

In order to make an informed decision about screening mammograms, women must be given the following facts:

1. Mammograms do not prevent breast cancer. They are a detection device, not a prevention method.
2. Mammography uses ionizing radiation, a known carcinogen that has a cumulative effect on the body. The greater the radiation exposure/dosage over a lifetime, the greater the risk of radiation-induced cancer. This risk is highest in tissue in which cells are rapidly changing, such as the growing breast tissue of adolescent females.¹ The Mammography Quality Standards Act (MQSA) regulations specify that a single view dose shall not exceed 3.0 milligray (mGy) or 0.3 rad. The average dosage currently used for a single view mammogram is 1.6 mGy (0.16 rads), a level that has dropped considerably from when mammograms were first introduced.²
3. The quality of mammography screening varies widely across the country, depending on the age and maintenance of the equipment, the skill of the technician who takes the x-rays, and the expertise of the radiologist who interprets the films. It is important that the mammography facility used be certified by the Food and Drug Administration (FDA). Under the MQSA, all mammography facilities must undergo an annual inspection and prominently display the certificate issued by an FDA-accredited agency. To find out whether a mammography center is currently certified, ask the center to show you their current certification, or look for certified sites by zip code at www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfMQSA/search.cfm
4. Mammograms do not always detect breast cancer—causing “false negative” results. False negatives occur when a mammogram fails to reveal a cancer that is present. In day-to-day practice, mammograms can miss more than a quarter of all tumors.³
5. Mammograms are not always accurate—causing “false positive” results. False positives occur when a mammogram finds something in the breast that, on biopsy, proves not to be cancer. As many as three-fourths of all post-mammogram biopsy results turn out to be benign lesions.⁴
6. No studies have ever been conducted on the effectiveness of mammography screening for women under 40 years of age. There is therefore no evidence to support routine mammography screening of women younger than 40.
7. Mammography may not be effective in detecting breast cancer for many women under the age of 50, or more accurately, women who are pre-menopausal. Because the breast tissue of pre-menopausal women tends to be denser than that of post-menopausal women, mammograms of younger women may be more difficult to read.⁵ Therefore, in order to make informed decisions regarding continuing mammography screening, pre-menopausal women should be given information about the density of their breasts and the effect of that density on the readability of their mammograms. The risk of radiation exposure to pre-menopausal women, combined with the high incidence of false negative readings for mammograms of women in this group, means that routine mammography screening of all women in this group may cause more harm than good.
8. Women 40 years old or older who are pre-menopausal and who consider themselves to be at high risk for breast cancer should consult a breast cancer specialist for guidance on when to begin mammography screening.
9. There are conflicting studies examining the effectiveness of screening mammograms for women between the ages of 50 and 65. Some of these studies suggest that annual mammograms do not affect the breast cancer mortality rate.⁶ Others

suggest that the mortality rate could be reduced for women in this group by as much as one third.⁷ Therefore, it is unclear whether mammography screening is of benefit for women in this age group.

10. No studies have been done that look at the effectiveness of mammography screening for women aged 65 or older.

There are a number of methods for detecting breast cancer that are not in common use because they have not yet been shown to be more effective than the current screening methods of mammography, breast self exam, and clinical breast exam. Research is underway on the following detection methods that may one day lead to a more reliable, non-radiation based technology for detecting breast cancer.

- **Digital Mammography:** already approved by the FDA, this technology relies on x-rays of the breast, but digitizes the images, permitting them to be transferred by computer. The FDA approved this technology despite the lack of any evidence that digitizing mammography images improved outcomes for women with breast cancer. Studies are currently underway to evaluate whether digital mammograms are a more effective technology than standard mammography. (See “Digital Imaging: A Marketing Triumph,” *BCA Newsletter* #62, November/December 2000)
- **Thermography (digital infrared imaging)** uses sensors to measure heat from the breast, based on the understanding that chemical and blood level activity increase as cancer develops, and this activity creates heat on the surface of the skin. The FDA has approved one system of thermography, and trials are currently underway to evaluate its effectiveness. Previous trials using older technology resulted in inconsistent findings. One concern about thermography is that the technology, while potentially very sensitive (it finds lots of breast changes), is not very specific (we can’t tell whether the thing it finds is cancer or not). (See “Thermography: An Alternative to Mammography?,” *BCA Newsletter* #60, July/August 2000)
- **Ductal lavage** uses a catheter inserted through the nipple of the breast to remove fluid in the breast ducts. The fluid is then examined under a microscope for evidence of cell changes that may indicate the existence of cancer or precursors to cancer. Ductal lavage is not in use for screening, though it is being used in some clinics in addition to, rather than in replacement of, other screening methods such as mammography. The invasive nature of the procedure may inhibit its usefulness as a screening tool in the future. (See “For Whom the Cells Toll,” *BCA Newsletter* #65, May/June 2001)
- **MRI (Magnetic Resonance Imaging):** this technology generates images from signals sent out by nuclear particles in the magnetic field to which the MRI machine exposes the breast. The technology is extremely sensitive, creating challenges in developing uniform criteria for evaluating the results. Until these challenges are resolved, it is unlikely that this very expensive technology will be used for breast cancer screening. Trials currently underway are evaluating MRI in conjunction with mammography screening, not as a substitute.
- **Blood Test:** Unlike the PSA test for prostate cancer, there is no blood test used to screen for breast cancer, though there are blood tests that can evaluate whether a woman carries a genetic mutation that might increase her risk of developing breast cancer (See “Getting into Our Genes,” *BCA Newsletter* #67, September/October 2001), and blood tests—like the AMAS test—that help monitor for the recurrence of breast cancer (See “Blood Test May Help Detect and Monitor Breast Cancer,” *BCA Newsletter* #37, August/September 1996). Until research resolves the dilemma posed by our inability to distinguish who will benefit from or need breast cancer treatment from who won’t, it is ill-advised to advocate for a blood test for breast

cancer, or for any method of detecting breast cancer “earlier.”

the National Cancer Institute, 2000 Sep, 92[18]: 1490-99

7 Nystrom L et al., “Breast cancer screening with mammography: overview of Swedish randomised trials,” *Lancet*, 1993 Apr 17;341[8851]:973-8

For more information on developing technologies for breast cancer detection see: Institute of Medicine/National Resource Council, *Mammography and Beyond: Developing Technologies for the Early Detection of Breast Cancer*, National Academy Press: Washington DC, 2001.

1 Love, Susan, *Dr. Susan Love’s Breast Book*, 3rd ed. , Perseus Publishing: MA. 2000; p. 125.

2 Suleiman OH, “Mammography in the 1990s: The United States and Canada,” *Radiology*, 1999; 210, No. 2: 345-351e

3 24-27% cited in Yankaskas B et al., “Association of recall rates with sensitivity and positive predictive values of screening mammography,” *American Journal of Roentgen Ray Society*, 2001 Sep; 177[3]:543-9. 28% cited in Poplack S et al., “Mammography in 53,803 Women from the New Hampshire Mammography Network,” *Radiology*, 2000 Dec; 217:832-840.

4 Institute of Medicine/National Resource Council, *Mammography and Beyond*, National Academy Press: Washington DC. 2001; pg. 39.)

5 Love, Susan, *Dr. Susan Love’s Breast Book*, 3rd ed. , Perseus Publishing: MA. 2000; p. 125.

6 Olsen O and Gotzsche P, “Cochrane Review on Screening for Breast Cancer with Mammography,” *The Lancet*, 2001 Oct, 358:1340-1342; Miller A, et al., “Canadian National Breast Screening Study-2: 13-Year Results of a Randomized Trial in Women Aged 50-59 Years,” *Journal of*

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