



# Continuing Education



## Focus on women's health: Cardiovascular disease and cancer in women

### Learning Objectives

**Describe** the key facts about coronary artery disease in women.

**Describe** the key facts about other cardiovascular disorders in women.

**Describe** the key facts about lung cancer in women.

**Describe** the key facts about breast cancer in women.

**Describe** the key facts about common gynecologic cancers in women.

This second article in a three-part series discusses cardiovascular disease and cancer in women. Topics include coronary artery disease, other cardiovascular disorders, lung cancer, breast cancer and common gynecologic cancers.

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**W**hile cardiovascular disease refers to any disease of the heart or blood vessels, coronary artery disease (CAD) affects the arteries that provide blood to the heart muscle. CAD is the number one killer of American women. Most often, it is caused by atherosclerosis – a buildup of plaque composed of lipids, cholesterol and cellular debris that narrows the interior of the blood vessel, leading to reduced blood flow and oxygen to the heart muscle.

In general, CAD develops about 10 years later in women than in men, until about the age of 70, when the incidence in women equals that of men. Because estrogen levels decline after menopause, postmenopausal women lose the hormone's protective effect, and the incidence of CAD rises substantially. Furthermore, the incidence of CAD is greater in African-American women than in Caucasian women.

Risk factors for CAD include age, diabetes, hypertension, cholesterol, smoking, obesity, family history of myocardial infarction and a sedentary lifestyle. A

CAD risk factor unique to women is the removal of both ovaries before the onset of natural menopause. In addition, women who smoke and use oral contraceptives are about 39 times more likely to have a myocardial infarction and 22 times more likely to have a stroke than women who neither smoke nor use birth control pills.

Symptoms of CAD may range from no symptoms at all to angina, heart attack and sudden cardiac death. Patients with CAD are treated with aspirin, nitrates, beta-blockers, statins, thrombolytic therapy, anticoagulant therapy and/or calcium channel blockers. Surgical procedures used to treat patients with CAD include percutaneous transluminal coronary angioplasty and coronary artery bypass grafting. New technologies for percutaneous coronary vascularization are emerging, including drug-eluting stents, intracoronary radiation and intravenous platelet inhibitors.

There is evidence that women who consume higher amounts of fish and omega-3 fatty acids have a lower risk of CAD, particularly CAD deaths, compared to women who have lesser amounts in

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their diet. Based on the data, the consumption of fish twice a week may have a role in the prevention of CAD.

### Other cardiovascular disorders

Other cardiovascular disorders of great importance to women include hyperlipidemia, hypertension and stroke.

**Hyperlipidemia** refers to an elevated lipoprotein or lipid level. It is an established risk factor for coronary artery disease (CAD), sets the stage for atherosclerosis, and may result ultimately in angina and even a heart attack or stroke. Low-density lipoprotein (LDL) has been shown to be the most atherosclerosis-related component of cholesterol, and high-density lipoprotein (HDL) has been shown to be protective against heart disease. In women, the level of HDL may be a more important and predictive risk factor than the level of LDL for developing CAD. Treatment for hyperlipidemia may involve a low-fat diet, weight loss and cessation of cigarette smoking. Women who cannot bring their cholesterol to within appropriate levels

using these measures should receive lipid-lowering drugs. These include bile acid sequestrants, statins, nicotinic acid, fibric acid derivatives and cholesterol absorption inhibitors.

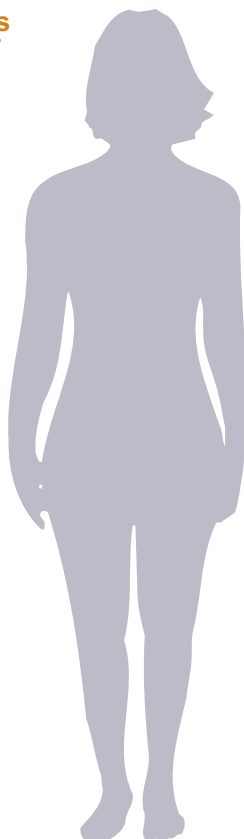
**Hypertension** (high blood pressure) may be one of two types: *primary* (or essential) hypertension is the more common type and has no identifiable cause, while *secondary* hypertension occurs because of another underlying disorder. Incidence of hypertension increases with age such that Caucasian women between the ages of 60 and 74 and African-American women at age 45 are just as likely as their male counterparts to have hypertension. Risk factors for primary hypertension include sodium sensitivity, psychologic factors, heavy alcohol consumption, obesity, diabetes and cigarette smoking. Hypertension in women can be controlled with lifestyle changes and medication. Several factors influence an antihypertensive drug regimen for a woman, including the woman's race, overall health status, the safety and tolerability profile of the drug(s), the efficacy of the drug(s), costs and the simplicity of drug dosing.

**Strokes** occur when the blood supply to the brain is disturbed. There are two types of strokes: ischemic strokes, characterized by the death of brain tissue as a result of reduced blood flow to the brain, and hemorrhagic strokes, characterized by nerve tissue death that occurs when an artery leaks blood into or around the brain. After age 30, strokes occur

## 2005 Estimates for the Major Sites of Cancer Incidence and Death for Women in the U.S.

### Estimated New Cancer Cases

Breast	211,240
Lung & Bronchus	79,560
Colon & Rectum	73,470
Uterus	40,880
Ovary	22,220
Non-Hodgkins Lymphoma	27,320
Melanoma of the Skin*	26,000
Thyroid	19,190
Pancreas	16,080
Bladder	16,200



### Estimated Cancer Deaths by Site

Lung & Bronchus	73,020
Breast	40,410
Colon & Rectum	27,750
Ovary	16,210
Pancreas	15,980
Leukemia	10,030
Non-Hodgkins Lymphoma	9,050
Uterus	7,310
Multiple Myeloma	5,640
Brain	5,480

\* Excluding basal and squamous cell skin cancer and carcinoma in situ.

## Article Summary

- **Coronary artery disease (CAD) affects the arteries that provide blood to the heart muscle.**
  - CAD is the number one killer of American women.
- **Other cardiovascular disorders of great importance to women include hyperlipidemia, hypertension (high blood pressure) and stroke.**
- **Lung cancer is the leading cause of cancer death in American women.**
  - Studies indicate that women may have a greater genetic predisposition to develop lung cancer.
- **Breast cancer is the most common site of cancer in American women, who have the highest incidence of this cancer in the world.**
  - Two genes associated with breast cancer have been identified: BRCA1 and BRCA2.
- **Common cancers of the female reproductive tract include ovarian cancer, endometrial cancer and cervical cancer.**

more frequently in men than in women; however, women who have strokes are twice as likely to die from them. Risk factors for both men and women include atherosclerosis, hypertension, diabetes and smoking. In women, the risk of stroke appears to increase at times of marked hormonal changes, such as pregnancy and childbirth. Symptoms may include sudden loss of consciousness; dizziness; confusion; rapid deterioration in vision, speech or sensation; and weakness or paralysis. The treatment for a stroke often includes rehabilitation therapy, surgery and drug therapy (for example, antiplatelet agents, anticoagulants) to prevent stroke recurrence.

### Lung cancer

Lung cancer is the leading cause of cancer death in American women. Many researchers believe that lung cancer develops over time as a result of exposure to toxic gases (such as cigarette smoke), other carcinogens (such as radon or asbestos) or from long-term lung disease. Cigarette smoking appears to produce a higher risk for the development of lung cancer in women than in men. While a lower percentage of women than men smoke, women now account for half of all newly diagnosed lung cancers.

Studies indicate that women may have a greater genetic predisposition to develop lung cancer. A 1999 study found that women were three times more likely than men to carry a gene mutation known as K-ras. K-ras is a marker for an especially aggressive form of lung cancer found exclusively in smokers or former smokers. In addition, it appears that K-ras may spur tumor growth in response to the female hormone estrogen.

There are two general types of lung cancer: non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). Common symptoms of lung cancer include a persistent cough (“smoker’s cough”), weight loss, breathing difficulties and chest pain. The cough can often produce pus or blood-containing sputum. Patients rarely experience symptoms during the early stages of lung cancer and may be diagnosed only after the disease has progressed to a point at which it cannot be cured.

When compared to other cancers in women, the five-year survival rate with most types of lung cancer is relatively low. As with other types of cancer, the treatment of lung cancer depends on the type and stage of tumor development as well as the overall health of the patient. If diagnosed at an early stage, the chance of survival is greatest when the tumor is removed surgically. Shrinking tumors with chemotherapy and

radiation before surgery may improve a patient’s chance of survival. Surgery usually is not possible in cases of rapidly spreading SCLC; treatment in these cases may result in temporary remission but rarely a cure.

### Breast cancer

Breast cancer is the most common site of cancer in American women, who have the highest incidence of this cancer in the world. Overall, Caucasian women have higher breast cancer rates than African-American women, although in women under age 50, rates in African-American women are higher than in Caucasian women. Risk factors for breast cancer include:

- Age – Breast cancer risk increases with age.
- Age at menarche – The earlier the menstrual cycle begins, the higher the risk for developing breast cancer.
- Number of breast biopsies – Women who have had a biopsy of a suspicious breast lump are at greater risk, and risk increases with the number of biopsies performed.
- First-degree relatives with breast cancer – Women with mothers, sisters or aunts with breast cancer are at increased risk.
- Age at first live birth – Women who have never been pregnant are at increased risk, and risk increases for every year over 20 that the first live birth occurs.

Two genes associated with breast cancer also have been identified: BRCA1 and BRCA2. Women with mutations in these genes have an increased risk for breast cancer of 60 percent to 85 percent. Those likely to have such a mutation include women with two or more first-degree relatives diagnosed with breast cancer before age 50, a male relative with breast cancer, or one or more relatives with breast or ovarian cancer in those with Ashkenazi Jewish heritage.

The Study of Tamoxifen and Raloxifene (STAR), which is currently under way, is comparing two hormonal agents in 22,000 postmenopausal women at increased risk for breast cancer. Initial results, released in April of 2006, indicate that raloxifene and tamoxifen are effective in preventing invasive breast cancer. However, they are associated with an increased risk of blood clots. In addition, tamoxifen is associated with an increased risk for endometrial cancer. For women at high risk for breast cancer, surgical removal of the breast (mastectomy) also is performed sometimes as preventive therapy.

Breast cancer treatment includes surgery, radiation therapy, chemotherapy and hormonal therapy. Typical treatment involves surgical removal of the tumor. This often is followed by adjuvant therapy with radiation or systemic therapy. The appropriateness of therapy regimens depend on factors such as the patient’s menopausal status, age and overall health, as well as the potential adverse effects, costs and convenience associated with the treatment.

## Gynecologic cancers

Common cancers of the female reproductive tract include ovarian cancer, endometrial cancer and cervical cancer.

**Ovarian cancer** is rarely diagnosed until it has reached an advanced stage because there are no effective screening methods for this type of cancer and it is silent in its early stages. Risk factors for ovarian cancer include age (risk is greatest in women aged 50 to 80), uninterrupted ovulation, heredity, breast cancer (women diagnosed with breast cancer before age 50 have an increased risk) and lifestyle (ovarian cancer is associated with cigarette smoking and a high-fat diet).

The initial treatment in ovarian cancer is called cytoreductive surgery. In this procedure, the ovaries and other reproductive organs are removed, along with any apparent intra-abdominal disease. The surgeon also examines the entire abdominal and pelvic cavity to assess the extent of disease. Following surgery, patients may receive adjuvant therapy with radiation or chemotherapy.

**Endometrial cancer** affects the body of the uterus. It typically initiates in the endometrial lining of the uterus. Endometrial cancer is more common in Caucasian women than in African-American women.

However, African-American women are more likely than Caucasians to die from this disease.

The major risk factor for endometrial cancer is exposure to estrogen. Thus, it is linked to estrogen therapy (ET), tamoxifen therapy, early menarche, late pregnancy, never having children and a history of failure to ovulate. Other risk factors include diabetes, infertility, gallbladder disease, hypertension and obesity.

Depending upon the stage of disease, endometrial cancer is treated with surgery, radiation, hormones and/or chemotherapy.

**Cervical cancer** occurs in the tissue of the uterine cervix, the opening to the uterus. Screening for cervical cancer with the Pap test has been highly successful in detecting this disease, and mortality rates have declined significantly over the past few decades.

Cervical cancer is linked to sexual behavior, and is more prevalent in women who have sex at an early age, many sexual partners, or partners who have many partners. It is associated with STDs, especially human papillomavirus (HPV). Research has shown that HPV is the main etiologic factor for cervical cancer.

Cervical cancer generally is treated using surgery, radiation or both. Combined therapy with radiation and chemotherapy in advanced cancer has been shown to reduce the mortality rate for this disease from 50 percent to 30 percent.

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The final article in the series will focus on women's issues in other medical diseases and psychology and behavioral medicine.

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