

# Condom Use Shortens Duration of HPV Infection

BY TIMOTHY F. KIRN  
Sacramento Bureau

LOS ANGELES — Condom use does matter in human papillomavirus infections, because it is associated with a shorter persistence of infection in females, according to a study of 57 sexually active female adolescents.

The investigators followed the adolescents for an average 2.2 years, included periods during which the subjects collected vaginal swabs weekly. The results showed that in those who reported the least-frequent condom use, the mean duration of an HPV infection was 251 days, compared with a mean duration of 138 days for those reporting the most condom use, Marcia L. Shew, M.D., said at the annual meeting

of the Society for Adolescent Medicine.

Noting that a recent National Institutes of Health report concluded that previous studies have not provided good enough evidence to know whether condom use prevents or influences HPV infection and transmission, Dr. Shew said, "We were so excited when we found out that condoms had a role, and it makes sense because condom use has clearly been shown to be associated with more frequent regression in cervical intraepithelial neoplasia."

The study, which, in addition to the weekly vaginal swabs collected by the subjects themselves, looked at cervical swabs collected by the investigators every 3 months, found that 49 of the 57 subjects got at least one infection during the average 2.2 years, for a cumulative incidence

of 86%, said Dr. Shew of Indiana University, Indianapolis.

Among them, there were 241 individual infections, or an average of about 5 per individual. Of those infections, 168 were of a high-risk, oncogenic type of papillomavirus, and 73 were of a low-risk type. The types most frequently detected were 52 and 16, both high-risk types, and 66, a low-risk type.

Factors the study found to be associated with longer duration of infection included oncogenic type, coinfection with chlamydia, a greater number of sexual partners, and less condom use.

Analysis indicated that the mean duration of infection with an oncogenic type papillomavirus was 226 days vs. a mean 159 days for the infections with nononco-

genic types. Mean duration of infection in those cases that occurred with a concurrent chlamydia infection was 333 days vs. 96 days. And the average duration of an infection in an individual with multiple sexual partners was 436 days, vs. 96 days in those individuals who had only one or no partners during the infection.

Some possible explanations for why condom use results in shorter infections include that someone who is having repeated sex with an infected individual might be exposed to a higher viral load, or even that semen is proinflammatory, and that this somehow contributes, Dr. Shew said.

"We feel these findings have substantial clinical and public health significance, and clearly may help to reduce viral transmission," she added. ■

## Nutrients in Vegetables, Fruits May Protect Women From HPV

BY SHERRY BOSCHERT  
San Francisco Bureau

VANCOUVER, B.C. — Women who eat their vegetables and take vitamins may have a better chance of avoiding or clearing human papillomavirus infection, Marc T. Goodman, Ph.D., said at the 22nd International Papillomavirus Conference.

Low serum levels of tocopherol (vitamin E) or retinol (vitamin A) may increase the risk for acquiring human papillomavirus (HPV) infection, according to preliminary data from a controlled study of micronutrients and HPV.

High serum levels of carotenoids may enhance clearance of HPV infection and avoid persistent infection, said Dr. Goodman of the University of Hawaii, Manoa.

The investigators analyzed data on 242 women who had complete records from at least four clinical visits, part of a larger longitudinal study at three clinics and two university-based health services. They categorized serum micronutrient levels as either low or high.

Women with low serum levels of vitamins E or A were twice as likely to develop incident HPV infection, compared with women with high levels of these nutrients, he said at the meeting, sponsored by the University of California, San Francisco.

A new HPV infection was found in 18% of women with low serum levels of  $\beta$ -tocopherol and  $\alpha$ -tocopherol combined, compared with 9% of women with high levels of these nutrients. HPV test results went from negative to positive from one visit to the next in 19% of women with low levels of retinol and 10% of those with high serum levels.

Incident HPV infection at one visit persisted in a positive HPV test at the next clinical visit in 20% of women with high serum levels of lutein or zeaxanthin, carotenoids that are abundant in green, leafy vegetables. HPV persisted in 31% of women with low levels of these carotenoids, a 60% increased risk with low serum levels.

HPV persisted in 22% of women with high levels of  $\beta$ -cryptoxanthin (a carotenoid found in a variety of tropical fruits and nectarines), compared with 38% of women with low levels of this nutrient, who had a



Micronutrients in fruits and vegetables have antioxidant and immunomodulatory effects that may counter HPV infection.

70% increased risk for persistence.

The risk for HPV persistence doubled with low levels of  $\alpha$ -carotene and was 60% higher with low levels of lycopene, compared with having high levels of these nutrients.

Dr. Goodman speculated that the differences might be related to the antioxidant functions of these nutrients, or to the interface between cytokine levels and local levels of antibodies. "We know that the micronutrient levels do enhance the immune response," he said.

Intracellular signaling might play a role. A variety of nutrients affect the genes associated with transcription. It's also possible that antioxidants could directly affect HPV viral load and cell proliferation, he added. ■

## Genital HSV-2: More Shedding With Hormonal Contraception

BY MICHELE G. SULLIVAN  
Mid-Atlantic Bureau

Bacterial vaginosis, high-density group B streptococcus colonization, and the use of hormonal contraceptives are all independently associated with increased risk of genital tract shedding of herpes simplex virus type 2, Thomas L. Chernes, M.D., and his colleagues at the University of Pittsburgh reported.

These increased risks could be key factors in HSV-2 transmission.

"Because hormonal contraceptives are used by more than 100 million women worldwide, and because bacterial vaginosis and vaginal GBS colonization are two of the most common genital tract conditions present among women of reproductive age, even modest associations between these variables and genital tract shedding of HSV-2 would result in substantial attributable risks for transmission of the virus," they reported (*Clin. Infect. Dis.* 2005;40:1422-8).

The researchers followed 330 HSV-2-positive women for a year. The women were aged 18-30 years; 65% were black. Every 4 months, the investigators collected behavioral data, vaginal swabs and smears, and a blood sample from each woman.

In the multivariate analysis, genital tract shedding was associated with recent HSV-2 seroconversion (odds ratio [OR] of 3), high-density group B streptococcus colonization (OR 2.2), bacterial vaginosis (OR 1.9), and the use of either depot medroxyprogesterone acetate or oral contraceptives (OR 1.8).

Genital tract shedding was not associated with vaginal intercourse, having a new sex partner, or douching.

The associations with bacterial vaginosis and high-density GBS colonization were somewhat of a surprise, the researchers said. "A number of recent studies have demonstrated that [bacte-

rial vaginosis] is associated with significant alterations in the concentrations of several immunomodulatory cytokines, compared with the concentrations of these cytokines associated with normal vaginal flora."

Oral contraceptives may influence shedding by different means, the researchers said. Suppression of estrogen and progesterone may alter the T cell-mediated immune response, and thereby increase shedding.

Additionally, women who use oral contraceptives can have larger areas of cervical ectopy. "This extension of the single-layered columnar epithelium onto the ectocervix may facilitate genital tract shedding."

However, since the increased risk was the same for both oral and injectable hormonal contraceptives, and cervical ectopy is more commonly associated with the oral form, it may not be the predominate mechanism responsible for increased viral shedding, they said.

Previous studies on the subject have reached varying conclusions, Katherine LaGuardia, M.D., medical affairs director for Ortho Women's Health, Ortho-McNeil Pharmaceutical, Inc., said in an interview.

"This study really doesn't shed any new light on this issue," she said. "The definitive study, which would control for both sexual behavior and hormonal contraception, has yet to be done."

However, it's important to continue emphasizing to women that no hormonal contraceptive method protects against sexually transmitted infection, Dr. LaGuardia said.

"Although safe and effective when used as labeled, these methods don't protect against infection," she added. "Using a condom along with hormonal methods offers the best protection against both pregnancy and STIs, including HIV," Dr. LaGuardia explained. ■