

# Mammographic Screening of the High-Risk Woman

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**Annual screening mammography beginning at age 40 is recommended for the general population. For some women at high risk for developing breast cancer at a younger age, annual screening may be appropriate starting at an earlier age. These women include those with a personal history of breast cancer, nontherapeutic radiation to the breasts especially for Hodgkin's disease, BRCA positive women, women with a family history of a first-degree relative with breast cancer at a young age, and women with a biopsy diagnosis of lobular carcinoma in situ or atypical ductal hyperplasia. Women with a biopsy diagnosis of atypical lobular hyperplasia develop breast cancer after age 40 and do not need earlier screening, unless they have a family history of breast cancer. Although increasing a woman's risk for breast cancer, radial scar does not increase risk for women younger than 40 years old and therefore does not require screening at a young age. *Am J Surg.* 2000;180:288-289. © 2000 by Excerpta Medica, Inc.**

Consensus screening recommendations for the patient at average risk to develop breast cancer are the initiation of mammography at age 40 with annual screening thereafter. This recommendation has been adopted by most major American medical organizations, including the American Cancer Society, the American Medical Association, and the American College of Radiology. For women whose risk is greater than those of the general public, no consensus guidelines are available on the use of screening with mammography for early detection.

For women with only slightly elevated risk, the development of breast cancer at an early age is not a likely event, and the routine screening recommendations should be followed. These women include those with prolonged exposure to estrogen, including women with menarche before age 12 and no live birth by age 30. Women who are Jewish, never married, college graduates, obese, and have a high consumption of alcohol also are included in this group.

Very high risk women in whom breast cancer may develop at an early age include women with a personal

history of breast cancer, prior radiation to the breasts, a strong family history of breast cancer or positive testing for genes associated with breast cancer, and a biopsy diagnosis of ductal atypia or lobular carcinoma in situ (LCIS). Unlike the recommendations for mammographic surveillance of women at normal risk, which are based on long-term follow-up of more than 500,000 women who participated in prospective randomized controlled studies, recommendations for these women are based on an understanding of the risk to develop breast cancer and not on clinical trials.

As in the case of any woman with breast cancer, mammographic screening of the woman younger than 40 years old with a personal history of breast cancer should be done annually. Follow-up recommendations are not influenced by her age.

Multiple genes have been associated with an increased risk of breast cancer. PTEN gene, associated with Cowden syndrome, has a 30% to 40% lifetime risk. A 50% to 89% risk of breast cancer by age 50 is associated with p53 (Li-Fraumeni syndrome). MSH2 and MLH1 (Muir-Torres syndrome) convey a 12% lifetime risk for breast cancer. This risk is elevated but has not been calculated for STK11 (Peutz-Jeghers syndrome). There is no reported mammographic screening experience for patients with these genes. Because of the rarity of these syndromes clinical experience is extremely limited, and recommendations are impossible to make.

More data are available for BRCA 1 and 2 genes, which were specifically identified because of their link with breast cancer. BRCA 1 conveys a 19% risk of breast cancer by age 40 and a lifetime risk estimated as large as 85%.<sup>1</sup> BRCA 2 has a similar risk for breast cancer, although it develops somewhat later than in women with BRCA 1. Both genes also carry a greatly increased risk for ovarian cancer. Recommendations that have been routinely advanced for women with a very strong family history (at least some of whom are BRCA positive) are probably appropriate for this group. In this population mammographic screening should begin at an age 10 years younger than the youngest first-degree relative was initially diagnosed with breast cancer. However, screening younger than age 25 is not recommended.<sup>2,3</sup>

Women with a history of nontherapeutic radiation to their breasts are at risk for radiation-induced breast cancer. The largest group of these women is those who were treated for Hodgkin's disease with mantle radiation, as well as chemotherapy. Breast cancers have been reported developing at 10 to 23 years after treatment in this group.<sup>4</sup> Therefore, mammographic screening beginning at 8 years after treatment is recommended.<sup>5</sup>

LCIS is found incidentally in about 1% of breast biopsies and is found in association with 6% of breast cancer. In 90% of cases, women are premenopausal. The risk of de-

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veloping breast cancer is estimated at 18% to 37%, with breast cancers developing in either breast, usually of ductal histology, and usually more than 15 years after the biopsy diagnosis of LCIS.<sup>6</sup> Programs of routine surveillance of these women with annual mammography and routine physical examination have resulted in low mortality, comparable with that achieved with prophylactic mastectomy. Therefore, annual mammography after a biopsy diagnosis of LCIS is recommended.

Atypical ductal hyperplasia (ADH) has relative risk of developing breast cancer for women 20 to 30 years old of 7.0 and for women with a positive family history of 9.7.<sup>7</sup> These women have a mean time to developing breast cancer of 8.2 years. Annual mammographic screening is recommended for women after a biopsy diagnosis of ADH. Atypical lobular hyperplasia (ALH) has an increased risk of cancer developing in women aged 46 to 55 for whom the relative risk is 6.4 and for women with a positive family history who have a relative risk of 8.4. Breast cancer development in women under the age of 40 without a family history does not appear to be a significant risk in these women. Therefore, annual screening after this biopsy diagnosis is only recommended for women with a positive family history.

Radial scar has a slightly increased risk of breast cancer development. However, this is increased if it is associated with proliferative disease with or without atypia. However, since 97% of cancers develop in women older than 45 years, screening for women younger than 40 with radial scar does not appear to be necessary.<sup>8</sup>

Therefore, annual screening for women younger than 40 is recommended for those with a personal history of breast

cancer, BRCA positive or a strong family history of premenopausal breast cancer, Hodgkin's disease treated with mantle radiation, LCIS, ADH, and ALH with a family history of breast cancer. Additionally, a single screening mammogram should be considered in women undergoing breast reduction, breast biopsy, and those with a strong cancer phobia requesting mammography.

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