Consensus double reading of mammograms was more effective and less costly than single reading


Objective
To determine whether a second independent reading of mammograms by a radiologist was a cost-effective means of detecting additional cases of breast cancer.

Design
Clinical and cost-effectiveness evaluation of 3 alternative policies for reading mammograms and recalling women with abnormal results.

Setting
St. Margaret's Hospital, Epping, England.

Patients
33 734 consecutive women aged 50 to 64 years going to hospital for breast cancer screening. A separate sample of 150 consecutive women was surveyed to provide data on private costs.

Intervention
3 strategies for reporting and recall were compared: 1) recall for assessment based on a single reading of mammograms by 1 radiologist; 2) nonconsensus double reading of mammograms by 2 radiologists with recall if recommended by either radiologist; and 3) consensus double reading of mammograms with recall if the radiologists agreed; if they disagreed, a decision was made by the senior consultant radiologist or by discussion between the 2 readers (the strategy in place at St. Margaret's Hospital).

Main cost and outcome measures
Number of cases of cancer detected, recall rates, and cost-effectiveness ratios. All costs were standardised to April 1994 prices.

Main results
Consensus double reading detected 9 additional cases of cancer per 10 000 women screened (95% CI 5 to 13) compared with single reading of mammograms. Nonconsensus double reading detected 10 additional cases of cancer per 10 000 women screened (CI 6 to 14) compared with single reading. No difference existed in the number of additional cases of cancer detected between consensus and nonconsensus double reading (1 additional case of cancer detected per 10 000 women screened, CI 2 to 2.2). The recall rate after consensus double reading was lower than after single reading (difference 2.7%, CI 2.4% to 3.0%).

Conclusion
Consensus double reading of mammograms was more effective and less costly than single reading.

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Commentary
In the analysis by Brown and colleagues that compared the current mammography reading policy at St. Margaret's Hospital (double reading with consensus required for recall) with 2 alternative hypothetical strategies, the authors showed that the current strategy used is the most cost-effective. 2 elements of this study must be considered when attempting to generalise the conclusions to other settings. First, the costs assigned in this meta-analysis are likely to vary among institutions and countries. Therefore, it is necessary to apply local charges to see whether the results of this study can be applied locally. The time and costs assigned for a second reading might exceed the threshold values determined by the sensitivity analysis in other settings (1). Similarly, the costs for assessing abnormal results are also likely to vary, with an unpredictable effect on the comparison of strategies. Second, results of this study are based on the interpretations of all mammograms by 1 senior radiologist at St. Margaret's Hospital and a total sample of 6 radiologists. The increased yield in cases of cancer detected in this study without a substantial increase in negative assessments (false-positive results) may not occur when radiologists with differing levels of skill and experience apply the same strategies. Previous studies have clearly established that the interpretation of mammograms varies widely among radiologists (2, 3). Analysis of data from a larger number of mammographers in various settings is required to establish whether double reading with consensus is generally a cost-effective strategy beyond the study site.