

# Breast Cancer



## Bottom Line

Nearly all breast cancers can be treated successfully if detected early. An annual mammogram beginning at age 40 is the most effective way to detect breast cancer at an early, curable stage. Annual clinical breast exams by a doctor or nurse, monthly self-breast examinations, and magnetic resonance imaging (MRI) for women at high lifetime risk are additional ways to detect breast cancer early.

## New Cases

An estimated 182,460 new cases of invasive breast cancer are expected to occur among women in the United States during 2008.<sup>1</sup> It is the most frequently diagnosed cancer in women. In addition to the number of female breast cancers, about 1,990 new cases of breast cancer are expected to occur among males in 2008.<sup>1</sup> Breast cancer incidence rates increased among women for more than two decades but decreased 3.5% per year from 2001-2004.<sup>1</sup>

In addition to invasive breast cancer, 67,770 new cases of *in situ* breast cancer are expected to occur nationally among women during 2008.<sup>1</sup> Of these, approximately 85% will be DCIS, that is ductal carcinoma *in situ* (noninvasive cancer cells in the milk ducts).<sup>1</sup> Similar to invasive breast cancer, incidence rates of *in situ* breast cancer have stabilized since the late 1990s.<sup>1</sup>

Breast cancer is the most common reportable cancer among women in Ohio, regardless of race, accounting for 29% of all cancers diagnosed in women.<sup>4</sup> An average of 8,063 new cases of female breast cancer were diagnosed annually between 2001 and 2005 in Ohio with a corresponding rate of 121.9 per 100,000 (Table 2).<sup>4</sup>

The risk of developing breast cancer increases with age. In Ohio from 2001 to 2005, approximately 95% of women who developed breast cancer were 40 and over.<sup>4</sup>

## Risk Factors & Populations with High Rates

Although a specific cause is unknown, several risk factors may contribute to the development of breast cancer.

### Non-modifiable risk factors

**Gender:** Breast cancer is 100 times more common among women than men.

**Age:** 95% of breast cancers occur in women 40 and older.

**Genetics:** About 5%-10% of cases are hereditary and result from gene mutations, most commonly mutations of the BRCA1 and BRCA2 genes.

**Family history:** Having one or more first-degree relatives (mother, sister, or daughter) diagnosed with breast cancer approximately doubles risk.

**Personal history:** Women with cancer in one breast, high breast tissue density, or biopsy-confirmed hyperplasia (abnormal cell proliferation) have increased risk of developing a new breast cancer.

**Race:** White women are slightly more likely to develop breast cancer than are African American women, but African American women are more likely to die of this cancer, due in part to more aggressive tumors among African American women.

**Ethnicity:** Ashkenazi Jews are at increased risk due to increased prevalence of BRCA1 and BRCA2 mutations.

**Previous breast radiation:** Women who as children or young adults had radiation therapy to the chest area as treatment for another cancer (such as Hodgkin's lymphoma or non-Hodgkin's lymphoma) or other medical condition have a significantly increased risk.

**Long menstrual history:** Women who started menstruating before 12 or who went through menopause after 55 have a slightly higher risk.

**Diethylstilbestrol (DES):** Women whose mothers were given DES during pregnancy have slightly increased risk.

### Modifiable risk factors

**Not having children:** Women who have had no children or who had their first child after age 30 have slightly higher risk.

**Oral contraceptive use:** Women who currently use oral contraceptives have a slightly increased risk compared with women who stopped using them more than 10 years ago or never used them.

**Post-menopausal hormone therapy (PHT):** Long-term use (several years) of PHT (especially combined estrogen and progestin therapy) is associated with increased risk.

**Not breast feeding:** Women who have never nursed or who have nursed less than 1.5 years have a slightly increased risk compared to mothers who nurse 1.5 to 2 years.

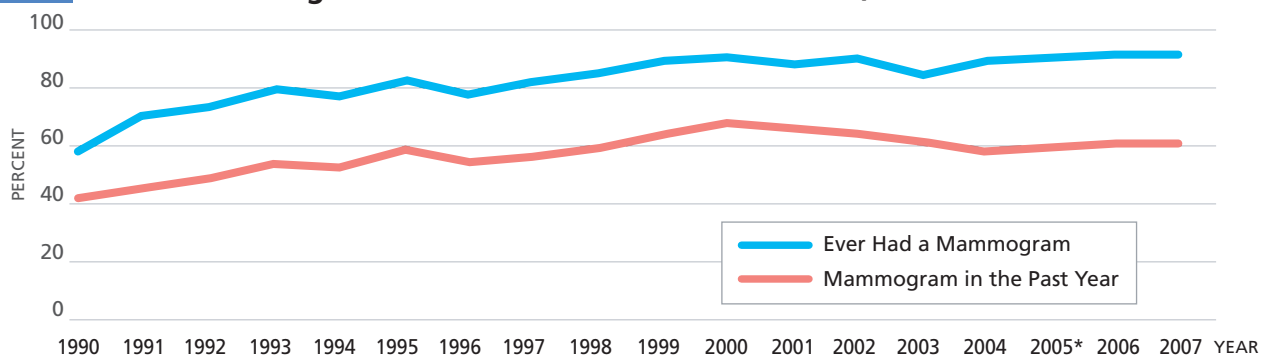
**Overweight/obesity and high fat diet:** Overweight/obese women and those who consume a high fat diet have an increased risk, especially after menopause.

**Alcohol:** Women who drink one alcoholic beverage per day have a slight increased risk. Women who drink 2-5 alcoholic beverages daily have 1.5 times the risk of a nondrinker.

**Physical inactivity:** Those who do not engage in moderate to vigorous physical activity in addition to usual activity on five or more days a week have higher risk than those who do.

**FIGURE 12**

**Trends in the Prevalence of Women 40 and Older Who Reported Having Had a Mammogram Ever or in the Past Year in Ohio, 1990-2007<sup>1,2,3</sup>**



<sup>1</sup> Source: Ohio Behavioral Risk Factor Surveillance System, Ohio Department of Health, 2008.

<sup>2</sup> The weighted percentages were adjusted to: 1) probability of selection, i.e., the number of different phone numbers that reach the household, the number of adults in each household, and the number of completed interviews in each cluster; and 2) demographic distribution, i.e., age and gender.

<sup>3</sup> "Don't Know" and "Refused" were excluded from the denominator. This can cause an artificially high percentage.

\* The Ohio Behavioral Risk Factor Surveillance Survey did not include mammography screening questions in 2005.

About 62 men were diagnosed with breast cancer each year in Ohio from 2001 to 2005 with a corresponding rate of 1.2 per 100,000, which is equal to the rate in the US (Table 2).<sup>3,5</sup> Clinically, breast cancer in men is very similar to breast cancer in women, but the prognosis is often poorer for men because they tend to be diagnosed at a later stage than women.<sup>1,18</sup>

### Deaths

An estimated 40,930 deaths (40,480 women, 450 men) are anticipated from breast cancer in 2008 nationally.<sup>1</sup> Breast cancer ranks second in cancer deaths among women. Only lung cancer accounts for more cancer deaths in women. According to the most recent national data, mortality rates have steadily declined in women since 1990, with the largest decrease (3.3% per year) in women younger than 50 years of age.<sup>1</sup> Improved mammography screening to detect breast cancer early, along with better treatment options, have made breast cancer a more curable disease than it was 30 years ago. In Ohio from 2001-2005, 97% of breast cancer deaths occurred in women 40 and older.<sup>5</sup> The 2001-2005 average annual mortality rate for breast cancer in Ohio females was 27.5 per 100,000.<sup>5</sup> This represents 1,900 average annual deaths in Ohio from female breast cancer over the time period (Table 3).<sup>5</sup>

### Early Detection

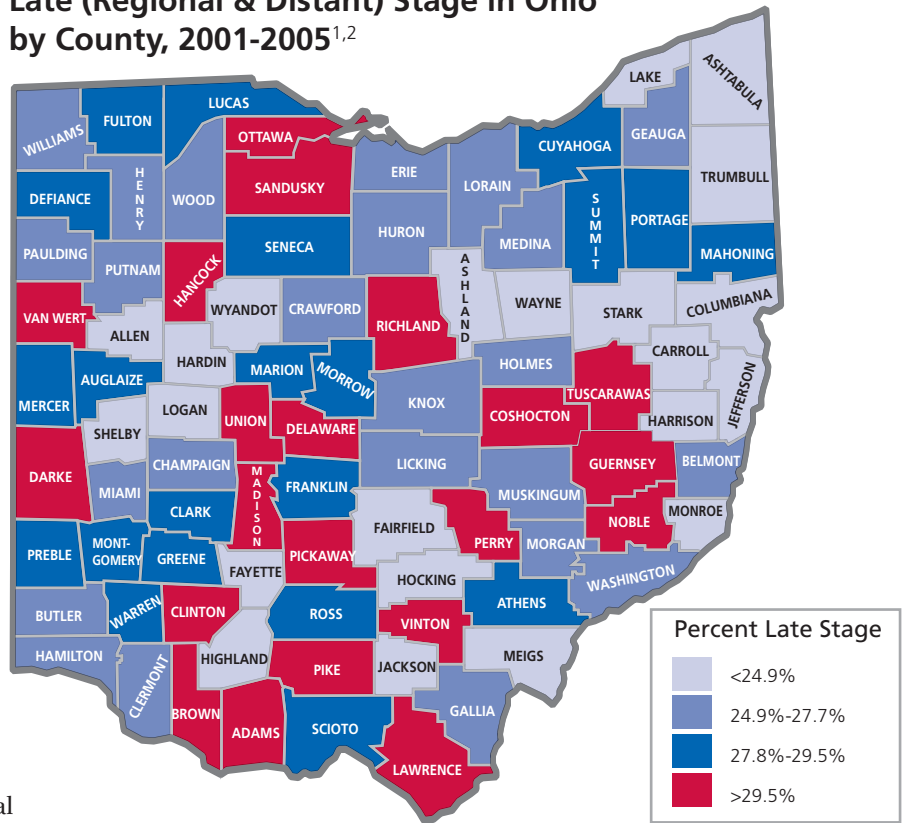
Mammography is especially valuable as an early detection tool because it can identify breast cancer at an early stage, usually before physical symptoms develop.<sup>1</sup> Numerous studies have shown that early detection saves lives and increases treatment options. It is important for all women to follow the screening guidelines in Table 8 on page 39.

According to the 2007 Ohio Behavioral Risk Factor Surveillance Survey (BRFSS), 61% of Ohio women 40 and older reported having had a mammogram in the past year.<sup>19</sup> Also according to the 2007 BRFSS, more African Americans (65%) than whites (61%) reported having had a mammogram in the past year.<sup>19</sup> Figure 12 displays the upward trend in mammography rates among women 40 and over in both having a mammogram in the past year, which increased from 42% in 1990 to 61% in 2007, and ever having had a mammogram, which increased from 59% in 1990 to 91% in 2007.<sup>19</sup>

In addition to mammography, the American Cancer Society now recommends a yearly MRI scan among women at an exceptionally high risk of developing breast cancer. This includes women with a BRCA1 or BRCA2 gene mutation; a first-degree relative with a BRCA1 or BRCA2 gene mutation; a history of radiation therapy to the chest as a child or young adult (ages 10 to 30); or a 20%-25% lifetime risk of breast cancer (determined mainly by family history). Those with Li Fraumeni, Cowden, or Bannayan-Riley-Ruvalcaba syndrome or with a first-degree relative diagnosed with one of these syndromes are also high risk.<sup>20</sup> Women at moderately increased risk, including women with a previous history of breast cancer, DCIS, lobular carcinoma *in situ* (LCIS), or atypical hyperplasia and women with extremely dense or unevenly dense breasts should talk with their doctors about the possible benefits and limitations of yearly MRI scans. MRI scans are more sensitive than mammograms but also produce many false positives. For this reason, MRI scans are not recommended for women at average risk.<sup>20</sup>

**FIGURE 13**

**Cancer of the Female Breast Diagnosed Late (Regional & Distant) Stage in Ohio by County, 2001-2005<sup>1,2</sup>**



<sup>1</sup> Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2008.  
<sup>2</sup> In Ohio, 27% of female breast cancers are diagnosed late (regional and distant) stage.

**Treatment**

Patients should discuss possible options for the best management of their breast cancer with their physicians. Taking into account the tumor size, stage, and other characteristics, as well as the patient’s preferences, treatment may involve lumpectomy (surgical removal of the tumor) or mastectomy (surgical removal of the breast) and removal of the lymph nodes under the arm if cancer has spread to the nodes; radiation therapy; chemotherapy; hormone therapy (tamoxifen; aromatase inhibitors); or targeted biologic therapy with trastuzumab (Herceptin®) or lapatinib (Tykerb®).<sup>1</sup> Often, two or more methods are used in combination. Numerous studies have shown that, for early stage disease, the long-term survival probability after lumpectomy plus radiation therapy is similar to the survival probability after mastectomy for women whose tumors have not spread to the skin, chest wall, or distant organs.<sup>1</sup>

It is unknown as to how often DCIS will progress to invasive cancer and need to be treated. Because doctors can’t yet distinguish DCIS cancers that will progress from those that won’t, treatment of DCIS is recommended to prevent tumor progression. Treatment options include lumpectomy and radiation therapy, with or without the drug tamoxifen, and mastectomy with or without tamoxifen.<sup>1</sup>

**Survival**

The five-year relative survival probability for localized breast cancer was 98% in 1996-2004.<sup>1,3</sup> If the cancer had spread regionally, however, the probability was 84%, and for women with distant metastases the probability was only 27% (Figure 1).<sup>3</sup> Survival after a diagnosis of breast cancer continues to decline beyond five years and is also stage-dependent, with the best survival observed in women diagnosed with early stage disease.

In Ohio from 2001 to 2005, 68% of breast cancers among women were diagnosed early (*in situ* or local stage) (Table A-1).<sup>4</sup> In order to improve the odds of sur-

**Signs & Symptoms of Breast Cancer**

- Lump or swelling in the breast or underarm area
- Persistent changes in the breast such as skin irritation, thickening, dimpling, swelling, distortion, or tenderness
- Nipple ulceration or retraction (turning inward)
- Redness or scaliness of the nipple or breast skin
- Spontaneous discharge other than breast milk

*Any of these symptoms may be caused by cancer or by other, less serious, health problems. If you have any of these symptoms, see your doctor.*

vival, early detection through mammography screening provides the best chance of discovering breast cancer at an early stage.<sup>1</sup> Regions and populations with a high percentage of late-stage breast cancer need increased screening to reduce mortality from this disease. The percentages of late-stage breast cancer by county in Ohio are shown in Figure 13.

**Currently, a woman living in the United States has a 1 in 10 lifetime risk of developing invasive breast cancer.<sup>2</sup>**