DMPA and bone mineral density loss

**The Question:** Does depot medroxyprogesterone acetate decrease bone mineral density?

**Past Studies** A substantial number of studies, largely cross-sectional, have suggested that loss of bone mineral density (BMD) occurs in current users of the progestin-only injectable contraceptive depot medroxyprogesterone acetate (DMPA). This loss likely indicates that ovarian estradiol production is lowered during use of this contraceptive.

**This Study** In this prospective cohort evaluation, researchers assessed BMD in 183 DMPA users and 274 non-users over a 3-year period. Bone density in women ages 18 to 39 was measured via dual-energy x-ray absorptiometry every 6 months. The results indicated marked BMD loss among DMPA users when compared with those women who did not take DMPA. Specifically, women on DMPA experienced a loss of 1.12% femoral bone density per year and non-users lost an annual 0.05%. Further, spine bone density loss among DMPA users was 0.87% per year, while non-users experienced a 0.40% gain.

However, the 110 women who discontinued DMPA during the study showed significant increases in BMD. Mean annualized gains were 1.41% and 1.03% at the spine and hip, respectively. Moreover, women who stopped DMPA injections for 30 months had bone density values similar to those of non-users.

The researchers concluded that DMPA use is strongly linked to BMD loss. However, if DMPA is discontinued, bone loss is reversible.

**Find This Study** Scholes D, LaCroix AZ, Ichikawa LE, et al. September 2002 issue of *Epidemiology*; abstract online at http://www.nichd.nih.gov/CPR/crh/crh.htm.

**Who May Be Affected by These Findings?** Women taking DMPA.

**Expert Commentary** The results of this important longitudinal study remind us that the skeleton is a dynamic organ and that cross-sectional observations may not adequately assess long-term clinical impact.

Premenopausal women whose endogenous estrogen levels decline, including DMPA users and lactating women, do experience short-term declines in BMD. However, this study (consistent with others assessing BMD following DMPA discontinuation) clarifies that bone loss is reversible following discontinuation of progestin-only injectable contraception. In fact, Orr-Walker’s study of postmenopausal...
women in New Zealand demonstrated that DMPA use in reproductive-aged women is not associated with postmenopausal osteopenia or osteoporosis.\(^1\)

It is important to note that DMPA users—and all women for that matter—should be encouraged to avoid smoking, consume adequate amounts of calcium, and engage in consistent weight-bearing exercises.

**No study has found** any long-term impact of DMPA use on **bone mineral density** or fracture risk. BMD concerns should not prevent clinicians from prescribing DMPA to appropriate candidates.

**The Bottom Line** Clinicians providing contraceptive services should recognize that the use of the highly effective and convenient DMPA does not appear to cause a lasting negative impact on BMD. In fact, no study has found evidence of any long-term impact of DMPA use on BMD or fracture risk. High-priority areas for future research include assessment of BMD in adolescents following use of DMPA, in women who have used DMPA for extended periods of time, and in higher-risk DMPA users, including smokers and those with a positive family history of osteoporosis. Based on the current evidence, however—including the reassuring findings reported in this study—BMD concerns should not prevent clinicians from prescribing DMPA to appropriate candidates.

**Reference**