

Genetic differences help protect against cervical cancer

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Women with certain gene variations appear to be protected against cervical cancer, according to a study led by scientists at Albert Einstein College of Medicine of Yeshiva University and reported in *Clinical Cancer Research*. Knowing whether or not women have these genetic variants could help physicians to better tailor treatment strategies.

Virtually all cases of [cervical cancer](#) are caused by persistent infections from several of the [human papillomaviruses](#) (HPV) — a family of viruses that also cause common [skin warts](#) and [genital warts](#). HPV is the most commonly sexually transmitted infection in young adults, yet only a small subset of these infections lead to [cervical cancer](#).

"Some people are better able than others to mount an [immune response](#) that suppresses their [HPV infection](#)," says Mark H. Einstein, M.D., associate professor of obstetrics & gynecology and women's health at Einstein. "We suspected that this advantage was probably due to variations in genes that play key roles in the body's immune response."

To find out, the researchers recruited 480 [women](#) and divided them into two groups: those with high-grade cervical intraepithelial neoplasia (CIN), a premalignant condition caused by HPV that can lead to cervical cancer; and a control group of women who had tested positive for HPV but had not developed high-grade CIN.

The researchers took cells from the women and looked for genetic differences between the two groups. They focused on a gene called TAP,

known to be crucial to the immune system's ability to recognize viruses and eliminate them from the body.

Dr. Einstein and his colleagues found that study participants had key differences at two locations in their TAP genes. Those women who possessed one or the other of these two gene variants were less than half as likely as other women to have developed high-grade CIN. Even women infected with the HPV types most likely to lead to cervical cancer were afforded protection by these variants. The finding suggests that knowledge of these genetic variants, known as polymorphisms, can provide important information regarding protection against cervical cancer.

"We're hopeful that our findings will lead to a genetic test that will help us predict which patients with persistent HPV infection are most likely to develop high-grade CIN and, ultimately, cervical cancer," says Dr. Einstein. "That knowledge should help us in mapping out effective treatment plans that are tailored to the individual patient. This trend of personalized medicine is becoming more common as new technologies offer hope of better tests."

More information: The paper, "Genetic Variants in TAP are Associated with High-Grade Cervical Neoplasia," is published in the February edition of *Clinical Cancer Research*.

Source: Albert Einstein College of Medicine

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