

Cardiovascular Disease and Other Chronic Conditions 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.

Introduction

Cardiovascular disease (CVD) is the number one killer of women worldwide, accounting for one-third of all deaths. In the United States, more than 38 million women are living with CVD, and the at-risk population is even larger.

Long thought of as primarily affecting men, we now know that CVD—including heart disease, hypertension, and stroke—also affects a substantial number of women. Experts estimate that one in three women will die of heart disease or stroke, compared with one in 25 women who will die of breast cancer.

In addition to cardiovascular disease, other chronic illnesses affecting women include diabetes, obesity, hypertension, osteoporosis, depression and other mental illness, and HIV/AIDS. AHRQ researchers are seeking ways to help women understand and manage their chronic conditions and achieve a better quality of life.

AHRQ-Sponsored Research

The Agency for Healthcare Research and Quality (AHRQ) supports a vigorous women's health research program, including research focused on CVD and other chronic illnesses. 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.

This program brief summarizes findings from AHRQ-supported research on cardiovascular disease and chronic illness in women published from January 2008 through December 2011. An asterisk (*) at the end of a summary indicates that reprints of an intramural study or copies of other publications are available from AHRQ.

See the back cover of this program brief to find out how you can get more detailed information on AHRQ's research programs and funding opportunities.





Cardiovascular Disease

Recent statistics show significant differences between men and women in survival following a heart attack. For example, 42 percent of women who have heart attacks die within 1 year compared with 24 percent of men. The reasons for these differences are not well understood. We know that women tend to get heart disease about 10 years later in life than men, and they are more likely to have coexisting chronic conditions. Research also has shown that women may not be diagnosed or treated as aggressively as men, and their symptoms may be very different from those of men who are having a heart attack.

- *Association found between cardiac problems and prior use of a certain type of breast cancer drug.*

According to this 16-year study of nearly 20,000 women with breast cancer, those who received chemotherapy that included anthracycline had a higher incidence of congestive heart failure, cardiomyopathy, and dysrhythmia than women who received other kinds of chemotherapy or no chemotherapy. For example, the probability of experiencing congestive heart failure in year 10 was 32 percent for women who received anthracycline, compared with 26 percent for women who received other types of chemotherapy and 27 percent for those who received no chemotherapy. Du, Siz, Liu, et al., *Cancer* 115(22):5296-5308, 2009 (AHRQ grant HS16743).

- *Women are more likely than men to experience a meaningful delay in ED care for cardiac symptoms.*

Researchers examined time-to-treatment for 5,887 individuals with suspected cardiac symptoms who made a call to 911 in 2004. They found that

women were 52 percent more likely than men to be delayed 15 minutes or more in reaching the hospital after calling 911. A delay of 15 minutes or more in heart attack treatment has been shown to result in measurably increased damage to the heart muscle and poorer clinical outcomes. Factors increasing the likelihood of delay included distance, evening rush hour travel, bypassing a local hospital, and transport from a more densely populated neighborhood. Concannon, Griffith, Kent, et al., *Circ Cardiovasc Qual Outcomes* 2:9-15, 2009 (AHRQ grants HS10282, T32 HS00060).

- *Postmenopausal women with metabolic syndrome are at increased risk for a cardiovascular event.*

Researchers used data on 372 postmenopausal women to investigate the effects and usefulness of applying two competing clinical definitions of metabolic syndrome to identify women at high risk of future heart attacks or stroke. Metabolic syndrome—a combination of high blood pressure, elevated blood glucose, abnormal lipid levels, and increased waist size—is known to be associated with elevated risk for heart attack and stroke. Overall, women who met at least one of the definitions for metabolic syndrome were significantly more likely to experience a cardiovascular event than those who did not, and there was no difference between the two definitions in their predictive ability. Brown, Vaidya, Rogers, et al., *J Womens Health* 17(5):841-847, 2008 (AHRQ grant HS13852).

- *Aspirin therapy to prevent heart attack may have different benefits and harms in men and women.*

The U.S. Preventive Services Task Force reviewed new evidence from NIH's Women's Health Study and other recent research and found good evidence that

aspirin decreases first heart attacks in men and first strokes in women. The Task Force has issued a recommendation that women between the ages of 55 and 70 should use aspirin to reduce their risk for ischemic stroke when the benefits outweigh the harms for potential gastrointestinal bleeding. The recommendation and other materials are available at [www.ahrq.gov/clinic/uspstf/uspstf.htm](http://www.ahrq.gov/clinic/uspstf/uspstf/uspstf.htm). U.S. Preventive Services Task Force, *Ann Intern Med* 150(6):396-404, 2009 (AHRQ supports the Task Force).

- *Female and black stroke patients are less likely than others to receive preventive care for subsequent strokes.*

According to this study of 501 patients hospitalized for stroke, 66 percent of women and 77 percent of blacks received incomplete inpatient evaluations, compared with 54 percent of men and 54 percent of whites. Also, women were more likely than men to receive incomplete discharge regimens (anticoagulants and other stroke prevention medications and outpatient followup). Tuhim, Cooperman, Rojas, et al., *J Stroke Cerebrovasc Dis* 17(4):226-234, 2008 (AHRQ grant HS10859).

Chronic Illness

Chronic conditions, such as diabetes, obesity, osteoporosis, and HIV/AIDS, usually are long-lasting and affect all aspects of a woman's life.

- *Routine osteoporosis screening recommended for all women over age 65.*

In an update to its 2002 recommendation, the AHRQ-supported U.S. Preventive Services Task Force now recommends that all women age 65 and older be routinely screened for osteoporosis. The Task Force also recommends that younger women who are at increased risk for osteoporosis be screened if their fracture risk is equal to or greater than that of a 65-year-old white woman who has no additional

risk factors. Risk factors for osteoporosis include tobacco use, alcohol use, low body mass, and parental history of fractures. U.S. Preventive Services Task Force, *Ann Intern Med* 154(5):356-364, 2011 (AHRQ contract 290-02-0024).

- *Medicare reimbursement for bone density scans varies by diagnosis codes and Medicare carrier.*

Researchers analyzed Medicare claims data from 1999 to 2005 for a 5 percent national sample of enrollees with part A and part B coverage who were not in HMOs to analyze denial of Medicare coverage for bone density (DXA) scans. They found that although Medicare reimbursement for DXA is covered as part of the "Welcome to Medicare" exam and for certain indications (e.g., screening for estrogen-deficient women and conditions that lead to bone loss), DXA claims were denied from 5 to 43 percent of the time. Variations in reimbursement were related to diagnosis code submitted, place of service, local Medicare carrier, and several other factors. Curtis, Laster, Becker, et al., *J Clin Densitom* 11(4):568-574, 2008 (AHRQ grant HS16956).

- *Osteoporosis and low bone density affect many postmenopausal women.*

Although osteoporosis affects both women and men, it occurs most often in postmenopausal women. It increases bone fragility and susceptibility to fracture; each year in the United States, about 1.5 million people experience a fracture related to osteoporosis. These three documents present information about osteoporosis and low bone density. *Treatment to Prevent Fractures in Men and Women with Low Bone Density or Osteoporosis: Update of a 2007 Report* presents a review of the evidence comparing the efficacy and safety of agents used to treat low bone density (AHRQ Publication No. 12-EHC023-1). *Treatment to Prevent Osteoporotic*



Fractures: An Update, Clinician Summary presents information for doctors and other providers on the effectiveness and safety of various treatments for preventing fractures in postmenopausal women (AHRQ Publication No. 12-EHC023-3). *Reducing the Risk of Bone Fracture: A Review of the Research for Adults with Low Bone Density* describes the effectiveness, side effects, and costs of the various treatments for low bone density (AHRQ Publication 12-EHC023-A).^{*} These publications are also available on the AHRQ Web site at <http://effectivehealthcare.ahrq.gov/>.

- *Lupus involves higher health care costs and leads to lower work productivity.*

In this study of 812 individuals diagnosed with systemic lupus erythematosus (SLE), researchers found that direct health care costs for each person were \$12,643, and their employment rate dropped from 76.8 percent of individuals at the time of diagnosis to 48.7 percent at study enrollment. The majority of study participants (92.6 percent) were female, since lupus most often affects women. Panopalis, Yazdany, Gillis, et al., *Arthritis Rheum* 59(12):1788-1795, 2008 (AHRQ grant HS13893).

- *Preventive care for patients with lupus could be improved.*

Infections and cancer are two of the leading cause of death in patients with lupus, making it particularly important for women with lupus to get cancer screening and immunizations to prevent infections. According to this study, women with lupus do get key tests and vaccinations at rates similar to the general population, but patients who are younger or have less education are not as likely to receive preventive services. Yazdany, Tonner, Trupin, et al., *Arthritis Res Ther* 12:R84, 2010 (AHRQ grant HS13893).

- *Socioeconomic status is related to physical and mental health outcomes of women with lupus.*

Researchers examined data on 957 patients with lupus to assess symptoms, physical functioning, and signs of depression, as well as neighborhood and socioeconomic status (SES). The majority of patients were female (91 percent) and white (66 percent). Three factors were associated with increased disease activity: lower education level, lower income level, and poverty status. There was a significant association between lower SES, worse functioning, and increased depressive symptoms. Patients who were poor and living in high poverty neighborhoods had a depression rate of 76 percent, compared with 32 percent for patients who were not poor and did not live in high poverty areas. Trupin, Tonner, Yazdany, et al., *J Rheumatol* 35(9):1782-1788, 2008 (AHRQ grant HS13893).

- *Mycobacterial pulmonary disease affects more women than men.*

Nontuberculous mycobacteria (NTM) are an important cause of disease and death, most often in the form of progressive lung disease. Long thought to be more common in men, this study found that the epidemiology of this disease has changed in the last several decades, and it now affects women more often than men. Of the 933 patients with NTM isolated by culture, 56 percent met the microbiologic criteria for NTM disease. Pulmonary cases predominated, and skin/soft tissue infections were the second most common form of NTM disease. Cassidy, Hedberg, Saulson, et al., *Clin Infect Dis* 49:e124-e129, 2009 (AHRQ grant HS17552).

- *Bariatric surgery results in improved fertility in formerly obese women.*

This review of the evidence indicates that fertility improves after bariatric surgical procedures, nutritional deficiencies for mother and child are minimal, and maternal and neonatal outcomes are acceptable with laparoscopic band and gastric bypass, as long as adequate nutrition and supplemental vitamins are maintained. There was no evidence that delivery complications are higher in post-surgery pregnancies. *Bariatric Surgery in Women of Reproductive Age: Special Concerns for Pregnancy*, Evidence Report/Technology Assessment No. 169 (AHRQ Publication No. 08-E013)^{*} (AHRQ contract 290-02-0003).

- *Obese women are at risk for pregnancies exceeding 40 weeks.*

In this study of nearly 120,000 women who gave birth between 1995 and 1999 in California, those who were obese before becoming pregnant ran a high risk of having a pregnancy that went 40 weeks or longer. White women, older women (aged 30-39), and women who had never given birth were also more likely to have pregnancies that went 40, 41, or even 42 weeks. Caughey, Stotland, Washington, and Escobar, *Am J Obstet Gynecol* 200(6):683.e1-683.e5, 2009 (AHRQ grant HS10856).

- *Childhood sexual abuse is one of several factors associated with obesity in women.*

Researchers analyzed information collected between 2003-2006 from 867 women (392 heterosexual, 475 lesbian), aged 35 to 64 to identify factors associated with obesity. They found increased odds of obesity among lesbians (58 percent greater) and women who reported childhood sexual abuse by a family member (42 percent greater), compared with women who were not obese; women who had a history of a mental health diagnosis were also more likely to be obese. Reduced odds for obesity were found in those having a

household income greater than \$75,000 per year or a bachelor's degree. Smith, Markovic, Danielson, et al., *J Women's Health* 19(8):1525-1532, 2010 (AHRQ grant HS17587).

- *Report describes quality of care and outcomes for women with diabetes.*

This report, prepared by AHRQ and the Centers for Disease Control and Prevention, presents measures for quality of care and outcomes for women with diabetes. It highlights where the American health care system excels with regard to diabetes care and where the greatest opportunities for improvement lie. For example, women with diabetes were less likely than women without diabetes to have their blood pressure controlled or to have had a dental visit in the preceding 12 months. Among younger women (64 or younger), women with diabetes were significantly more likely than women without diabetes to have only public health insurance. On the other hand, women with diabetes were much more likely than women without diabetes to have received an annual flu vaccination and to have ever received a vaccination for pneumonia. *Women with Diabetes: Quality of Health Care, 2004-2005* (AHRQ Publication No. 08-0099)* (Intramural).

- *Having a chronic disease may be a barrier to receipt of recommended preventive care among women.*

Researchers used data from three nationally representative surveys to examine the quality of care received by women with diabetes and the impact of socioeconomic factors on receipt of clinical preventive services and screening for diabetes-related conditions. They found that use of diabetes-specific preventive care among women is low, and that women aged 45 and younger and those with low

educational levels were the least likely to receive recommended services. Also, women with diabetes were less likely than other women to receive a Pap smear, and those who were poor and minority were less likely than more affluent and white women to receive the pneumonia vaccine. Owens, Beckles, Ho, et al., *J Women's Health* 17(9):1415-1423, 2008 (AHRQ Publication No. 09-R018)* (Intramural).

Mental/Behavioral Health

- *Psychological distress may cause women to delay getting regular medical care.*

The stress of juggling work and family roles may lead some women to delay or skip regular preventive care, such as routine physicals, mammograms, and other screening tests. In this study of 9,166 women aged 18-49, over 13 percent of them reported experiencing signs of psychological distress, including feeling nervous, hopeless, restless, fidgety, or depressed. These distressed women were more likely to delay getting health care than women who did not have distress symptoms (27 percent vs. 22 percent, respectively). Bonomi, Anderson, Reid, et al., *Arch Intern Med* 169(18):1692-1697, 2009 (AHRQ grant HS10909).

- *Prenatal appointments provide an opportunity to screen for depression and other problems.*

This study found that clinicians often fail to screen pregnant women during their first prenatal visit for depression, stress, support, and whether the pregnancy was planned. Such screening allows clinicians to identify women who may be at risk for post-partum depression or need social support once the baby arrives. During 48 prenatal visits with 16 providers in an academic medical center, 35 women indicated their pregnancies were unplanned. Of

these, only eight of the women were told about pregnancy options, four received information about birth control options, and just six were referred to counselors or social services. Meiksin, Chang, Bhargava, et al., *Patient Educ Couns* 81(3):462-467, 2010 (AHRQ grant HS13913). See also Manber, Schnyer, Lyell, et al., *Obstet Gynecol* 115(3):511-520, 2010 (AHRQ grant HS09988) and Roman, Gardiner, Lindsay, et al., *Arch Women's Mental Health* 12:379-391, 2009 (AHRQ grant HS14206).

- *Nearly two-thirds of mothers with depression do not receive adequate treatment for their condition.*

Nearly 10 percent of the 2,130 mothers in this study reported experiencing depression. More than one-third of those with depression did not receive any treatment for their condition, 27.3 percent received some treatment, and just 35 percent received adequate treatment for depression. Mothers who received treatment were more likely than other mothers to be age 35 or older, white, and have some college education, and they were less likely to be in the paid workforce. Surprisingly, more than 80 percent of mothers who did not receive any treatment for their depression reported having insurance. Witt, Keller, Gottlieb, et al., *J Behav Health Serv Res* online at <http://jbhsr.fmhi.usf.edu/toc/36.html>, 2009 (AHRQ grants T32 HS00063, T32 HS00083).

- *Nearly half of homeless women are in need of mental health services.*

Researchers conducted face-to-face interviews with 821 homeless women in the Los Angeles area, and found that nearly half of the women had a mental distress score indicating the need for further evaluation and possible clinical intervention. Sixty-seven percent of the women were black, 17 percent were

Hispanic, and 16 percent were white. Black women reported the lowest overall mental distress scores; nearly twice as many white women as Hispanic or black women reported childhood or recent physical or sexual assault. Austin, Andersen, and Gelberg, *Women's Health Issues* 18:26-34, 2008 (AHRQ grant HS08323).

More Information

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

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