

# Screening Mammography: Revisiting Assumptions About Early Detection

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## ABSTRACT

Recommendations for the frequency of mammography screening vary across several professional advisory groups. In 2009, the United States Preventive Services Task Force Guidelines reduced screening to biennially for women 50-74 years old. Drivers of this change were false-positive results and unnecessary biopsies, exposure to radiation, and treatment of cancers that would never develop. Despite the recommendation, surveys show that screening has actually increased since the change. A review of the individual woman's risk and a more balanced approach addressing both the benefits and harms of screening is required so that patients can make an informed choice.

**Keywords:** mammography, overdiagnosis, screening, US Preventive Services Task Force

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Until recently, the screening of patients was fairly straightforward. Based on age and sex, specific screening tests were ordered. The assumption that early detection of disease would allow early intervention to reduce mortality was not questioned. More recently, it has become less clear when to screen a patient for some diseases. This is especially true for breast cancer screening. Recommendations have changed based on increased knowledge about tumor characteristics and prognosis, patient variables such as age and past findings, and the harm that can be done to patients either from screening or incorrect diagnosis and subsequent treatment.<sup>1</sup> The health care literature reflects a growing understanding among providers that “harming the healthy” is a nontrivial outcome of the detection and treatment of normal variants and nonprogressive conditions.<sup>2</sup> The potential harm of labeling an individual as diseased and incurring the cost of treatment could outweigh the risk from the disease.

It is commonly believed that any early finding deserves treatment, revealing both a provider and a popular bias for early detection. Increasingly, however, it appears that many findings are incidental, unlikely to progress, or not likely to result in loss of life, whereas treating them comes with known disadvantages. Large studies of screening mammography confirm the disadvantages to patients of detecting

conditions that may never progress to symptomatic disease.<sup>3</sup>

The purpose of the United States Preventive Services Task Force (USPSTF) is to develop recommendations for primary care clinicians on the appropriate content of periodic health examinations.<sup>4</sup> For example, in 2012, the USPSTF made a final recommendation against prostate surface antigen (PSA) screening in healthy men based on a growing understanding that the consequences of treatment in a healthy population can be devastating. Based on an examination of the accumulated data and a growing recognition of harms associated with false-positive results, in 2009, the USPSTF updated its guidelines for breast cancer screening to recommend against routine screening for women age 40-49 years, reduced the frequency of mammography for women from 50 to 74 years to every other year, and recommended against screening in women over 74 years whose lifespan was unlikely to exceed 5 years.<sup>4</sup> The American Cancer Society and the American College of Radiologists continue to recommend women age 40 years and older have a mammogram annually.<sup>5,6</sup> The discrepancy and misconceptions about risk and the consequences of false-positive treatment have sparked controversy among clinicians and patients. Conflicting and/or changing guidelines for screening from professional advisory bodies have led to

confusion for both nurse practitioners (NPs) and patients about when or if screening should be done with individual patients. **Table 1** shows a comparison of recommendations for mammography among various organizations.<sup>5-7</sup>

An illustrative parallel to mammography screening is that of prostate cancer screening. A major European study using prostate surface antigen to screen for prostate cancer found a relative survival benefit of 20%.<sup>8</sup> Complicating the European study, however, was a substantial rate of overdiagnosis; for every 1,410 men screened, 48 cases of prostate cancer would need to be treated to prevent a single prostate cancer death.<sup>8</sup> In contrast, a US study comparing PSA and a digital examination to detect cancer found no survival benefit from either screening test, and the authors questioned the benefits for any screening test for prostate cancer.<sup>9</sup> With evidence accumulating

against the survival benefit of PSA screening, a 2013 Cochrane meta-analysis found “insufficient evidence to either support or refute the use of routine mass, selective, or opportunistic screening for prostate cancer” and ultimately “that screening did not significantly reduce prostate cancer-specific mortality.”<sup>10</sup> Refining their findings, researchers noted that survival benefit from prostate-specific cancer accumulates over more than a decade, if at all. Like the USPSTF for screening mammography, authors noted that screening men with a short remaining lifespan is not useful when the cause of death will likely be something other than prostate cancer.<sup>4,10</sup>

**SCREENING MAMMOGRAPHY CONTROVERSY**

Evidence from the Surveillance Epidemiology and End Results study indicated that the rising incidence of disease set against stable deaths rates suggests that

**Table 1. Comparison of Mammography Screening Recommendations for Women**

Age	American Cancer Society	American College of Obstetricians and Gynecologists	US Preventive Services Task Force	Kaiser Permanente Care Management Institute	American College of Radiology
40-49	Offer screening mammography annually	Offer screening mammography annually, but biennial screening may be more appropriate based on patient’s individual risk and values	Shared decision between patient and provider on screening benefits and harms, and patient’s individual risk and values	Shared decision between patient and provider on screening benefits and harms, and patient’s individual risk and values	Offer screening mammography annually
50-74	Offer screening mammography annually	Offer screening mammography annually, but biennial screening may be more appropriate based on patient’s individual risk and values	Offer screening mammography every 2 years	Offer screening mammography every 1-2 years	Offer screening mammography annually
75 and older	Offer screening mammography annually as long as patient in good health	Offer screening mammography annually, but biennial screening may be more appropriate based on patient’s individual risk and values	Insufficient evidence to assess the additional benefits and harms of screening mammography in women 75 years or older	Should decide in consultation with provider	Offer screening mammography annually as long as patient in good health

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