

## Cancer Screening and Treatment in Women: Recent Findings

The mission of AHRQ is to improve the quality, safety, efficiency, and effectiveness of health care by:

- Using evidence to improve health care.
- Improving health care outcomes through research.
- Transforming research into practice.

Breast cancer continues to be the most commonly diagnosed cancer among women in the United States. In 2008, an estimated 182,400 U.S. women were newly diagnosed with breast cancer, and more than 40,000 women died from the disease.

The good news is that breast cancer deaths have declined in recent years among white women in this country; the bad news is that over the same period, survival has decreased among black women. Although between 12 and 29 percent more white women than black women are stricken with breast cancer, black women are 28 percent more likely to die from the disease. The 5-year breast cancer survival rate is 69 percent for black women, compared with 85 percent for white women.

In 2008, there were an estimated 11,000 newly diagnosed cases of invasive cervical cancer in U.S. women, and about 3,900 women died from the disease. Cervical cancer occurs most often among minority women, particularly Asian-American

(Vietnamese and Korean), Alaska Native, and Hispanic women. Although deaths from cervical cancer have declined substantially over the past 30 years, the cervical cancer death rate for black women continues to be more than twice that of white women. The chance of dying of cervical cancer increases as women get older. Worldwide, cervical cancer is the second or third most common cancer among women, and in some developing countries, it is the most common cancer.

Women who have never had a Pap test or who have not had one for several years have a higher than average risk of developing cervical cancer. Many women still do not have regular Pap tests, particularly older women, uninsured women, minorities, poor women, and women living in rural areas. About half of the women with newly diagnosed invasive cervical cancer have not had a Pap test in the previous 5 years.





## AHRQ-Sponsored Research

The Agency for Healthcare Research and Quality (AHRQ) supports a vigorous women's health research program, including research focused on breast cancer, cervical cancer, and other cancers in women. AHRQ-supported projects are addressing women's access to quality health care services, accurate diagnoses, appropriate referrals for procedures, and optimal use of proven therapies.

Following are examples of findings from AHRQ-supported research projects focused on cancer in women published January 2005 through December 2008. An asterisk (\*) indicates that reprints of an intramural study or copies of other publications are available from AHRQ. See the back cover of this fact sheet to find out how you can get more detailed information on AHRQ's research programs and funding opportunities.

### Breast Cancer

- *Several factors affect the accuracy of mammogram interpretation.*

Researchers examined how differences among mammography facilities affect the results of mammogram interpretation. They found that the most accurate facilities offered screening but not diagnostic mammograms, had a breast imaging specialist on staff, and conducted audits of radiologists' performance two or more times per year. Their findings are based on a review of 5 years of mammogram data and results of surveys received from 43 facilities and their 128 radiologists in the Pacific Northwest, New Hampshire, and Colorado. Taplin, Abraham, Barlow, et al., *J Natl Cancer Inst* 100(12):876-887, 2008 (AHRQ grant HS10591). See also Miglioretti, Smith-Bindman, Abraham, et al., *J Natl*

*Cancer Inst* 99(24):1854-1863, 2007 (AHRQ grant HS10591).

- *Lesions overlooked on mammograms represent missed opportunities for early diagnosis.*

From 10 to 20 percent of women diagnosed with breast cancer had lesions that were visible but overlooked on their most recent mammograms, and another 10 to 20 percent had lesions that were misinterpreted. In both cases, the opportunities for early diagnosis and intervention were missed. These authors discuss the pros and cons of double or even quadruple reading of mammograms and computer-aided detection as a second digital "reader" of mammograms. Elmore and Brenner, *J Natl Cancer Inst* 99(15):1141-1143, 2007 (AHRQ grant HS10591).

- *Breast desmoid tumors are rare and often mistaken for cancer.*

A review over 25 years (1982-2006) at one institution identified 32 patients with pathologically confirmed breast desmoids. Their median age was 45; eight patients had a prior history of breast cancer, and 14 had undergone breast surgery, with desmoids diagnosed an average of 24 months postoperatively. All patients presented with physical findings; MRI was more accurate in visualizing the mass than mammography or ultrasound. All patients had their tumors surgically removed, and eight patients had recurring tumors at a median of 15 months. The researchers recommend that clinical judgment be used before extensive and potentially deforming breast resections are performed. Neuman, Brogi, Ebrahim, et al., *Ann Surg Oncol* 15(1):274-280, 2008 (AHRQ grant T32 HS00066).

- *More attention is needed to quality of life for breast cancer survivors.*

Researchers examined quality of life among women with (114 women) and

without (2,527 women) breast cancer. Women with breast cancer reported lower scores on physical function, general health, vitality, and social function compared with women who did not have breast cancer. There was no difference in mental health scores between the two groups of women. Trentham-Dietz, Sprague, Klein, et al., *Breast Cancer Res* 109:379-387, 2008 (AHRQ grant HS06941).

- *Study underway to develop computer-based tools to improve use of genetic breast cancer tests.*

AHRQ has funded a new project to develop, implement, and evaluate four computer-based decision-support tools that will help clinicians and patients better use genetic tests to identify, evaluate, and treated breast cancer. The first pair of tools will assess whether a woman with a family history of cancer should be tested for BRCA1 and BRCA2 gene mutations. The second pair of tools, for women already diagnosed with breast cancer, will help determine which patients are suitable for a gene expression profiling test that can evaluate the risk of cancer recurrence and whether they should have chemotherapy. More information is available online at <http://effectivehealthcare.ahrq.gov> (AHRQ contract 290-200-500361).

- *Report discusses impact of several gene expression profiling tests for breast cancer patients.*

Breast cancer treatment today often involves a multi-modality approach, including surgery, radiation therapy, endocrine therapy, and/or chemotherapy. Gene expression profiling has been proposed as an approach to assess women's risk of distant disease recurrence. This report discusses the available evidence on three breast cancer gene expression assays: the Oncotype DX™ Breast Cancer Assay, the MammaPrint® Test, and the Breast Cancer Profiling Test. Tests that improve such estimates of risk

potentially can affect clinical outcome in breast cancer patients by either avoiding unnecessary chemotherapy or employing it where it otherwise might not have been used. *Impact of Gene Expression Profiling Tests on Breast Cancer Outcomes*, Evidence Report/Technology Assessment No. 160 (AHRQ Publication No. 08-E002)\* (AHRQ contract 290-02-0018).

- *Radiation therapy for a primary cancer that develops in a second breast may offer a survival benefit.*

Radiation therapy following breast-conserving surgery (BCS) for a primary breast cancer reduces the risk of recurrence, but it has only a small overall survival benefit. However, omission of radiation therapy following BCS for a primary cancer that later develops in a second breast appears to double the risk of dying, according to this study. Researchers compared mortality rates of women aged 40 to 69 who did not receive radiation therapy following BCS for the second breast (43 percent of women) with those who did. Women who did not receive radiation had slightly more than twice the risk of dying from breast cancer and 1.7 times the risk of dying from all causes as women who received radiation. Schootman, Jeffe, Gillanders, et al., *Breast Cancer Res Treat* 103:77-83, 2007 (AHRQ grant HS14095). See also Du, Fan, and Meyer, *Am J Clin Oncol* 31(2):125-132, 2008 (AHRQ grant HS16743); and Schootman, Fuortes, and Aft, *Breast Cancer Res Treat* 99:91-95, 2006 (AHRQ grant HS14095).

- *Some women do not receive recommended adjuvant therapy for breast cancer.*

A survey of surgeons at six New York hospitals who treated 119 breast cancer patients who did not receive adjuvant therapy found that the surgeons did not

recommend adjuvant treatment in one-third of the cases, most often because they believed the risks outweighed the benefits. Among the two-thirds of women for whom surgeons did recommend adjuvant therapy, 31 percent declined the treatment, and 34 percent did not receive it for unknown reasons. Adjuvant therapy recommended for breast cancer patients includes radiotherapy after breast conserving surgery, chemotherapy for estrogen receptor-negative tumors, and hormonal therapies for estrogen receptor-positive tumors larger than 1 cm. Bickell, LePar, Wang, and Leventhal, *J Clin Oncol* 25(18):2516-2521, 2007 (AHRQ grant HS10859). See also Anderson and Carlson, *J Natl Compr Canc Netw* 5(3):349-356, 2007 (AHRQ grant HS15756); and Fryback, Stout, Rosenberg, et al., *J Natl Cancer Inst Monographs* 36:37-47, 2006 (AHRQ grant T32 HS00083).

- *Booklet helps women assess their treatment options for early-stage breast cancer.*

Women newly diagnosed with early-stage breast cancer usually can choose between breast-conserving surgery (lumpectomy) followed by radiation and mastectomy. Research has shown that long-term outcomes are similar for both treatments. This booklet provides information to help women work with their providers to choose which type of surgery they will have and, if they choose mastectomy, whether they want to have reconstructive surgery. The booklet was developed collaboratively by the National Cancer Institute and AHRQ. *Surgery Choices for Women with Early-Stage Breast Cancer* (AHRQ Publication No. PHS 04-M053, English; AHRQ 05-0031, Spanish)\* (Intramural).

- *Race, age, and other factors affect degree of pain among women with breast cancer.*

Researchers studied 1,124 women with stage IV breast cancer over the course of a year and found that minority women who had advanced breast cancer suffered more pain than white women. In addition, women who were inactive and younger women also reported more severe pain. Castel, Saville, DePuy, et al., *Cancer* 112(1):162-170, 2008 (AHRQ grant T32 HS00032).

- *Death and complications following breast cancer surgery are rare.*

The most common complication of breast cancer surgery is wound infection, which is twice as common after mastectomy as lumpectomy and lymph node dissection, according to this study. Factors that may contribute to the higher rate of wound infection following mastectomy include extensive tissue dissection, drain placement, formation of pockets of fluid, and longer operation time, as well as a woman's overall health status.

Researchers analyzed data on 1,660 women (mean age 56) who underwent mastectomy and 1,447 women who underwent breast conserving surgery at 14 university and 4 community medical centers. There were few cardiac or pulmonary complications in the mastectomy group and none in the lumpectomy group; central nervous system problems were rare in both groups. El-Tamer, Ward, Schiffner, et al., *Ann Surg* 245(5):665-671, 2007 (AHRQ grant HS11913).

- *Immediate reading of mammograms and followup on false-positive results reduce anxiety among women.*

A group of women aged 40 and older participated in this study at seven sites in the Boston area between February

1999 and January 2001. Radiologists read the mammograms of 564 women immediately, while the films of 576 women were read in batches at a later time. Although there were more false-positives in the immediate-reading group, that strategy provided quick resolution of false-positives and led to significantly lower anxiety among those women. Immediate reading of mammograms increased costs to health plans by 10 percent because of reduced efficiency and the need for extra films. However, 12-month costs did not differ significantly between the two groups. Stewart, Neumann, Fletcher, and Barton, *Health Serv Res* 42(4):1464-1482, 2007 (AHRQ Publication No. 07-R067)\* (Intramural).

- *Depression hinders recovery of older breast cancer patients.*

Researchers examined data on 187 women aged 60 years and older, including the presence of depressive symptoms 2 months after breast cancer diagnosis. They also examined sociodemographic factors, type of breast cancer treatment, and shoulder range of motion at 12 months after diagnosis. Results showed that each unit increase in depressive symptoms was associated with an 8 percent decreased odds of having full range of shoulder motion a year after diagnosis. Caban, Freeman, Zhang, et al., *Clin Rehabil* 20:513-522, 2006 (AHRQ grant HS11618).

- *Poor communication of mammogram results may explain disparities in breast cancer diagnosis and outcomes.*

Researchers surveyed 411 black and 734 white women who had screening mammograms at five hospital-based facilities in Connecticut between 1996 and 1998 and found no difference between the two groups of women in the proportion of abnormal screening mammograms. However, communication of mammogram results

was problematic for 14.5 percent of the women; 12.5 percent had not received their results, and 2 percent had received their results but their self-report differed from the radiology record. Inadequate communication of mammogram results was nearly twice as common among black women as among white women. Jones, Reams, Calvocoressi, et al., *Am J Public Health* 97(3):531-538, 2007 (AHRQ grant HS11603). See also Dailey, Kasl, Holford, and Jones, *Am J Epidemiol* 165(11):1287-1295, 2007 (AHRQ grant HS15686).

- *Physician communication style may depend on characteristics of breast cancer patients.*

According to this study, oncologists tend to communicate differently with women newly diagnosed with breast cancer, depending on their age, race, education, and income. A series of videotaped visits between 58 oncologists with 405 women revealed that the physicians spent more time engaged in building relationships with white women than with women of other races; the same was true of visits with more educated and affluent patients compared with less advantaged patients. The women who asked more questions tended to be younger, white, better educated (beyond high school), and more affluent than other patients. Siminoff, Graham, and Gordon, *Patient Educ Counsel* 62:355-360, 2006 (AHRQ grant HS08516).

## Cervical Cancer

- *Instituting new processes can reduce diagnostic errors in Pap smear interpretation.*

Lean methods are used to weigh the expenditure of resources against value received. For this study, researchers compared the diagnostic accuracy of Pap tests procured by five clinicians

before (5,384 controls) and after (5,442 cases) implementing a process redesign using Lean methods. Following process redesign, there was a significant improvement in Pap smear quality, and the case group showed a 114 percent increase in newly detected cervical intraepithelial cancer following a previous benign Pap test. Raab, Andrew-Jaja, Grzybicki, et al, *J Low Genit Tract Dis* 12(2):103-110, 2008 (AHRQ grant HS13321).

- *Despite new guidelines, most ob-gyns continue to over-screen low-risk women for cervical cancer.*

The American Cancer Society suggests that cervical cancer screening with Pap tests begin within 3 years after a woman becomes sexually active or by age 21, whichever comes first. The ACS no longer recommends annual screening in women over age 30 who have had three or more previous normal Pap tests. The American College of Obstetricians and Gynecologists has made similar recommendations. Yet, 185 randomly selected ob-gyns said that they would begin screening girls who were not yet sexually active at age 18. Also, 60 percent of respondents said that they would continue annual screening in a 35-year-old woman with three or more normal tests. Saint, Gildengorin, and Sawaya, *Am J Obstet Gynecol* 192:414-421, 2005 (AHRQ grant HS07373).

## Breast and Cervical/Ovarian Cancer

- *Less access to effective treatment may explain poorer survival of elderly black women with ovarian cancer.*

Researchers studied 5,131 elderly women diagnosed with ovarian cancer between 1992 and 1999 with up to 11 years of followup. Overall, 72 percent of white women and 70 percent of black women were diagnosed with stage

III or IV (advanced) disease. Among those with stage IV disease, those who underwent ovarian surgery and received adjuvant chemotherapy were 50 percent less likely to die during the followup period compared with those who did not, regardless of race. However, fewer blacks received chemotherapy than whites (50 vs. 65 percent, respectively). Du, Sun, Milam, et al., *Int J Gynecol Cancer* 18:660-669, 2008 (AHRQ grant HS16743).

- *Evidence does not support use of genomic tests to detect ovarian cancer.*

According to this scientific review, there is no evidence relevant to the impact of genomic tests for ovarian cancer on health outcomes in asymptomatic women. The researchers used model simulations to predict the usefulness and efficacy of genomic tests for ovarian cancer. The model simulations suggest that annual screening, even with a highly sensitive test, will not reduce ovarian cancer mortality, and that frequent screening has a very low positive predictive value. *Genomic Tests for Ovarian Cancer Detection and Management, Evidence Report/Technology Assessment No. 145* (AHRQ Publication No. 07-E001)\* (AHRQ Contract 290-02-0025).

- *Breast and gynecologic cancers account for one-fourth of all cancer hospitalizations among women.*

This publication summarizes findings on hospital use, outpatient surgery use, hospital charges, and changing practice patterns for the care of breast and gynecologic cancers in U.S. women. The information is based on inpatient hospital discharge data and outpatient ambulatory surgery data from AHRQ's Healthcare Cost and Utilization Project (HCUP) and covers the period 1993-2003. *Hospital and Ambulatory Surgery Care for Women's Cancers, HCUP*





*Highlights No. 2* (AHRQ Publication No. 06-0038).\*

- *Despite new guidelines, most ob-gyns continue to overscreen low-risk women for cervical cancer.*

The American Cancer Society suggests that cervical cancer screening with Pap tests begin within 3 years after a woman becomes sexually active or by age 21, whichever comes first. The ACS no longer recommends annual screening in women over 30 who have had three or more previous normal Pap tests. The American College of Obstetricians and Gynecologists has made similar recommendations. Yet 185 randomly selected ob-gyns said that they would begin screening girls who were not yet sexually active at age 18. Also, 60 percent of respondents said that they would continue annual screening in a 35-year-old woman with three or more normal tests. Saint, Gildengorin, and Sawaya, *Am J Obstet Gynecol* 192:414-421, 2005 (AHRQ grant HS07373).

## Other Cancers

- *Women's perception of risk affects screening for colon cancer but not cervical or breast cancer.*

Researchers interviewed 1,160 white, black, Hispanic, and Asian women (aged 50 to 80) about their perceived risk for breast, cervical, and colon cancer and compared their perceived risk with their screening behavior. The women's perceived lifetime risk of cancer varied by ethnicity, with Asian women generally perceiving the lowest risk and Hispanic women the highest risk for all three types of cancer. Nearly 90 percent of women reported having a mammogram, and about 70 percent of the women reported having a Pap test in the previous 2 years; 70 percent of the women were current with colon cancer screening. There was no

relationship between screening and perception of risk for cervical or breast cancer; however, a moderate to very high perception for colon cancer risk was associated with nearly three times higher odds of having undergone colonoscopy within the last 10 years. Kim, Perez-Stable, Wong, et al., *Arch Int Med* 168(7):728-734, 2008 (AHRQ grant HS10856).

- *Among older patients with early-stage lung cancer, women live longer than men, regardless of treatment choice.*

Researchers examined differences between women and men in the natural history of lung cancer, after controlling for unrelated causes of death and type of treatment among 18,967 Medicare patients with stages I and II non-small cell lung cancer who were diagnosed between 1991 and 1999. They found that the women lived longer than the men, regardless of the type of treatment they received, and that the women's longer survival was independent of differences in life expectancy between men and women due to unrelated causes of death. They found improved survival advantages even among untreated women, suggesting that lung cancer in women has a different natural history and potentially a different tumor biology. Wisnivesky and Halm, *J Clin Oncol* 25(13):1705-1712, 2007 (AHRQ grant HS13312).

- *Up to 12 percent of tissues examined by pathologists for cancer result in diagnostic errors, many involving women.*

Researchers examined pathology errors over a 1-year period in patients at four hospitals who underwent laboratory tests to determine the presence or absence of cancer or precancerous lesions. Cancer diagnosis errors were dependent on the hospital and ranged from 2 to 20 percent of gynecologic cases and from 5 to 12 percent of

nongynecologic cases. Errors due to pathologic misinterpretation ranged from 5 to 51 percent. The remaining errors were due to clinical sampling problems. Overall, 45 percent of gynecologic pathology errors were associated with harm. The researchers estimate that each year, nearly 128,000 U.S. patients will suffer harm as a result of cancer diagnosis errors. Raab, Grzybicki, Janosky, et al., *Cancer* 104(10):2205-2213, 2005 (AHRQ grant HS13321).

## Cancer Screening and Diagnosis

- *Requirement for cost-sharing reduces use of mammography among some groups of women.*

Researchers examined data on mammography use and cost-sharing from 2002 to 2004 for more than 365,000 women covered by Medicare. Of the 174 Medicare health plans studied, just 3 required copayments of \$10 or more or coinsurance of more than 20 percent in 2001; by 2004, 21 plans required cost-sharing of one form or another. The increase in coinsurance requirements correlated with a decrease in screening mammograms. Less than 70 percent of women in cost-sharing plans were screened, compared with nearly 80 percent of fully covered women. Although every demographic group was affected, black women and women with lower incomes and education levels often were covered by plans that required cost-sharing. Trivedi, Rakowski, and Ayanian, *N Engl J Med* 358(4):375-383, 2008 (AHRQ grant T32 HS00020).

- *Breast screening is less common in counties that have many uninsured women.*

Researchers used data from two large surveillance systems to determine whether screening for breast cancer varied by the proportion of uninsured

women in the community. The data showed that as the rate of uninsurance in a community increased by 5 percent, women were 5 percent less likely to receive either clinical breast exams or mammograms. Breast cancer screening declined significantly for women earning \$25,000 to \$75,000 who lived in counties with high rates of uninsurance. On the other hand, black women and Hispanic women had higher screening rates than white women when they lived in communities with low rates of uninsurance. Schootman, Walker, Jeffe, et al., *Am J Prevent Med* 33(5):379-386, 2007 (AHRQ grant HS14095).

- *Women aged 40 to 49 were responsive to changes in mammography recommendations.*

According to interviews with 1,451 women who received screening mammograms at one of five hospital-based clinics between October 1996 and January 1998, opinions about mammography have changed among women aged 40 to 49. Prior to the issuance of recommendations by the American Cancer Society and the National Cancer Institute that women aged 40 to 49 should receive screening mammograms every 1 or 2 years, only 49 percent of women in this age group endorsed annual screening. After the new recommendations were issued, 64 percent of women in this age group endorsed annual screening. Calvocoressi, Sun, Kasl, et al., *Cancer* 120(3):473-480, 2008 (AHRQ grant HS11603).

- *Task Force recommends against routine testing for genetic risk of breast or ovarian cancer.*

According to the U.S. Preventive Services Task Force, primary care physicians should only refer certain women for genetic counseling and

DNA testing to detect the presence of specific BRCA1 and BRCA2 gene mutations that may be associated with breast and ovarian cancer. Physicians should suggest counseling and DNA testing only for women who have specific family history patterns which put them at risk for these gene mutations. Nelson, Huffman, Fu, and Harris, *Ann Intern Med* 132(5):362-379, 2005; see also pages 355-361 in the same journal (AHRQ contract 290-97-0011).

- *Task Force revises recommendations for mammography.*

The U.S. Preventive Services Task Force updated its recommendation by calling for screening mammography, with or without clinical breast exam, every 1 to 2 years for women 40 and over. The recommendation acknowledges some risks associated with mammography, which will lessen as women age. The strongest evidence of benefit and reduced mortality from breast cancer is among women ages 50 to 69. The recommendation and materials for clinicians and patients are available at [www.ahrq.gov/clinic/uspstf/uspbrca.htm](http://www.ahrq.gov/clinic/uspstf/uspbrca.htm) (Intramural).

- *Noninvasive tests may miss breast cancer.*

This report indicates that four common noninvasive tests for breast cancer are not accurate enough to replace biopsies for women who receive abnormal findings from mammography or a clinical breast exam. Researchers found that each of the four tests—magnetic resonance imaging (MRI), ultrasonography (ultrasound), positron emission tomography scanning (PET scan), and scintimammography (nuclear medicine scan)—would miss a significant number of cases of cancer, compared with immediate biopsy, in women at high enough risk to warrant evaluation for breast cancer. *Effectiveness*

of *Noninvasive Diagnostic Tests for Breast Abnormalities*, Executive Summary No. 2 (AHRQ Publication No. 06-EHC005-1)\* and online at <http://effectivehealthcare.ahrq.gov>.

- *Researchers evaluate the costs and benefits of breast cancer screening of older women.*

The optimal age to stop breast cancer screening has not been determined. This study found that lifetime screening is not cost effective at \$151,434 per life year saved if women receive idealized treatment (treatment and survival that are comparable to clinical trials). The researchers used a model to simulate the life history of women to evaluate the incremental societal costs and benefits of biennial screening from age 50 to age 70, to age 79, and for lifetime. The researchers concluded that if all women received idealized treatment, the benefits of mammography beyond age 79 would be too low relative to cost to justify continued screening. Mandelblatt, Schechter, Yabroff, et al., *J Gen Intern Med* 20:487-496, 2005 (AHRQ Publication No. 05-R072) (Intramural).\*

- *Study reveals shortage of radiologists at community mammography facilities.*

In a 2000-2001 survey of mammography facilities in three States, nearly half of the 45 facilities reported radiologist staffing shortages. Almost two-thirds (60 percent) of not-for-profit facilities reported shortages, compared with less than one-third (28 percent) of for-profit facilities. Waiting times for diagnostic mammography ranged from less than 1 week to 4 weeks. Forty-seven percent of facilities had a waiting time of 2 or more weeks

for screening mammography, and some had waiting times of 1 to 2 months. Orsi, Tu, Nakano, et al., *Radiology* 235:391-395, 2005 (AHRQ grant HS10591).

- *White women who are obese may avoid having Pap tests.*

This study found that white women who are obese are more likely than normal-weight white women to delay Pap testing and to find Pap tests to be painful, uncomfortable, and/or embarrassing. The researchers examined Pap testing in the preceding 3 years for 6,419 white women, 1,715 black women, and 1,859 Hispanic women aged 18 to 75 years. Overall, 86 percent of white, 88 percent of black, and 78 percent of Hispanic women reported Pap testing in the previous 3 years. After accounting for other factors, white women who were extremely obese (BMI greater than 40) were 9 percent less likely to have a Pap test compared with white women who were normal weight. BMI was not associated with screening in black or Hispanic women. Wee, Phillips, and McCarthy, *Obes Res* 13(7):1275-1280, 2005 (AHRQ grant HS11683).

- *Up to 12 percent of tissues examined by pathologists for cancer result in diagnostic errors.*

Researchers examined pathology errors over a 1-year period in patients at four hospitals who underwent laboratory tests to determine the presence or absence of cancer or precancerous lesions. Cancer diagnosis errors were dependent on the hospital and ranged from approximately 2 to 20 percent of gynecologic cases and from approximately 5 to 12 percent of nongynecologic cases. Errors due to

pathologic misinterpretation ranged from 5 to 51 percent. The remaining errors were due to clinical sampling problems. Overall, 45 percent of gynecologic pathology errors and 39 percent of nongynecologic errors were associated with harm. The researchers estimate that nearly 128,000 patients per year in the United States will suffer harm as a result of cancer diagnosis errors. Raab, Grzybicki, Janosky, et al., *Cancer* 104(10):2205-2213, 2005 (AHRQ grant HS13321).

## More Information

For more information on AHRQ initiatives related to women's health, please contact:

Shakeh J. Kaftarian, Ph.D.  
Senior Advisor, Women's Health  
and Gender Research  
Agency for Healthcare Research and  
Quality  
540 Gaither Road  
Rockville, MD 20850  
Telephone: 301-427-1550  
E-mail:  
[Jackie.Kaftarian@ahrq.hhs.gov](mailto:Jackie.Kaftarian@ahrq.hhs.gov)

For more information about AHRQ and its research portfolio and funding opportunities, visit the Agency's Web site at [www.ahrq.gov](http://www.ahrq.gov).

Items marked with an asterisk (\*) are available free from the AHRQ Clearinghouse. To order, contact the clearinghouse at 800-358-9295 or request electronically by sending an e-mail to [ahrqpubs@ahrq.gov](mailto:ahrqpubs@ahrq.gov). Please use the AHRQ publication number when ordering.

