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### Thinking Beyond Testosterone: Estradiol and male health

When we think of male hormone health, testosterone is probably the first hormone that comes to mind. Testosterone plays a key role in the development of male reproductive tissues such as the testis and prostate, as well as promoting secondary sexual characteristics, stimulating increased muscle and bone mass and the growth of body hair. Testosterone is essential for health and well-being, strength and stamina, strong bones and a healthy libido and sexual response. Maintaining normal testosterone levels in aging men has been shown to improve many parameters which are thought to reduce cardiovascular disease risk, such as increased lean body mass, decreased fat mass, decreased total cholesterol and glycemic control. A strong testosterone level is essential for optimal health, but recent research has also shown that estradiol also plays an important role in men's health.

The impact of estrogens in men is well studied. Longitudinal studies have shown that low estradiol levels are associated with an increased rate of bone loss. The Osteoporotic Fractures in Men (MrOS) study revealed a threefold increased risk for osteoporotic fractures in men with a combination of low testosterone, low estradiol and high sex hormone binding globulin (the protein that binds testosterone and estradiol in the bloodstream). Even in men, estrogen appears to be necessary for normal bone development.

When thinking about sexual health, we know that testosterone is important for driving libido and sexual response. However, new research is illustrating the importance of estradiol in this area. Studies of castrated men suggest that estradiol may play a role with respect to erectile function, independent from libido. In the absence of testosterone, most men reported a profound decrease in sexual interest, but still were able to achieve erections sufficient for penetration. This may be due to estradiol's ability to induce nitric oxide and vascular endothelial growth factor expression, which stimulate vasodilation that contributes to a healthy erection. One study examined erections in 25 (presurgical) individuals undergoing male-to-female (MtF) gender reassignment. After taking transdermal estrogen in addition to androgen suppression with an androgen agonist, all "men" reported no change in erectile function after hormone therapy. These studies suggest that in the absence of testosterone, men may be less interested in sex, but sufficient estradiol may stimulate erections.

Why do some men have higher estradiol levels than others? Estradiol levels will likely be higher in men with an elevated BMI, as obesity can increase aromatase activity in subcutaneous and gluteal fat. Men of African descent tend to have higher estradiol levels. Genetic differences in aromatization pathways can also result in elevated levels of estradiol, and poor liver health can result in the inhibition of hepatic metabolism of estradiol.

While estradiol is proving to play an important role in hormone health for men, it's important to remember that too much estradiol in relation to progesterone is not healthy. Estradiol is a proliferative hormone and can lead to an enlarged prostate. Therefore, it is as imperative to maintain a healthy Pg/E2 ratio in men as it is in women. As we continue to learn new and exciting ways that each hormone impacts health, we must always consider that the hormones of the endocrine system are designed to work in concert with one another.

Join us for a webinar on Andropause: Testosterone and beyond as we take an in depth look at the role of testosterone as well as other hormones on men's health. The webinar will be on Tuesday, July 10th at 9:00am PST. To register today, click here: <https://www1.gotomeeting.com/register/551229560>.

### References:

Kacker R, Traish AM, Morgentaler A. Estrogens in men: clinical implications for sexual function and the treatment of testosterone deficiency **J Sex Med.** 2012 Jun;**9(6):1681-96.**

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