

Relationship between total hip (TH) BMD T-score and incidence of nonvertebral fracture (NVFX) with up to 10 years of Denosumab (Dmab) treatment

S Ferrari¹, S Adami³, J P Brown⁴, F Cosman⁵, E Czerwiński⁶, L H de Gregório⁷, J Malou⁸, J-Y Reginster⁹, N S Daizadeh², A Wang², R B Wagman² & E M Lewiecki¹⁰

▶ Author affiliations

The relationship between BMD T-score and FX risk has not been established in patients receiving osteoporosis therapy. In the FREEDOM Extension study, continuous DMAB therapy for up to 10 years increased BMD levels with no therapeutic plateau at lumbar spine or TH [Bone et al, ASBMR 2015]. Such improvements would only be meaningful if associated with FX reductions. We investigated the relationship between TH BMD T-score and NVFX in women who received DMAB during FREEDOM and those who continued to receive DMAB in FREEDOM Extension ($N=3612$; maximum of 10 years continuous treatment). A repeated-measures model was used to estimate each subject's BMD T-score time course during the entire study, and estimate BMD at each unique NVFX time among all subjects at risk. A Cox's proportional-hazards model was then fitted, with time to NVFX as response and TH BMD T-score time course a time dependent covariate. Higher TH BMD T-scores achieved during up to 10 years of DMAB therapy were associated with lower incidence of NVFX (Table); similar findings have been reported for treatment-naïve patients [Austin *JBMR* 2015]. For example, TH BMD T-scores of -2.5 and -1.5 were associated with 1-year NVFX incidence of approximately 3.0 and 2.0%, respectively. T-scores above -1.5 appear to have minimal impact on further reducing NVFX incidence. This inverse relationship was maintained regardless of age or prior FX (data not shown). Our findings suggest that BMD level achieved during treatment is more important for FX risk reduction than the magnitude of the change from baseline levels. Moreover, our findings support the concept that a specific T-score, perhaps in the range of -2.0 to -1.5, can be considered a therapeutic goal with DMAB treatment.

TH BMD T-score	Estimated 1-year NVFX incidence (%) [95% CI]
-3.0	4.03 [2.94, 5.11]
-2.5	3.01 [2.34, 3.67]
-2.0	2.38 [1.87, 2.89]
-1.5	2.00 [1.55, 2.45]
-1.0	1.78 [1.35, 2.21]
-0.5	1.68 [1.22, 2.14]