

# Smoking after menopause may increase sex hormone levels

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A recent study accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology & Metabolism* (JCEM) found that postmenopausal women who smoke have higher androgen and estrogen levels than non-smoking women, with sex hormone levels being highest in heavy smokers.

Previous studies have shown that high levels of estrogens and androgens are potential risk factors for breast and endometrial cancer as well as type 2 diabetes. Cigarette [smoking](#) is a well established risk factor for chronic diseases such as cancer, cardiovascular disease and diabetes, but earlier studies examining the relationship between smoking and sex [hormone levels](#) have yielded inconsistent results. This new cross-sectional study in a population-based sample of [postmenopausal women](#) suggests that [sex hormones](#) may provide one plausible mechanism through which cigarette smoking influences chronic disease risk.

"The observed increase in sex hormone levels with cigarette use suggests that tobacco smoke, apart from its direct toxic and carcinogenic effects, may also influence chronic disease risk through hormonal mechanisms," said Judith Brand, MSc, of University Medical Center Utrecht in The Netherlands and lead author of the study. "The good news is that the effect of cigarette smoking appears reversible, as an almost immediate reduction in sex hormone levels was seen in women who quit using cigarettes."

In this study, researchers examined blood samples from 2,030

postmenopausal women aged 55-81 years. Study participants were categorized as 'current', 'former' or 'never' smokers based on their responses to questions regarding cigarette use. Researchers found that study participants who were 'current' smokers had higher circulating levels of androgens and estrogens, while 'former' smokers who had quit within 1-2 years had sex hormone levels the same as 'never' smokers.

"Obviously, quitting smoking has major health benefits such as prevention of cancer, respiratory and heart diseases," said Brand. "Our research suggests that smoking cessation may have additional effects by modifying hormone-related disease risks, but this was not the subject of the present study and requires further investigation."

**More information:** The article, "Cigarette smoking and endogenous sex hormones in postmenopausal women," appears in the October 2011 issue of *JCEM*.

Provided by The Endocrine Society

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