# Osteoporosis Management Algorithm
### Adapted from *Recommendations for Evaluation and Management of Bone Disease in HIV. CID 2015; 60: 1242-1251*

## Diagnosis
Any of the following

 * Fragility fracture: occurs spontaneously or from minor trauma (such as a fall from ground level), most often of the spine (can be asymptomatic), hip, or wrist

 * Bone mineral density (BMD) measurement at the hip, spine, or femoral neck on dual-energy x-ray absorptiometry (DXA) testing with a t-score lower than -2.5

 * No BMD measurement by 10-year risk of osteoporotic fracture by FRAX^ ≥20%

## Treatment
* Behavioral modifications: physical activity, moderate alcohol use, smoking cessation

 * Optimize calcium intake: consider supplementation (1000mg daily of calcium carbonate) if limited intake of dairy or leafy green vegetables but must take 6hrs before or 2hrs after dolutegravir

 * Optimize vitamin D: goal 25-OH-vitamin D >30 ng/mL

 * Once vitamin D is normal, consider bisphosphonate treatment such as alendronate 70mg PO weekly (take on empty stomach, remain upright for 30min after taking)

 * Consider modifying ART (below)

### If not taking tenofovir DF or a protease inhibitor (such as darunavir, lopinavir, ritonavir)
 * No ART adjustment necessary

### If taking tenofovir DF or a protease inhibitor (such as darunavir, lopinavir, ritonavir)
 * If on tenofovir DF: consider adjusting medications (such as substituting for abacavir)
* If on a protease inhibitor (less important than tenofovir adjustment): consider adjusting medications (such as substituting for dolutegravir)

^FRAX calculator for Botswana and other select countries in sub-Saharan Africa is available here: https://frax.shef.ac.uk/frax/tool.aspx?country=82
(note, select "yes" for the "secondary osteoporosis" question for PWH)