

## Study finds HIV-positive young men at risk of low bone mass

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Young men being treated for HIV are more likely to experience low bone mass than are other men their age, according to results from a research network supported by the National Institutes of Health. The findings indicate that physicians who care for these patients should monitor them regularly for signs of bone thinning, which could foretell a risk for fractures. The young men in the study did not have HIV at birth and had been diagnosed with HIV an average of two years earlier.

Earlier studies have shown that adults with HIV also have [bone loss](#) and increased risk for [bone fractures](#), associated in part with the use of certain anti-HIV medications.

"The [young men](#) in the study had been taking anti-HIV medications for a comparatively short time, yet they still had lower [bone mineral density](#) than other men their age," said co-author Bill G. Kapogiannis, M.D., of the Pediatric, Adolescent, and Maternal AIDS Branch of the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). "These findings suggest a short-term impact of [HIV therapy](#) on bone at ages when people are still growing and building bone mass. This raises concern about the risk of fracture as they age."

For the HIV-infected young men, on average, [bone density](#) in the hip was 5-8 percent lower, and in the spine 2-4 percent lower, than for [study participants](#) without HIV.

The study was not designed to determine the cause of the bone loss and

cannot rule out the possibility that low bone mass preceded the young men's [HIV infection](#). The researchers noted that all the young men had several risk factors for bone loss, such as tobacco and alcohol use, and low intake of calcium and vitamin D (needed to absorb calcium.)

The study was conducted by lead authors Kathleen Mulligan, Ph.D., of the University of California, San Francisco; Grace Aldrovandi, M.D., of Children's Hospital Los Angeles and the University of Southern California; Dr. Kapogiannis, and seven other researchers affiliated with the NICHD-supported Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN).

Their findings appear in *Clinical Infectious Diseases*.

Additional funding was provided by the NIH's National Institute on Drug Abuse, the National Center for Research Resources and the National Center for Advancing Translational Sciences.

Some 250 teens and young men (14 to 25 years old) participated in the study. About 88 percent of the study participants identified themselves as African-American or Hispanic and all lived in urban areas. The participants underwent whole body scans to measure their bone density as well as the distribution of fat and lean muscle mass in certain regions of their bodies. Participants also answered questions about their medical history, and diet, exercise and other lifestyle habits.

The researchers calculated the density of bones in the body as a whole, as well as the spine and hipbones. These bones are more susceptible than other bones to bone loss, Dr. Mulligan explained. The researchers also assessed total body fat and amounts of fat in the arms, legs and trunk.

The researchers found that the HIV-positive participants who had not yet begun treatment tended to have less body fat than either their

counterparts on medication or the study's HIV-negative participants.

Both bone density and the calcium and other mineral content of bones tended to be lowest in participants taking medication for HIV. Youth with HIV who had not begun treatment had higher bone mass levels than HIV positive youth who were on anti-HIV regimens, but lower [bone mass](#) levels than youth who did not have HIV. Participants' responses to questions about diet indicated that at least half of them did not consume sufficient calcium or vitamin D. The researchers also found that more than 30 percent of all the participants smoked. Half said they did not get regular exercise. Smoking and lack of exercise can contribute to weaker bones. The study authors noted that additional studies are needed to follow HIV-positive young men long term to determine whether [bone loss](#) during adolescence increases the risk of fractures later in life.

"None of the young men we saw is in immediate risk of fracture," said Dr. Mulligan. "However, our results indicated that it would be a good idea for young men newly diagnosed with HIV to make sure they exercise, get enough calcium and vitamin D, quit smoking and limit alcohol consumption."

Researchers in the ATN Network previously found that vitamin D supplements might help protect the bones of people taking the anti-HIV drug tenofovir.

Provided by NIH/National Institute of Child Health and Human Development

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