

Breast cancer screening: No added value through mammography

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Do we need a revision of current recommendations for breast cancer screening? According to a recent prospective multicenter cohort study published in the "*Journal of Clinical Oncology*", this appears advisable at least for young women carrying an increased risk of breast cancer.

The results of the EVA trial confirm once more that magnetic resonance imaging (MRI) is substantially more accurate for early diagnosis of breast cancer than [digital mammography](#) or breast ultrasound: MRI is three times more sensitive for breast cancer than digital mammography. For the EVA trial, almost 700 [women](#) were enrolled. Aim of the trial was to refine existing guidelines for surveillance of women at high and moderately increased risk of breast cancer. Findings suggest that in these women, MRI is essential for early diagnosis - and that a mammogram or an ultrasound examination does not increase the "cancer yield" compared to what is achieved by MRI alone. Researchers conclude that annual MRI is not only necessary, but in fact sufficient for screening young women at elevated risk of breast cancer. In women undergoing screening MRI, mammograms will have no benefit and should be discontinued. Moreover, MRI screening is important not only for women at high risk, but also for those at moderately increased risk. ([doi: 10.1200/JCO.2009.23.0839](https://doi.org/10.1200/JCO.2009.23.0839)).

Between 2002 and 2007, the EVA trial recruited 687 women who carried a moderately increased risk of breast cancer (lifetime risk of 20% and over). Women underwent 1679 screening rounds consisting of annual MRI, annual digital mammography and half-annual screening

ultrasound examinations. During this time span, 27 women received a new diagnosis of invasive cancer or DCIS ([Ductal Carcinoma In Situ](#)).

Of all imaging methods under investigation (digital mammography, ultrasound and MRI), MRI offered by far the highest sensitivity: MRI identified 93% of breast cancers. 37% of cancers were picked up by ultrasound. The lowest sensitivity was achieved by digital mammography, which identified only one-third of breast cancers (33%). These results confirm once more that MRI is essential for surveillance not only of women at high risk, but also for women at moderately increased risk of breast cancer. Moreover, the results contradict current guidelines according to which mammography is considered indispensable for [breast cancer screening](#). One aim of the EVA trial was to question this concept and to ask whether it is still appropriate to require that MRI should only be used in addition to mammography. The results speak for themselves: If an MRI is available, then the added value of mammography is literally negligible. Researchers conclude that MRI is necessary as well as sufficient for screening young women at elevated risk of breast cancer. Since mammography appears to be unnecessary in women undergoing MRI, its use is no longer justifiable, and current guidelines should be revised to reflect this.

Current guidelines questionable

Current guidelines for women at high familial risk of breast cancer recommend annual MRI (with or without ultrasound) and annual MRI starting at age 25-30. "These guidelines were set up based on little or no scientific evidence, and mainly reflect expert opinion", summarizes Prof. Christiane Kuhl, radiologist at the University of Bonn and principal investigator of the EVA trial. "In the light of the results of the EVA trial, such recommendations should be revisited". This seems even more important because digital mammography uses x-rays (ionizing radiation) to detect breast cancer. "The radiation dose associated with regular

mammographic screening is clearly acceptable and safe", underscores Kuhl. "However, regular mammographic screening usually starts at age 40-50". The situation is different if systematic annual mammographic screening is started at age 25-30. "Not only because these women will undergo more mammograms and therefore will experience a cumulative lifetime radiation dose that will be substantially higher, but also because the breast tissue of young women is more vulnerable to the mutagenic effects of radiation". This appears to be especially true for BRCA mutation carriers. "Accordingly, we impose more radiation on less radiation-tolerant breast tissue - for a very limited, if any, diagnostic benefit". Therefore, Kuhl advocates a revision of existing guidelines: "It is no longer justifiable to insist on annual mammographic screening women in their thirties if they have access to screening MRI".

MRI is a mature technology

In the past, MRI was used strictly in addition to mammography only. The allegedly high rate of "false positive" diagnoses and the allegedly insufficient sensitivity for DCIS were the main reason to discourage its use as a stand-alone method for [breast cancer](#) screening. "In this multicenter trial, with basic quality assurance implemented not only for mammography, but also for MRI, we were able to prove that false positive diagnoses are avoidable if MRI studies are interpreted with adequate radiologist expertise". In the EVA cohort, the Positive Predictive Value achieved with MRI was already even higher than that of mammography or breast ultrasound. "Moreover, we found that MRI offered the highest sensitivity especially for DCIS", adds Dr. Kuhl. "It is simply wrong to state that we need a mammogram to detect intraductal cancer".

Provided by University of Bonn

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