Commentary: Challenges to current and future bone health in young women living with HIV:

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The growing ageing population across the globe presents challenges to individuals, communities and health care systems. It is predicted that the fastest rise in adults aged 65-years and over coming decades will be in the African continent. Alongside the growing ageing population, will be a consequent rise in non-communicable chronic diseases of ageing, such as musculoskeletal diseases osteoporosis, osteoarthritis and sarcopenia. Musculoskeletal diseases result in more lives lost due to disability than cancer and cardiac disease combined and are present in a third of multimorbidity cases across the globe. Understanding the burden of non-communicable and communicable diseases, and their contribution to multimorbidity is key to limit future burden of disease. Osteoporotic fractures cause significant morbidity and mortality and are predicted to double in low- and middle-income countries by 2050. Whilst in higher-income countries there are comprehensive data regarding risk factors for fracture, there are few data in sub-Saharan Africa, and lessons from work in Africa show it would be naive to assume risk factors necessarily translate to low- and middle- income settings.

In sub-Saharan Africa in particular, HIV prevalence is high and with the success of antiretroviral treatment, is now considered a chronic communicable disease of ageing and presents multiple challenges to the skeleton at different stages of the lifecourse. The acquisition and maintenance of peak bone mass is crucial for prevention of future fracture. The longevity of antiretroviral treatments, often initiated in the growing and reproductive years, may therefore present challenges to the ageing skeleton through prevention or acquisition of peak bone mass, or causing pre-menopausal bone loss. The second challenge during reproductive years are the use of contraceptives, particularly those that impact estrogen status such as the injectable contraceptive depo provera, which is a popular choice of contraceptive in SSA. Given the growing evidence of bone loss on initiation of HIV, and increasing use of injectable contraceptives, in this issue, Matovu and colleagues, explore the combined effect of initiation of ART treatment with the use of depo provera. In a four-arm, randomised controlled trial of the use of tenovovir disoproxil fumate (TDF) and intramuscular depo medroxyprogesterone acetate (DPMA-IM), in women living with HIV (WLWH) and a control group of women living without HIV, the authors studied change in bone density (a surrogate for fracture risk) over a 6, 12 and 24-month period. As previously reported by others, the greatest loss of bone in women taking TDF was over the first 12-months of TDF treatment. Losses were observed at the lumbar spine, femoral neck and total hip. In those women taking TDF and DMPA-IM there was double the loss of bone, with upto 4% loss, compared to 1-2% in the women taking TDF without DMPA-IM. Losses relative to controls, and WLWH not initiating treatment, were much greater. These data are the first to test, in an RCT, the dual effect of TDF and DMPA-IM initiation in young-adult women. The magnitudes of losses are in excess of menopausal bone loss, which is usually 1-2% per annum. The implications of these losses at or around the time of peak bone mass may have significant implications for the bone health of WLWH in later years. IF they already begin menopause with a deficit in bone, losing more during menopause, will likely make them at much higher fracture risk in later life. Not studied in the current paper, is the cumulative effects then of pregnancy and lactation. Nabwire et al. recently reported, also in Ugandan WLWH initiated on TDF during pregnancy, that bone loss during lactation is exacerbated compared to controls, and that the usual post-weaning recovery of bone, did not occur. Thus lactation presents a third challenge to the skeleton, at a time when bone mass should be being maximised and retained for menopause and later life.

Together, the growing body of evidence from SSA, in young adult women, points to a triple challenge for bone health. It is imperative, as pointed out by Matovu et al., that alternative, acceptable solutions for ‘bone-sparing’ contraceptives are found in these communities to prevent or minimise the impact of treatments on health in later life. Furthermore, data are required to link the implications of these and other’s findings on fracture risk in later life. This will allow affordable solutions for prevention of osteoporosis and fractures in WLWH in the coming years.