Computer-Aided Mammography Finds More Cancer, More False Positives

ECRI Institute's Newest Evidence Report Details Results from Seven Studies

Computer programs designed to help radiologists could identify more cases of breast cancer, but they might also increase the number of false positive results, which can lead to biopsies in healthy women, according to ECRI Institute's recent systematic review.

Using computer-aided detection (CAD) mammography, "you do catch some cases that would have been missed if the mammogram had been read only by a single radiologist," said Meredith Noble, a research analyst at ECRI Institute.

Typically, a radiologist examines a woman's screening mammogram to check for signs of cancer. When using CAD with mammography, the radiologist still reads the mammogram, but a computer program also evaluates the mammogram and marks suspicious areas for the radiologist to review further.

ECRI Institute analysts synthesized data from seven previously published studies of CAD mammography's use in 392,015 healthy women with no lumps or other symptoms of breast cancer.

The current evidence report, released this month, is an update of an earlier review also published by ECRI Institute (www.ecri.org), an independent not for profit organisation that researches best approaches to improving patient care. The research agency produces systematic evidence reviews on medical devices, drugs, biotechnologies and procedures as part of its Health Technology Assessment Information Service and as a US accredited Evidence-based Practice Center.

Investigators found that in women with no symptoms, screening with CAD mammography identified an estimated 84.2 percent to 87.6 percent of women with cancer, a finding referred to as test sensitivity.

In addition, an estimated 88.1 percent to 88.3 percent of healthy women correctly received negative test results when undergoing CAD mammography, a finding referred to as test specificity.

Researchers compared CAD mammography results to biopsy results and patient follow-up records to determine whether if the women received a breast cancer diagnosis within a year after the mammogram.

The updated evidence review indicated that CAD mammography helped identify an estimated 50 additional cancer diagnoses for every 100,000 women who underwent the screening test, compared to having the mammogram read only by a radiologist.

The analysis also estimated that following CAD mammography, between 1,090 and 1,290 women per 100,000 healthy women — women who did not have breast cancer — would be recalled for further testing in the form of more imaging studies or biopsy based on abnormal mammogram results.

ECRI Institute estimated that 80 of those women who had false-positive results would undergo biopsy.

Although the results of this evidence report pertain mainly to health care providers, patients do need to know about the advantages and potential drawbacks of CAD mammography, Noble said. Most notably, physicians should tell women who undergo CAD mammography screenings that there are more false-positives when CAD is used.

False-positive findings can provoke anxiety, but some women and their doctors might find them to be an acceptable trade-off for identifying some additional cancers, Noble added.

CAD mammography received approval by the U.S. Food and Drug Administration in 1998.

For inquiries about ECRI Institute's evidence report, "Computer-aided Detection (CAD) Mammography for Breast Cancer Screening," or its Health Technology Assessment Information Service, please contact ECRI Institute European Office at info@ecri.org.uk or call +44 (0) 1707 831001, ext. 491.