

Conventional, annual Pap smear cost-effective follow-up after cervical lesion treatment

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A study of the options for reducing cancer incidence and mortality among women who have been treated for precancerous cervical lesions found that an annual conventional Pap smear is a cost effective strategy.

Joy Melnikow, professor in the Department of Family and Community Medicine and colleagues tested several follow-up screening strategies for the 500,000 American women diagnosed and treated for cervical intraepithelial neoplasia (CIN), abnormal cervical cell growth that can lead to [cervical cancer](#). The first comprehensive study of its kind, "Surveillance After Treatment for Cervical Intraepithelial Neoplasia" will be published in the November issue of *Obstetrics & Gynecology*.

"This is a large and growing pool of women who need follow-up after treatment," said Melnikow, who is also director of the UC Davis Center for Healthcare Policy and Research. "But we've had few studies on which to base recommendations for follow-up."

Detection and treatment of these pre-cancerous lesions have led to large reductions in cervical [cancer incidence](#) and death in many countries where screening is routine. But current recommendations about follow-up over time vary widely, and the use of newer technologies had not been fully evaluated until now, Melnikow said.

Melnikow and her colleagues examined the relative benefits and costs

for different strategies, including the frequency of follow-up testing. "What we learned was that the newer technologies such as liquid-based Pap testing and HPV (human papillomavirus) testing add considerable cost but little to no benefit compared with conventional Pap smear follow-up," she said.

Among the options currently in use for women who have undergone treatment for CIN are conventional cervical cytology (Pap test) at six and 12 months followed by routine Pap testing if these tests are negative. Some patients are given colposcopy (an examination of the cervix using a magnifying lens) followed by an annual Pap test. Increasingly, physicians conduct the cytology with a liquid-based technique that is very popular but also more expensive than the conventional method; others also utilize a test for the presence of HPV, a sexually-transmitted infection linked to a majority of cervical cancers.

"Follow-up surveillance strategies must strike a balance between the detection and treatment of persistent or incident lesions and the overuse of costly and invasive diagnostic procedures and tests," the study authors write.

To evaluate the various strategies, Melnikow and her co-authors developed a computer model and applied available data from prior studies on CIN, including on the disease stages, treatment modalities, outcomes and follow-up strategies.

One of those studies, conducted by Melnikow and published in May 2009 in the Journal of the National Cancer Institute, found that risk of subsequent CIN or cervical cancer was associated with the type of treatment the women received, their age and the initial level of CIN diagnosed. Women who had been treated for CIN 3 with cryotherapy (a freezing method) were at higher risk for recurrence of the disease or invasive cancer.

In the new study, Melnikow and her colleagues found that the least expensive follow-up strategy was not the most effective in terms of patient outcomes. Conventional cytology at six and 12 months followed by cytology every three years was least expensive, but resulted in the largest number of subsequent cancers and cancer deaths. Although cytology conducted every year after initial treatment for CIN was more expensive, the strategy reduced expected cervical cancer deaths by 73 percent to 77 percent.

Researchers also found that for women who had a high risk of recurrence because of the stage of the CIN at diagnosis, colposcopy at six months after treatment followed by annual cytology was a cost-effective strategy. The study found that HPV testing and use of liquid-based cytology were more costly and did not improve life expectancy more than the less costly strategies.

"This tells us that surveillance can be tailored to a certain extent based on a woman's history and her risk of recurrence," Melnikow said. "More intensive surveillance is most important in women who are at higher risk of recurrence."

Provided by University of California - Davis

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