

## \*Osteoporosis in HIV and Aging

- Since older individuals with HIV, even those on effective ART, may suffer accelerated bone loss, screening for and treatment of osteoporosis should be done.
- Since vitamin D deficiency is prevalent in older HIV-infected persons, screening for vitamin D deficiency is warranted.

Osteoporotic bone disease affects persons with HIV infection disproportionately when compared to others of similar age. Bone density is lower, and the fracture rate as much as 60% higher, in HIV-infected individuals (Arnsten et al. 2007; Triant et al. 2008; Womack et al. 2011). This may be explained by conventional risk factors that are more common among those with HIV, such as low body weight, cigarette smoking, alcoholism, hypogonadism, opiate use, and vitamin D deficiency. However, the proinflammatory state of HIV infection and direct viral effects on bone formation and resorption likely play a role as well (Walker Harris et al. 2012). HIV/AIDS has been added to the most recent iteration of the National Osteoporosis Foundation (NOF) Guidelines as a risk factor for osteoporosis (2013). Additionally, studies have demonstrated a high rate of secondary causes of osteoporosis in individuals with HIV (Walker Harris et al 2012).

In regards to screening for abnormal bone mineral density, the 2013 Primary Care Guidelines for the Management of Persons Infected with HIV recommend dual-X-ray absorptiometry (DXA) scan for all HIV-infected women who are post-menopausal and all HIV-infected men over the age of 50 (Aberg et al. 2014), though

the cost-effectiveness of this strategy has not been well defined. Screening should be considered for all HIV-infected individuals who fall into these risk groups and should be prioritized for those with additional risk factors, such as those listed above. An evaluation for secondary causes of osteoporosis is also important, including a screen for vitamin D deficiency.

Treatment strategies for osteoporosis in HIV-infected persons are similar to those for HIV-uninfected persons. Good bone health depends first and foremost on good nutrition, with adequate intake of calcium and vitamin D, as well as avoidance of serious systemic illness, smoking and alcohol (McComsey et al. 2010; Qaseem et al. 2008). Patients should receive nutritional counseling if osteoporotic, and vitamin D supplementation if deficient. Weight bearing and strengthening exercise should be advised. Attempts to modify known risk factors should be encouraged. Osteoporosis should be treated aggressively with conventional modalities appropriate to the individual patient and as outlined by national guidelines (AHRQ Guideline Summary 2007; Qaseem et al. 2008; NOF Guidelines 2013). Androgen supplementation should be an individual decision between patient and provider and was not deliberated by the Panel. Similarly, decisions for changing antiretroviral therapy due to decreased

bone mineral density should be individualized.

## References

AHRQ Guideline Summary, 2007. Management of osteoporosis: a national clinical guideline. Available at:

<http://www.guideline.gov/browse/archive.aspx>

Arnsten JH, Freeman R, Howard AA, Floris-Moore M, Lo Y, Klein RS. Decreased bone mineral density and increased fracture risk in aging men with or at risk for HIV infection. *AIDS*. 2007; 21(5):617-23.

Klein RS, Lo Y, Santoro N, Dobs AS. Androgen levels in older men who have or who are at risk of acquiring HIV infection. *Clinical Infect Dis*. 2005;41(12):1794-803.

McComsey GA, Tebas P, Shane E, Yin MT, Overton ET, Huang JS, et al. Bone disease in HIV infection: a practical review and recommendations for HIV care providers. *Clinical Infect Dis*. 2010;51(8):937-46.

Mueller NJ, Fux CA, Ledergerber B, Elzi L, Schmid P, Dang T, et al. High prevalence of severe vitamin D deficiency in combined antiretroviral therapy-naive and successfully treated Swiss HIV patients. *AIDS*. 2010;24(8):1127-34.

National Osteoporosis Foundation, Clinician's Guide to Prevention and Treatment of Osteoporosis, 2013. Available at:

<http://nof.org/files/nof/public/content/resource/913/files/580.pdf>