

Letters

“The pill” suppresses adolescent bone growth, no matter the estrogen dose

We appreciated the recent *CMAJ* article about adolescent contraception.¹ We especially support the statement that long-acting reversible contraceptive agents, such as implants and intrauterine devices, are ideally first-line methods for adolescents because of improved adherence and bone safety.

However, the authors’ assertion that “oral contraceptives containing less than 30 µg ethinyl estradiol may be insufficient for optimizing bone density” is not well supported by data. Their cited study is a randomized trial that was funded by a pharmaceutical company. It reported that, over 1 year, 45% of participants in the continuous or cyclic combined hormonal contraceptives (CHC) arms discontinued treatment. Moreover, the study did not use a parallel design, since the extended CHC arm administered a higher ethinyl estradiol dose than the cyclic CHC arm.²

In contrast, a prospective, population-based, 2-year observational study of Canadian adolescents aged 16–19 years showed that those who used CHC had decreased gains in femoral bone mineral density compared with those who did not use CHC.³ Loss of bone mineral density on CHC was unrelated to dose of ethinyl estradiol.³ Earlier data had already shown the lack of a dose effect from CHC estrogen on bone;

patients on 20–35 µg ethinyl estradiol CHC formulations all had suppressed markers of bone remodelling.⁴ Our recent meta-analysis comparing adolescents who did and did not use CHC also showed impaired accrual of bone mineral density among CHC users across a wide range of doses.⁵

Why might adolescents taking CHC have lower gains toward peak bone mineral density than those not taking CHC? Bone resorption and formation are tightly coupled physiologic processes. As with the lower doses of estrogen in menopausal hormone therapy, CHC suppress bone resorption and therefore prevent the necessary bone growth that adolescents require to reach peak bone mineral density.

Thus, when carefully weighing the benefits and risks of adolescent use of CHC, such as “the pill,” patch or vaginal ring, clinicians need to consider its universal negative effect on bone growth, rather than focusing on its estrogen dose.

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