



**Changes in bone mineral density in men who
have sex with men on tenofovir disoproxil
fumarate-based HIV pre-exposure
prophylaxis: longitudinal cohort data**

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Acknowledgements

Potential conflicts of interest

- **John McAllister:** research support from Gilead & ViiV
- **Andrew Carr**
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BMD loss and TDF-based PrEP

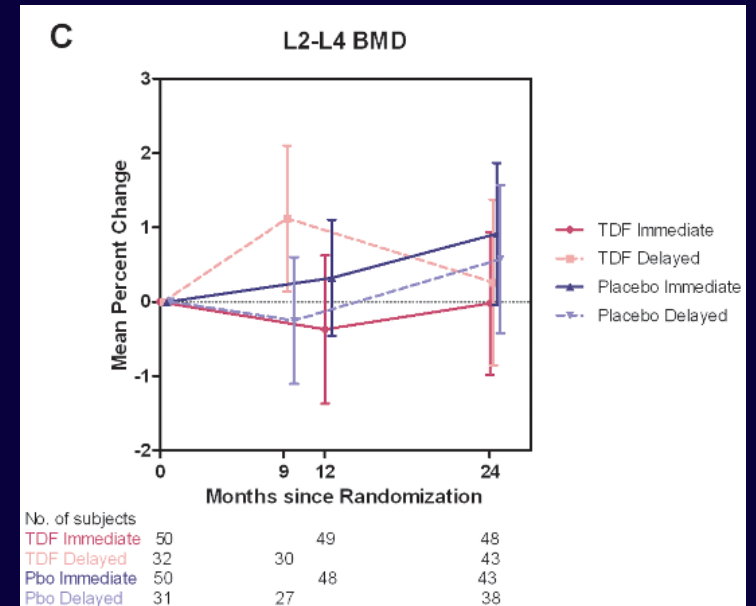
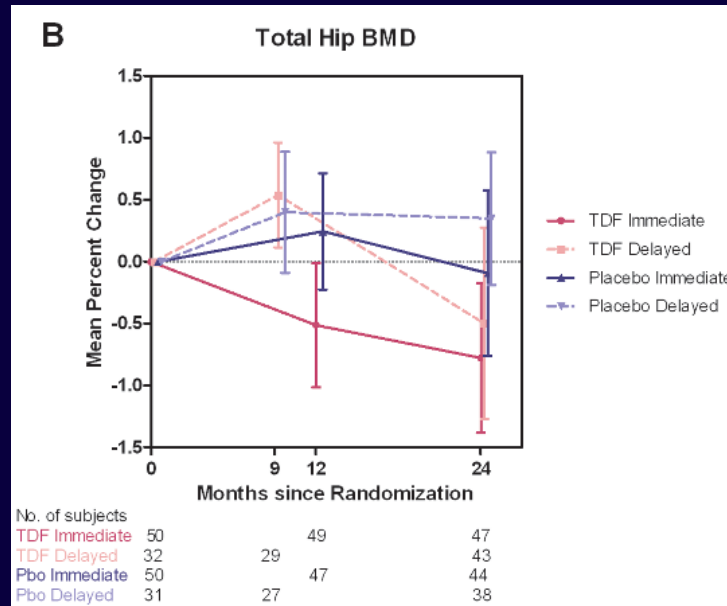
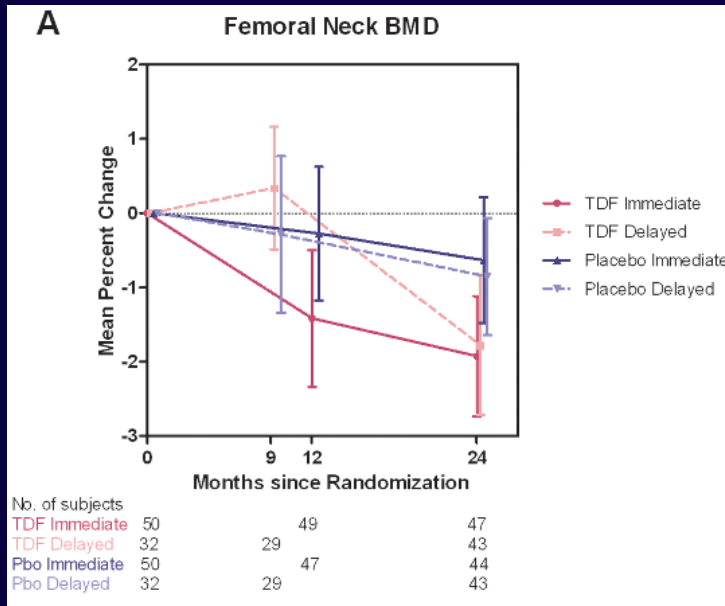
Background

- About 18,000 Australian MSM take daily TDF-FTC as PrEP¹
- We have previously shown $>3\%$ BMD loss ≥ 1 site in 82% & $>5\%$ in 53% of MSM (n=32) over 12 months²
- BMD loss of $\geq 3\%$ in the general population is associated with more than 2-fold greater risk of fracture³

BMD loss and TDF-based PrEP

Background

- One study of TDF-FTC PrEP in MSM found BMD loss >1% over 24 months²
- Data limited by imperfect adherence in many participants

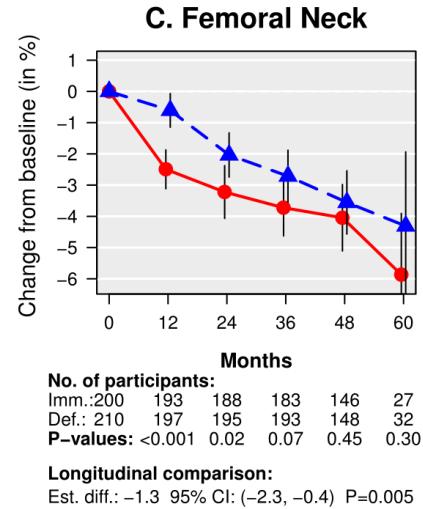
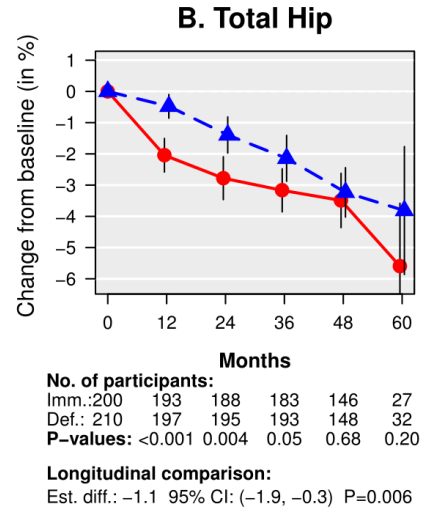
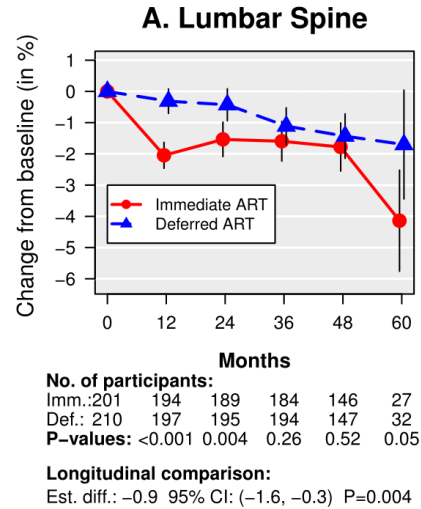


BMD loss and TDF-based PrEP

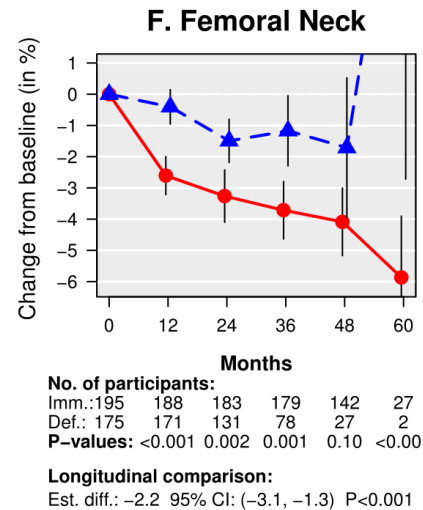
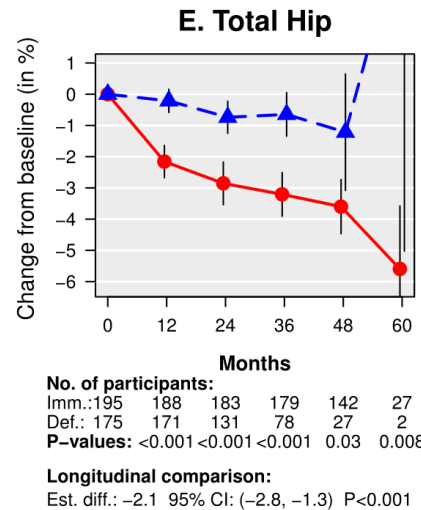
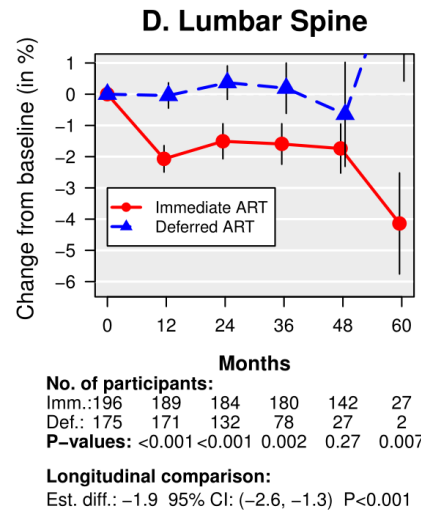
Background

- BMD loss appears to slow after that the first year of (predominantly) TDF-based ART

Intent-to-Treat Comparison
Imm. vs. Def. ART Groups



Immediate Group* vs.
Def. Censored at ART Start



BMD loss and TDF-based PrEP

Aims and Methods

- **To evaluate BMD changes in MSM who were adherent to PrEP, and in particular change after Year 1**
- **MSM initiating daily TDF-based PrEP through EPIC-NSW, a PrEP demonstration project, were offered annual BMD assessment**
- **BMD by DXA**
 - **lumbar spine (L1-L4) and femurs**
 - **baseline, Year 1 and Year 2**
 - **all DXAs performed on the one scanner**

BMD loss and TDF-based PrEP

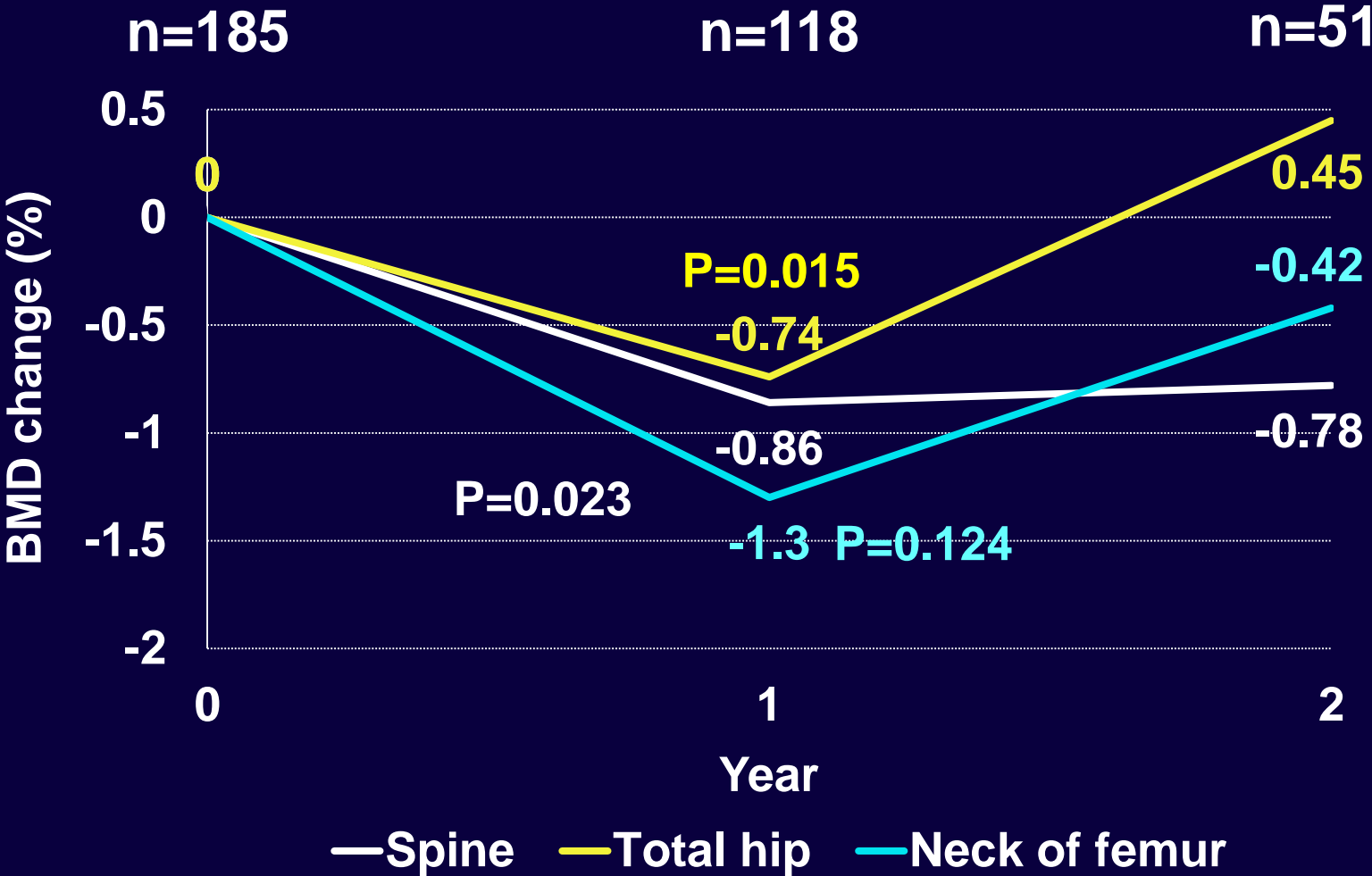
Results

- 485 men initiated daily TDF-based PrEP
 - 215 had baseline DXA; 30 excluded from analysis as combined PEP/PrEP duration >90 days
 - adherence almost 100% by pill returns

BMD Assessments	Baseline (n=185)	Year 1 (n=118)	Year 2 (n=51)
Age, mean (SD) yrs	37 (10)	38 (10)	42 (11)
PrEP duration, median (IQR) days	7 (1-16)	420 (391-449)	824 (776-885)
BMI, mean (SD) kg/m²	25 (4)	25 (4)	25 (4)
Cigarette smoking	5%	5%	5%
Alcohol >3 drinks/day	12%	12%	12%
Corticosteroid use	0	0	0

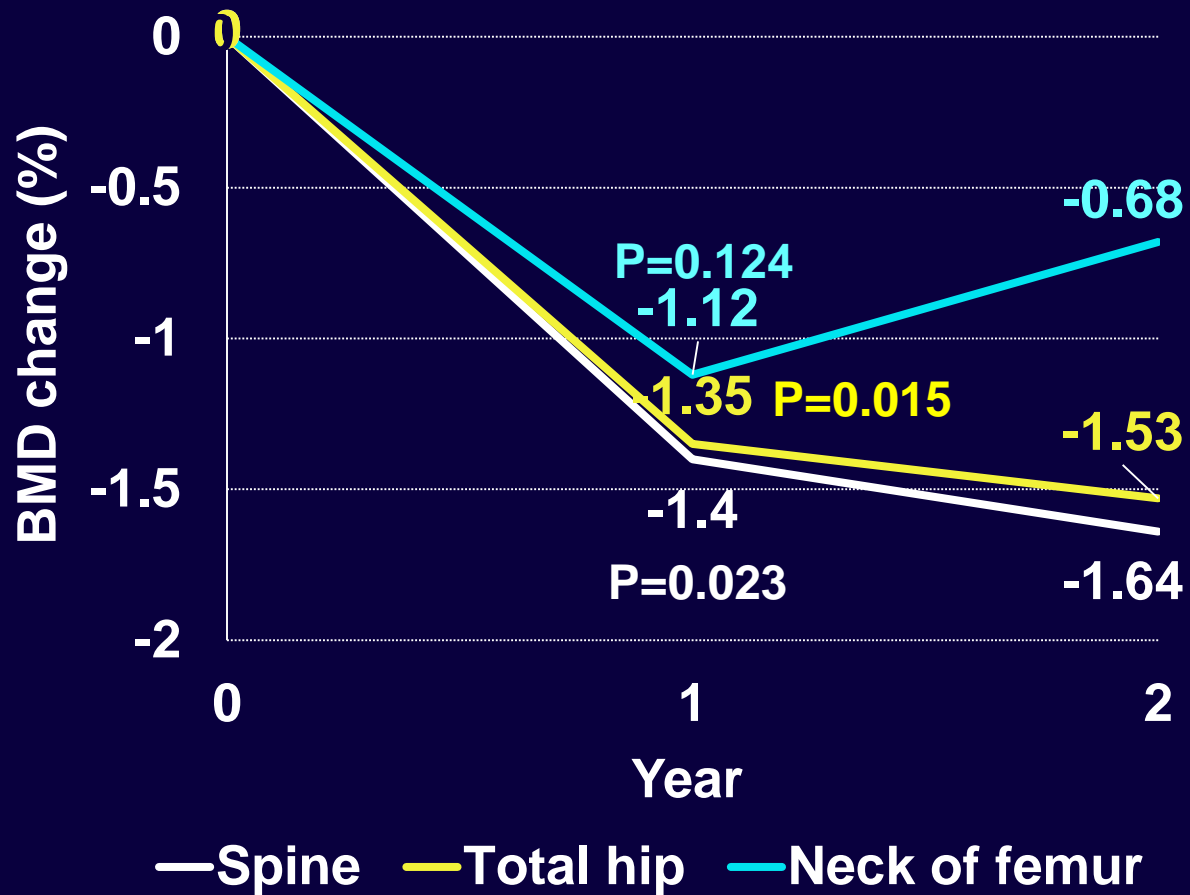
BMD loss and TDF-based PrEP

Results



BMD loss and TDF-based PrEP

Results for 51 participants with complete data through Year 2



Site	BMDΔ Yr1-2 (%)	P	>3% BMD decline to Yr 2
Spine	-0.24	0.50	31%
Total hip	-0.15	0.50	35%
Neck of femur	+0.45	0.15	24%

BMD loss and TDF-based PrEP

Limitations

- **Single-site**
- **All MSM**
- **Most participants declined follow-up testing**
- **Sample remains too small to determine predictors of change**

BMD loss and TDF-based PrEP

Conclusions

- **Over 2 years, significant numbers of MSM on daily TDF-based PrEP lost $\geq 3\%$ BMD at all measured sites**
- **As in HIV+ adults initiating TDF-based ART, BMD loss appeared to stabilise after 1 year**
- **DXA on TDF-based PrEP may be reasonable for those at higher fracture risk**

Acknowledgements

- **Participants**
- **Karl Hesse for assistance with data entry**
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