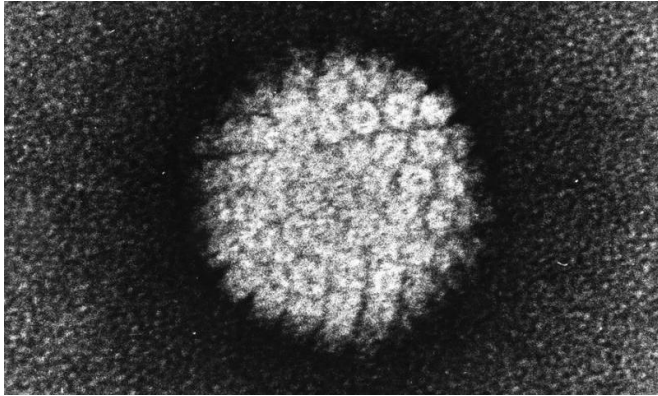


High-risk sexually transmitted HPV virus associated with increased CVD risk

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Electron micrograph of a negatively stained human papilloma virus (HPV) which occurs in human warts. Credit: public domain

Infection with high-risk strains of the human papillomavirus (HPV), which have been linked to cancer, might increase the risk of heart and blood vessel or cardiovascular disease, especially among women with obesity or other cardiovascular risk factors, according to new research in *Circulation Research*, an American Heart Association journal.

While cardiovascular disease has known [risk factors](#)—such as cigarette smoking; [high cholesterol](#), [high blood pressure](#), physical inactivity, poor diet, obesity and diabetes—to prevent cardiovascular disease, it is important to uncover other potential contributors.

One potential contributor is the most common sexually transmitted disease worldwide—the human papillomavirus or HPV. Certain strains of HPV are considered [high risk](#) because they can increase the risk of certain kinds of cancer, especially cervical, but also vaginal, vulvar, penile as well as mouth and throat. A Pap test can detect abnormal cells in the cervix, but HPV [infection](#) often has no

symptoms until cancerous cells develop. Previous research among U.S. women linked high-risk HPV infection to self-reported diagnoses of past heart attack and stroke.

In this study, investigators looked at the relationship between high-risk HPV and cardiovascular disease diagnosed during the course of the study. After adjusting for other factors—such as body mass index or BMI, a weight-to-height ratio, smoking, alcohol use, exercise, [education level](#) and family history of cardiovascular disease—women with high-risk HPV were 22 percent more likely than uninfected women to develop cardiovascular disease.

The likelihood of cardiovascular disease rose even more when high-risk HPV occurred in conjunction with obesity or metabolic syndrome. Comparing high-risk positive to high-risk HPV negative women, women with obesity were nearly two-thirds more likely to develop cardiovascular disease, and those with metabolic syndrome and high-risk HPV were nearly twice as likely to develop cardiovascular disease.

Factors associated with a greater likelihood of high-risk HPV included current smoking and alcohol consumption. Interestingly, women who reported being physically active also were more likely to have high-risk HPV. In contrast, higher education, defined as a [college degree](#) or more, was associated with a decreased likelihood of having high-risk HPV.

"A better understanding of high-risk HPV as a risk factor for cardiovascular disease and possible combined effects of high-risk HPV, obesity and metabolic syndrome in increasing cardiovascular disease risk may help improve preventive strategies and patient outcomes," said Seungho Ryu, M.D., Ph.D., senior coauthor of the study and professor at Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, in

Seoul, South Korea. "Further studies are required to identify specific high-risk HPV genotypes that may contribute to cardiovascular disease and to examine whether vaccine strategies to reduce high-risk HPV infection for cancer prevention may also help reduce cardiovascular disease."

From 2011 to 2016, 63,411 Korean women aged 30 or older without cardiovascular disease joined the study. Their average age was 40, and their average BMI was 22. Slightly more than 7 percent of the women had high-risk HPV infections.

All participants received a standard Pap test with DNA testing for 13 strains of high-risk HPV, as part of a comprehensive medical exam for the large Kangbuk Samsung Health Study in Seoul and Suwon, South Korea. Participants also provided informed consent to participate in the Insurance Review & Assessment Service once a year or once every two years for approximately four years. The Insurance Review & Assessment Service is a large database of healthcare costs, including those related to [cardiovascular disease](#).

Several limitations could have affected the study's results, including the possibility that HPV status might have changed during the course of the study, since infections sometimes go away on their own. Additionally, the study could not determine the length of HPV infections, and information about high-risk HPV was lacking for more than one-third of participants.

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