

Sex & Gender Differences in Bone Health

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Scope & Definition

- Sex & gender differences in normal bone development and maintenance
- Bone health = resistance to fracture [mechanical strength]
 - Size
 - Micro-architecture
 - Mineralization

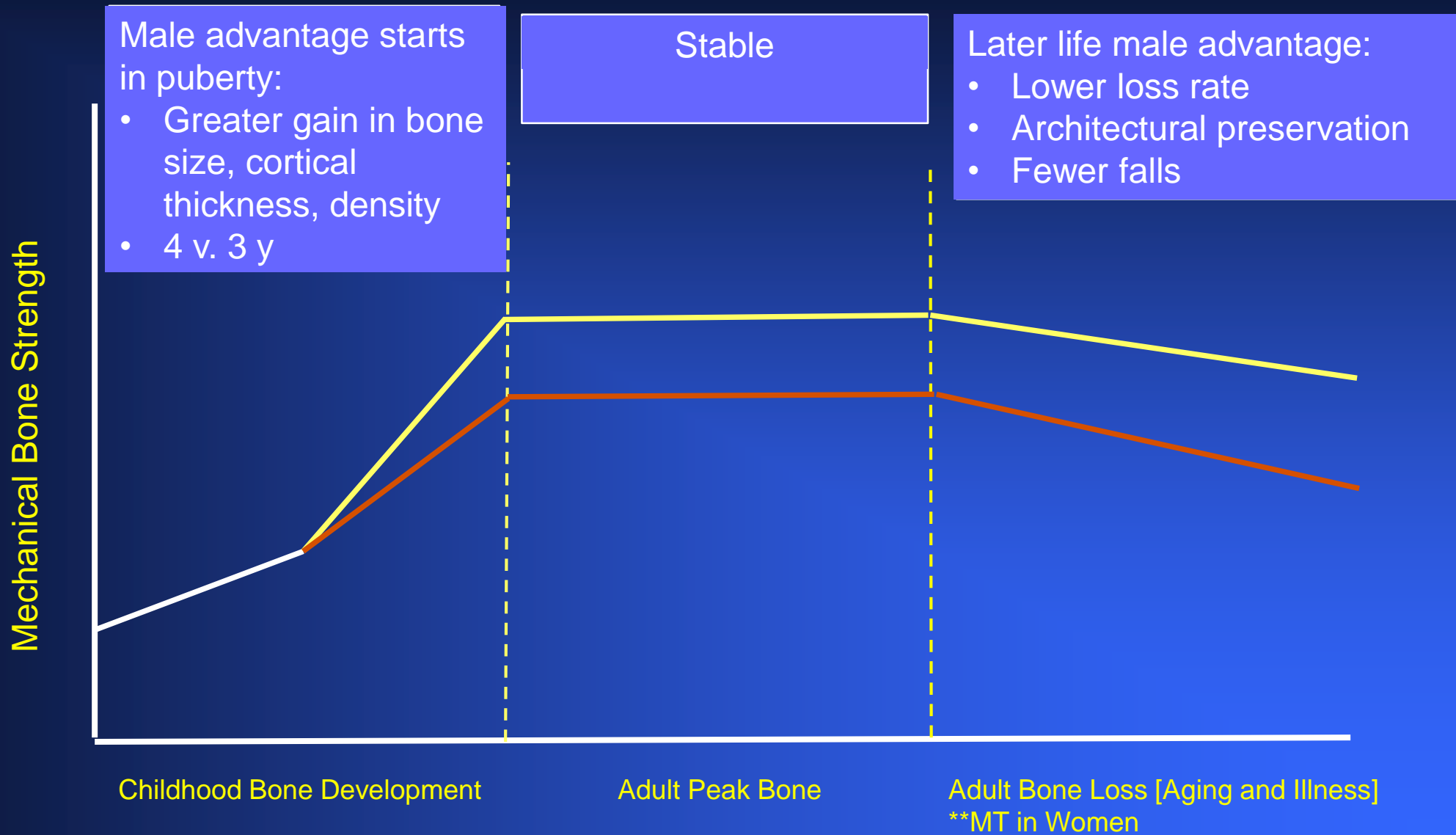
Sex & Gender Differences in Bone Health

Bottom Line:

- Females fracture more than males do
- Females survive hip fracture better than males do
- Important note: Most data from White samples
- May be racial/ethnic variation in sex & gender differences
 - e.g., fracture ratio may similar in Black females & males

Why are males bone-advantaged?

- Sex & gender differences in bone development and maintenance across the life span



Why do males grow more bone?

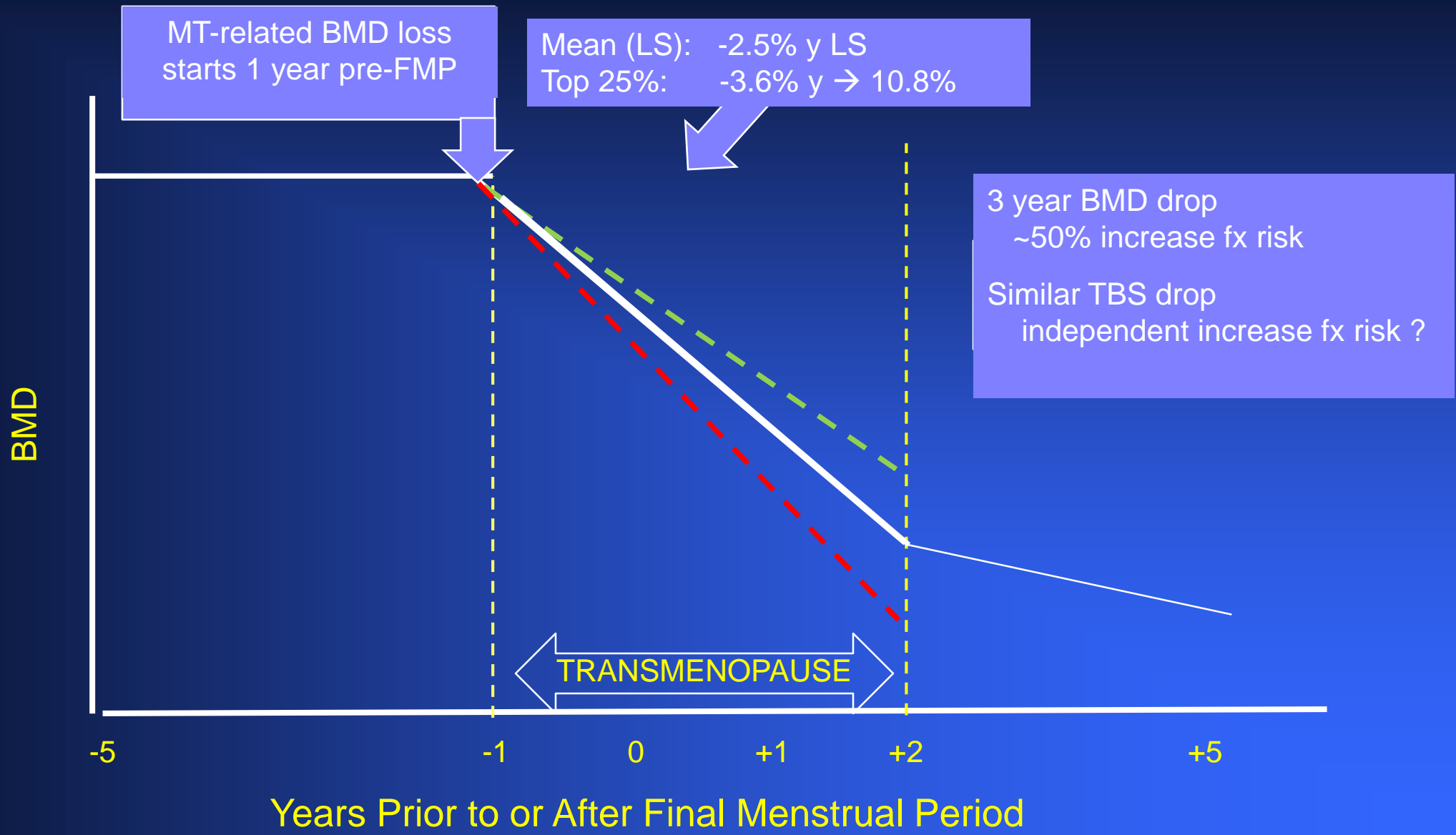
Some determinants of peak bone strength
are male advantaged

Non-malleable & sex-similar

- Heritability (~ 60-80%)
- Estrogens
- IGF 1

Malleable & male advantaged

- PA: more + ballistic + possibly more responsive
- Greater calcium intake
- PA + Ca interaction

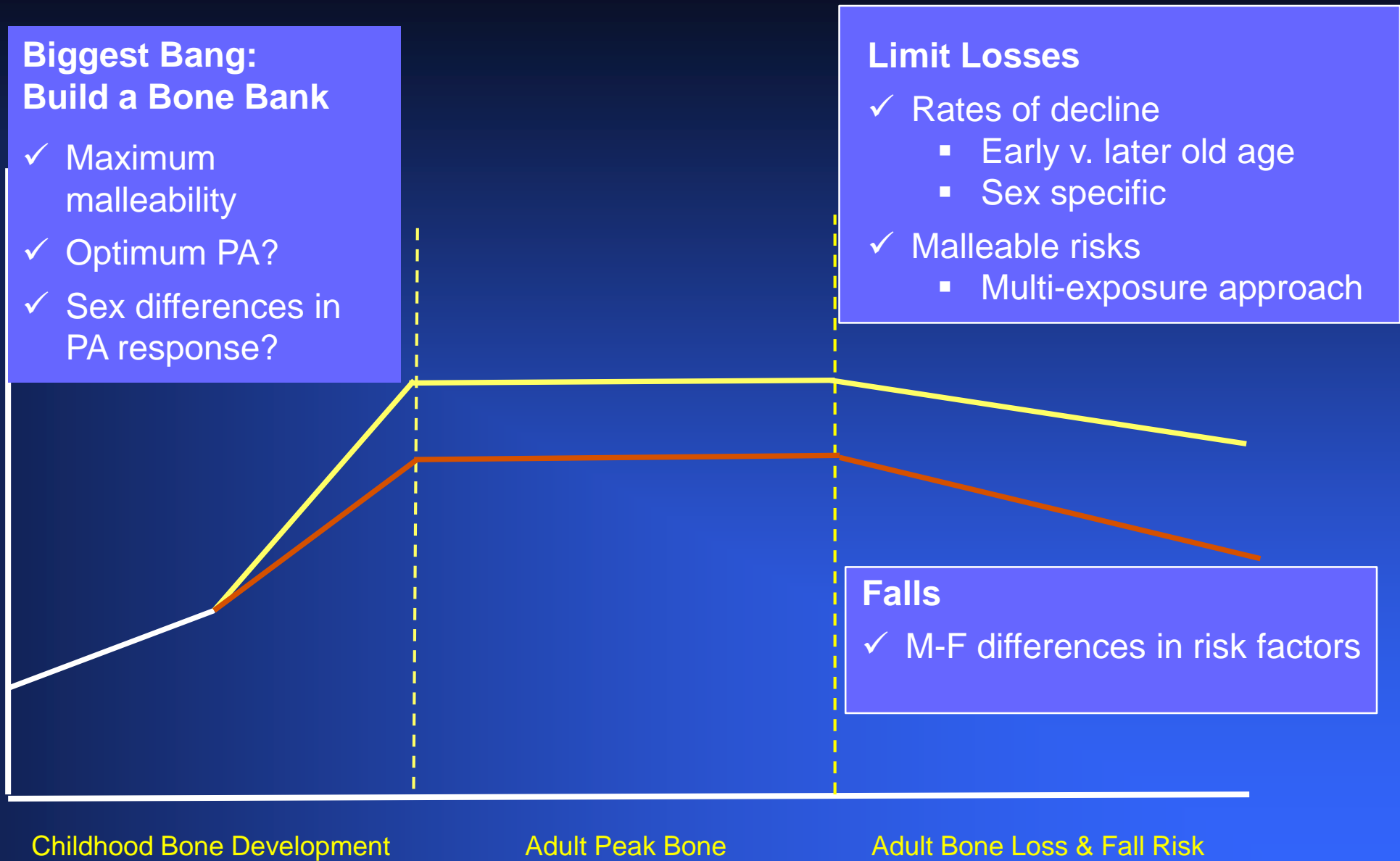


Male Disadvantage After Hip Fracture

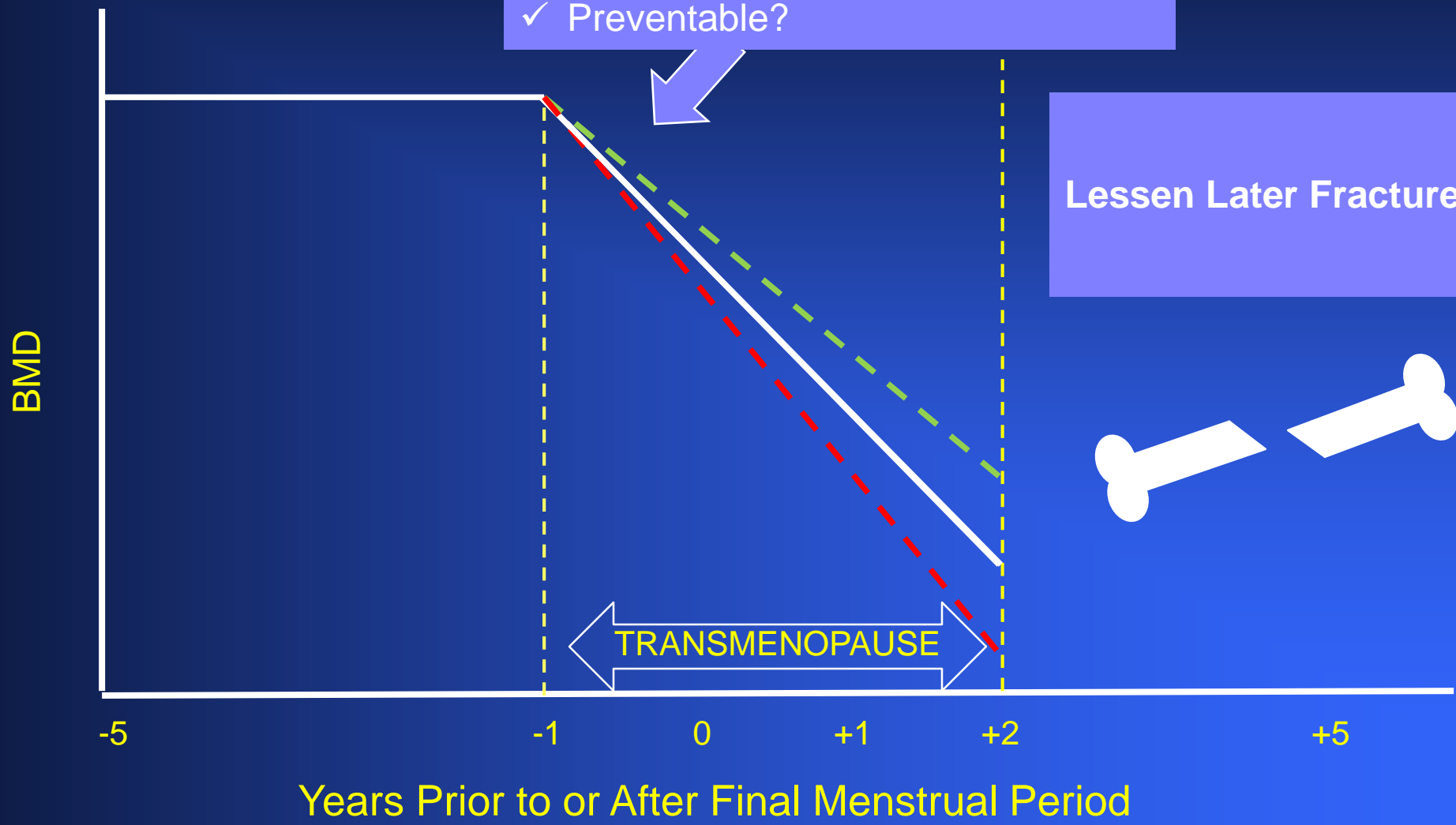
After hip fracture...

- Male mortality higher
- Men with hip fracture
 - ✓ Have more comorbidities
 - ✓ Higher delirium risk
 - ✓ Higher risk of death w/in 3 months

Maximizing Bone Strength & Preventing Fracture



Equally Big Bang?
Preventing MT-Related Loss
✓ Onset and amt likely predictable
✓ Preventable?



Lessen Later Fractures?

