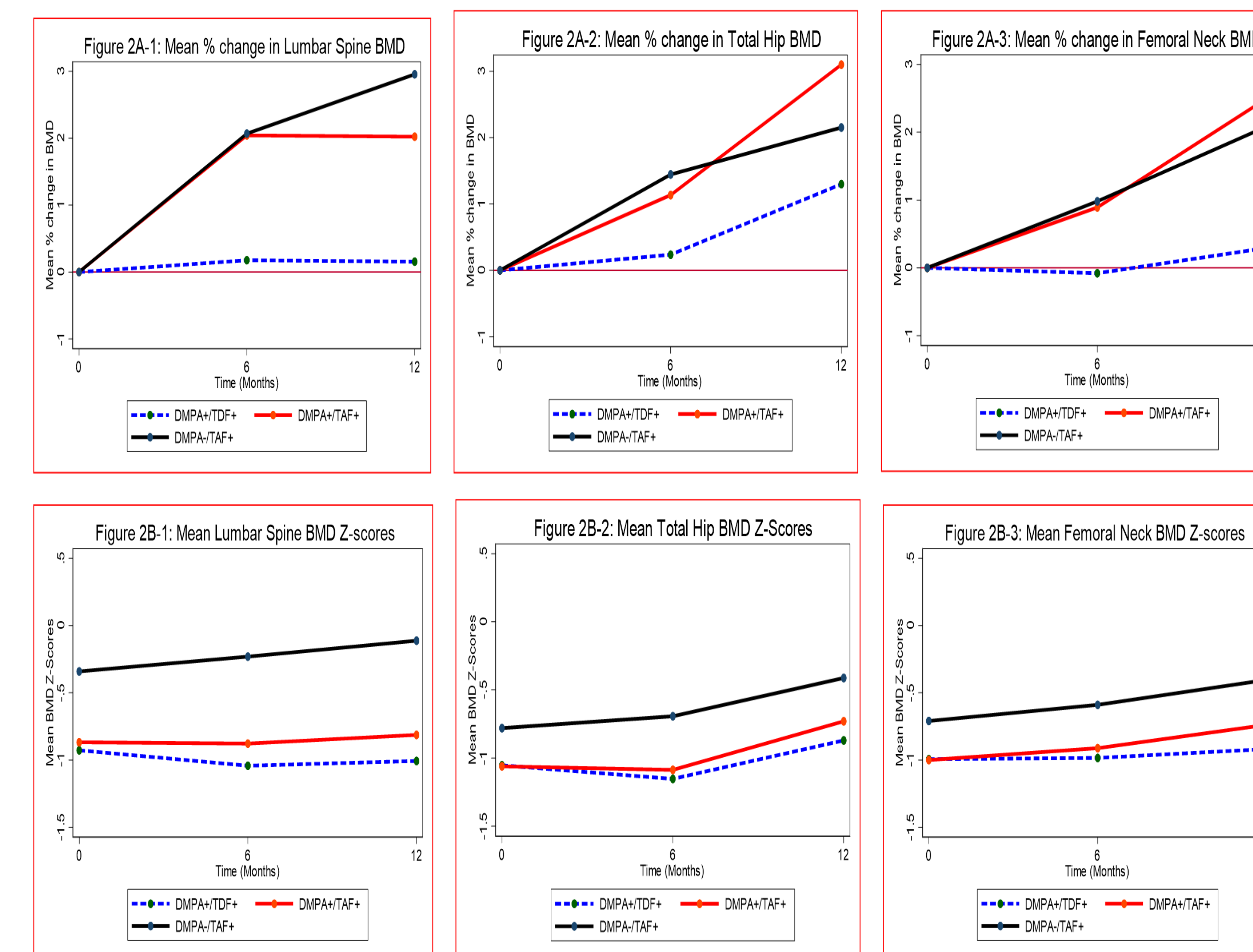
In women living with HIV receiving TDF-containing ART, switching to B/F/TAF was associated with significant improvement in mean % change in BMD underscoring the promising role of newer bone-sparing ART in minimizing comorbid risks among women with HIV.

- Both non-hormonal and DMPA groups who switched to B/F/TAF had significant improvement in mean % change in BMD post switch (**Fig 2A**). There were no significant differences between the two TAF except at the LS; % differences in mean BMD (-0.011% (-0.020, -0.001)) p=0.029 at the LS, (0.254% (1.022, 0.515)), p =0.516 at the TH, and (-0.277%(-1.361, 0.806)), P=0.615 at the FN.
- DMPA users had lower mean BMD Z-scores at baseline and these remained lower compared to non-hormonal users (**Fig 2B**) at the LS -0.805 (-1.017, -0.593) vs -0.131 (-0.321, 0.059), TH -0.835 (-1.050, -0.620) vs -0.432 (-0.639, -0.225), and FN -0.794 (-0.900, -0.590) vs -0.428 (-0.650, -0.206), P ≤ 0.021.

**Table: Participant Baseline Characteristics (N=346)**

Characteristic [n(%) or median (IQR)]	DMPA+/TDF+ (N=110)	DMPA+/TAF+ (N=111)	DMPA-/TAF+ (N=125)	P-value (Overall)	P-value (DMPA groups)
Age (years)	31.3 (28.3, 34.5)	31.4 (28.2, 34.7)	30.7 (27.3, 34.9)	0.808	0.947
Education (≥Secondary)	51 (46.3)	62 (55.9)	73 (58.4)	0.060	0.339
Married/cohabiting	72 (65.5)	66 (59.5)	81 (64.8)	0.727	0.496
Duration of DMPA use (Months)	38 (33, 72)	44 (34, 76)	N/A	N/A	0.122
Age at Menarche	14 (13, 15)	14 (13, 15)	14 (13, 15)	0.579	0.954
Ever pregnant	108 (98.2)	107 (96.4)	108 (86.4)	<0.001	0.414
Parity	2 (1, 3)	3 (2, 3)	2 (1, 3)	0.139	0.377
Moderate physical activity ≥ 150 minutes/ week	94 (94.9)	93 (94.9)	96 (96)	0.918	0.987
Vigorous physical activity ≥ 75 minutes/ week	10 (83.3)	17 (77.3)	8 (100)	0.336	0.676
Body Mass Index	26.2 (22.6, 29.4)	26.1 (22.9, 28.7)	24.5 (22.0, 27.7)	0.104	0.947

**Fig 2: Mean % Change in BMD and BMD Z-score**



## Conclusions

- Switching from TDF-containing ART to B/F/TAF was associated with significant improvement in mean % BMD.
- However, compared to non-hormonal users, DMPA-IM users had lower BMD Z-scores.
- Overall, we recommend use of B/F/TAF for improved long-term ART safety in women.
- Additional research should focus on the impact of alternative contraceptive options that can preserve BMD for women who are unable to use available non-hormonal contraceptive methods, as well as the clinical effect of lower BMD in women on DMPA-IM.



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