

## COMMENTARY

## Women should be fully informed of the potential benefits and harms before screening mammography

Based on their survey of women's attitudes about screening mammography, Schwartz and colleagues conclude that women are knowledgeable of the chance of a false-positive result and accept this risk as a consequence of undergoing screening mammography. It is not clear, however, whether the authors accurately assessed women's true tolerance of false-positive mammography results because their survey did not describe the spectrum of physical and psychological sequelae of a false-positive result (for example, additional diagnostic evaluations and associated morbidity and anxiety).<sup>1-3</sup> Thus, the proportion of women who are tolerant of false-positive mammography results may have been overestimated because the possible harms of screening mammography were not fully described. Even so, 38% of women surveyed indicated that they would want to factor information about the consequences of false-positive results into their decision about undergoing screening mammography. If nearly 2 of every 5 women desire such information, then they should be informed of the possible harms, as well as the benefits, of screening mammography.

The authors attempt to bolster their conclusion by reporting that women who had both a positive mammography result and subsequent benign findings on tissue biopsy expressed the same high tolerance for false-positive results as all of the women surveyed. However, women who have positive mammography results that subsequently lead to biopsy account for only 25% of women with false-positive results.<sup>4</sup> Thus, these women's tolerance of false-positive results may not accurately reflect the views of all women who have false-positive results. Women who undergo breast biopsy for positive results are often so relieved when they find out that they do not have breast

cancer that they might understandably—but somewhat ironically—have a high tolerance of false-positive results.

The authors found that a significant proportion (55%) of women overestimate the benefit of mammography, and that only 25% accurately reported that the chance of dying of breast cancer would be reduced by 30% for a 60-year-old woman undergoing screening mammography. Nonetheless, Schwartz and associates conclude that the high tolerance for false-positive results is not explained by overly optimistic beliefs of the benefits of mammography. One interpretation of the results is that women do overestimate the benefit of screening and that such misperceptions may explain why some women did not want to factor information about the consequences of false-positives into their decision about screening mammography.

The authors found that few women (6%) were knowledgeable about ductal carcinoma in situ (DCIS). When women were informed about DCIS, 3 of every 5 women wanted to take into account the chance of it being detected when deciding whether to undergo screening mammography. This is an important finding and suggests that information about DCIS should be included in educational materials and discussions about the possible benefits and harms of screening mammography. We were involved in designing and writing a Web site (<http://mammography.ucsf.edu/inform/index.cfm>) that gives an example of how DCIS may be explained to women. The site states that

DCIS lesions contain cells that appear to be cancer but not all such lesions behave as cancer, ie, they will not spread outside the ducts and invade surrounding tissue nor will they be life threatening. In other words, only some DCIS will eventually become invasive cancer. What percentage will become invasive cancer is not known. Almost all women who have DCIS detected are treated by surgery, either a mastectomy (removal of the breast) or by lumpectomy (excision of the lesion) with or without radiation.

Additional information that could be conveyed to women is the absolute benefit of detecting DCIS. For example, for every 10,000 women aged 70 years and older screened for 10 years, 65 cases of DCIS will be detected and surgically treated with mastectomy or lumpectomy and only 1 death from invasive breast cancer averted.<sup>5</sup>

To encompass a range of individual preferences, women should be provided with estimates—in absolute terms—of the possible benefits and harms of mammography to make an informed decision about screening (see box). Women who easily tolerate the additional tests that

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### Estimates that should be provided to a woman for informed decision making before mammography

- Individual risk of invasive breast cancer and DCIS
- Age-specific chance of an abnormal result
- Age-specific chance of a false-positive result
- Chance that mammography may miss cancer
- Expected absolute reduction in risk of breast cancer deaths among women in her age group who undergo screening mammography compared with women who do not

## Potential Benefits & Risks of Mammograms



**About this Web Site:** Breast cancer is a commonly diagnosed cancer in women. Mammograms are one way to detect breast cancer. This Website provides up to date information about the potential benefits and risks of screening mammograms according to a woman's age. Prior to placing this Web site on the Internet, its content was reviewed by medical researchers and by breast cancer advocates for completeness, clarity and bias. The Deputy Director, Division of Cancer Prevention and Control at the National Cancer Institute and the Associate Director for Science, Division of Cancer Prevention and Control at the Centers for Disease Control reviewed and approved the content of the program for linkage to their Internet sites.

This Web site, at <http://mammography.ucsf.edu/inform/index.cfm>, gives clinical information about ductal carcinoma in situ (DCIS)

are recommended following an abnormal screening result and want to do everything possible to decrease the chance of death from breast cancer, even if certain harms are

involved, will likely choose to undergo screening mammography. On the other hand, women who feel that the small incremental risk of breast cancer death associated with not being screened is outweighed by the fairly high likelihood of a false-positive result, the additional testing, and the anxiety may rationally choose not to have screening mammography.

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### References

- 1 Ong G, Austoker J, Brett J. Breast screening: adverse psychological consequences one month after placing women on early recall because of a diagnostic uncertainty: a multicentre study. *J Med Screen* 1997;4:158-168.
- 2 Lowe JB, Balanda KP, Del Mar C, Hawes E. Psychologic distress in women with abnormal findings in mass mammography screening. *Cancer* 1999;85:1114-1118.
- 3 Kerlikowske K, Grady D, Barclay J, Sickles EA, Eaton A, Ernster V. Positive predictive value of screening mammography by age and family history of breast cancer. *JAMA* 1993;270:2444-2450.
- 4 Kerlikowske K, Barclay J. Outcomes of modern screening mammography. *J Natl Cancer Inst Monogr* 1997;22:105-111.
- 5 Kerlikowske K, Salzman P, Phillips KA, Cauley JA, Cummings SR. Continuing screening mammography in women aged 70 to 79 years: impact on life expectancy and cost-effectiveness. *JAMA* 1999;282:2156-2163.