

# Elevated hormone levels add up to increased breast cancer risk

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Post-menopausal women with high levels of hormones such as estrogen or testosterone are known to have a higher risk of breast cancer. New research published in BioMed Central's open access journal *Breast Cancer Research* looked at eight different sex and growth hormones and found that the risk of breast cancer increased with the number of elevated hormones - each additional elevated hormone level increased risk by 16%.

Researchers from the Brigham and Women's Hospital and Harvard Medical School used blood samples collected from nurses up to nine years before health information, including their breast cancer status, was recorded. Post-menopausal women who were diagnosed with breast cancer were matched to two controls of a similar age.

The highest levels of circulating estrogens (estrone and estrogen), prolactin, and androgens (testosterone, androstenedione, DHEA, or DHEA-sulfate) were individually associated with between 50 and 200% increase in [breast cancer risk](#). The number of different hormones elevated above normal further increased risk, so that women with one elevated hormone had an increased risk of 10% (compared to normal levels), but the risk for women with five or six elevated hormone levels was doubled, and that for women with seven or eight was tripled. All these risks were slightly higher for women with ER positive disease.

Dr Shelley Tworoger, from Brigham and Women's Hospital, commented that, "Elevated estrogens had the biggest effect on risk, especially for ER

positive cancer. However, androgens, and prolactin also contribute to increasing risk of breast cancer. These hormones are known to stimulate the growth of [breast cancer cells](#) in the lab and, while androgens can be converted to estrogen in the body, these hormones have also been found to stimulate [cancer cell growth](#) in the absence of ER. Our results suggest that models used to assess [breast cancer](#) risk could be improved by taking into account multiple sex hormone and growth hormone levels."

**More information:** The combined influence of multiple sex and growth hormones on risk of postmenopausal breast cancer: a nested case-control study, Shelley S Tworoger, Bernard A Rosner, Walter C Willett and Susan E Hankinson, *Breast Cancer Research* (in press)

Provided by BioMed Central

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