The early detection and diagnosis of breast cancer: a literature review. An update

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Authors' objectives
The authors aimed to update a literature review on the effectiveness of breast cancer screening and diagnosis conducted in 1996. Their main objective was to assess the early diagnosis of breast cancer by primary care health professionals.

Searching
The authors searched for English language studies published between January 1996 and October 1998. Searches were conducted on MEDLINE, EMBASE, HealthSTAR, Current Contents, DARE, NHS EED, the Cochrane Library and CINAHL; the search terms were listed in detail in the report. The reference lists of identified papers and documents published by members of the International Network of Agencies for Health Technology Assessment were also searched.

Study selection
Study designs of evaluations included in the review
Systematic reviews with meta-analysis, randomised trials, cohort studies, cost-effectiveness studies, case-control studies, before-and-after studies, and cross-sectional descriptive and ecological studies were eligible for inclusion. The studies actually included in the review were randomised trials, cohort studies, case-control studies and other cross-sectional studies. Studies were excluded if they were published before January 1996 or after October 1998, had a participation rate lower than 50%, had a sample size less than 25, or did not clearly describe their methods or results.

Specific interventions included in the review
Studies were eligible for inclusion in the review if they assessed breast cancer screening and diagnosis techniques in primary care. Studies were included on the triple diagnostic test for breast cancer and its individual components (clinical examination, fine-needle aspiration and mammography), ultrasound, core biopsy and population-based breast cancer screening.

Reference standard test against which the new test was compared
The authors did not specify any inclusion criteria relating to the diagnostic reference standard. Some of the studies included in the review used surgery and long-term follow-up to assess the presence of breast cancer and survival rates.

Participants included in the review
The authors did not specify any inclusion criteria relating to the participants. Details of each study sample were tabulated in the report.

Outcomes assessed in the review
The authors did not specify any outcomes that the studies had to assess in order to be eligible for inclusion. The main outcomes included in the review were sensitivity, specificity, and overall and disease-free survival.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors rated the articles according to study design, based on a schedule developed by the New Zealand Guidelines Group of the National Health Committee (see Other Publications of Related Interest). The level of evidence was graded using an adaptation of the U.S. Preventive Services Task Force protocol (1989; full citation not provided). The articles were appraised using the validity schedules described. The authors did not state how many reviewers performed the validity assessment.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Data were extracted on the level of evidence, country, sample size, participant characteristics, outcomes, main results and study limitations.

Methods of synthesis
How were the studies combined?
A narrative synthesis of the studies was presented, supported by detailed descriptive tables.

How were differences between studies investigated?
The authors described differences between the studies narratively.

Results of the review
The authors included 232 studies, of which 33 focused on evaluating diagnostic tools for identifying breast cancer (5 on fine-needle aspiration, 6 on the triple test, 6 on core biopsy and 7 on scintigraphic imaging).

Mammography: there was evidence that mammography is more sensitive than clinical examination for diagnosing breast cancer in women of all ages. There was evidence that population-based mammography screening improves survival in women aged 50 to 65 years; there may also be benefits for women aged 65 to 75 years. There was less evidence of the benefits of mammography for women younger than 50 years. Tailored mammography appointment letters from general practitioners may increase the uptake of screening.

Fine-needle aspiration: the sensitivity is generally high (over 90%), but the specificity varies (78 to 95%). Both the sensitivity and specificity vary depending on the placement of the needle. In lesions larger than 1 cm, core biopsy may be an alternative to fine-needle aspiration.

Triple test: triple testing with mammography, fine-needle aspiration and clinical examination is more accurate than any of the tests alone.

Other tests: ultrasound is recommended as the first radiological investigation for women younger than 35 years. There was no strong evidence that breast self examination improves survival. There was insufficient evidence about the role of scintimammography, colour Doppler and magnetic resonance mammography in new breast lesions.

Authors’ conclusions
Mammography, fine-needle biopsy, and clinical examination may be useful for detecting breast cancer, especially when used in combination. There was less evidence about scintimammography, colour Doppler and magnetic resonance mammography. There was little evidence that breast self examination increases survival.

CRD commentary
This clearly presented review provides a summary of studies published between 1996 and 1998. The rationale, search strategy, search terms and some limitations of the review were described clearly. The authors searched multiple databases, although there was no focus on unpublished material. The authors did not discuss the possibility of publication bias or other biases that may have influenced their conclusions.

The authors covered a broad range of material, including risk factors, diagnostic tools, symptoms and screening tools. This broad scope may make it more difficult to combine the data effectively. The authors did not provide information about the overall number of participants in the review, or their characteristics. It was therefore difficult to assess the overall evidence-base from which the conclusions were drawn.

The authors did not provide full details of the processes for assessing the relevance and validity of the included studies. All the excluded studies were listed in an appendix. Details of the individual studies were tabulated and a clear narrative synthesis was provided, although it would have been possible to combine some of the data quantitatively.
Overall, the authors' conclusions were supported by the data presented. However, the authors constantly compared their findings with an earlier review as a form of validation. Therefore, it may be helpful for readers to view both reports simultaneously, especially as this review covers only a limited time period (the authors did not provide a full citation for the previous review).

**Implications of the review for practice and research**

Practice: The authors concluded that mammography, fine-needle aspiration and clinical examination may be clinically useful for detecting breast cancer, especially when used in combination. Detailed guidelines of when to use specific tests were provided. The authors found little evidence that breast self examination improves breast cancer survival.

Research: The authors suggested that further research is needed into the accuracy and usefulness of scintimammography, colour Doppler and magnetic resonance mammography.

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http://nzhta.chmeds.ac.nz/publications/breast_cancer.pdf

**Other publications of related interest**

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**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.