

Opportunities for improvement of the breast cancer screening programme executive summary



Breast cancer is the most common cancer in women in the Netherlands. One in seven Dutch women will be diagnosed during her lifetime and about 3,000 Dutch women die from breast cancer each year. Detecting breast cancer early increases the chances of survival. For more than 30 years, an organised breast cancer screening programme has been offered in the Netherlands. Recent developments in artificial intelligence (AI), risk stratification and new imaging techniques offer opportunities to further improve the screening programme. At the same time, capacity within the programme is limited by staff shortages and a tight labour market.

The state secretary of Health, Welfare and Sport (VWS) has asked the Health Council to identify new developments and advise on options to improve the breast cancer screening programme, within the available capacity of the programme.

Organised screening has favourable benefit-harm ratio

In the Netherlands, women aged between 50 and 75 years are invited every two to three years to take part in breast cancer screening, which

involves taking X-rays of the breasts (mammography). More than 850,000 women are screened each year. The aim of the screening programme is to reduce deaths from breast cancer and this goal is being achieved. Based on modelling, it is estimated that breast cancer screening prevents around 1,300 breast cancer deaths per year in the Netherlands. Tumours that are detected through organised screening are more likely to be detected at an early stage, making them more treatable. Harms of screening include false-positive and false-negative results, overdiagnosis and overtreatment, and pain during screening. Early detection of breast cancer and reduction of breast cancer mortality outweigh these harms, according to the committee. The benefit-risk ratio is therefore assessed as favourable.

Changes to screening interval and age range does not lead to significant improvement

The committee assessed whether the screening programme could be further improved by changing the start or stop age or the screening interval. The committee assessed these changes given the available

capacity of the screening programme, as requested by the state secretary. Based on modelling studies, adjusting the start age, stop age and screening interval would achieve approximately the same results as the current screening programme in terms of prevented deaths, life years gained, overdiagnosis and QALYs (life years gained in good health).

The number of false-positive results would increase (mainly when considering a lower starting age), which is unfavourable because more women would then be referred to hospital for follow-up diagnostics, which is burdensome and, in retrospect, unnecessary. The committee therefore concludes that changing the start or stop ages or the screening interval will not lead to a marked improvement in the programme. In addition, these adjustments would lead to drastic changes to screening programme that require significant investment of time and resources. According to the committee, it is not efficient to make sweeping changes now that do not lead to a clear improvement, while at the same time, developments are expected in AI, risk stratification and imaging techniques.



Future implementation of risk stratification and AI can improve population screening

The committee expects that population-based breast cancer screening can be further improved through the use of risk stratification and AI. One form of risk stratification is to screen women with a low risk of developing breast cancer less often and women with a high risk more often. Further research into risk stratification is currently being conducted

and the committee will later advise on issues such as the pros and cons of risk stratification and in which way it could be implemented. With AI, breast cancer risk scores can be calculated so that risk stratification is possible. In addition, AI can be used to improve the assessment of mammography images and reduce the workload for radiologists.

As AI tools are rapidly being developed, the committee believes it is important to make preparations for implementing AI within the Dutch screening programme are made now. These preparations could include choosing the type of AI used within the screening programme (for risk stratification and/or mammogram assessment), setting thresholds for safe use, and testing and training AI models. Implementation will also involve ethical, legal and practical challenges that will require consideration.

New imaging techniques are being researched

Tomosynthesis (an alternative X-ray technique), mammography with a contrast agent (CEM) and abbreviated MRI are new imaging techniques that could improve the breast cancer screening programme.

As tomosynthesis may be able to detect breast cancer better than mammography, this technique could potentially replace mammography. CEM and abbreviated MRI could be used as an additional test for women with very dense breast tissue (category D). For these women, the existing screening programme is less effective, as breast cancer is less visible in very dense breast tissue, while having very dense breast tissue increases

the risk of breast cancer. Several studies on CEM, abbreviated MRI and tomosynthesis are either underway or in preparation.

Less painful screening test not yet available

The committee looked at options for less painful or less uncomfortable mammogram. The committee advises against the use of other compression plates, as there is uncertainty about the quality of the images taken with alternative compression plates. As a result, breast cancers may be missed, while there is minimal impact on levels of pain experienced during screening. As yet, there are no other imaging techniques that could replace mammogram. Ultrasound, MRI or CT appear to be unsuitable as primary screening tests for various reasons, such as their poorer ability to detect breast cancer. Therefore, mammography remains the preferred screening test for organised screening for the time being.

The committee also looked into other ways to make mammography less painful or uncomfortable. Research has shown that informing women about mammography and the process of screening can reduce pain and discomfort. The committee therefore highlights the importance of adequate information provision, which is also relevant for participation in the screening programme.

Data sharing can be improved

The committee stresses that the storage and exchange of data from the screening programme between different implementing organisations is essential for the quality of, and improvement of, the programme.

Currently, obstacles are experienced with data sharing, resulting in insufficient monitoring of screening outcomes, such as participation, detection and interval cancers. This also hinders scientific research. The committee therefore recommends identifying what the obstacles are and, as far as possible, removing them while also respecting the applicable ethical and legal frameworks.

This publication can be downloaded from www.healthcouncil.nl.

Preferred citation:

Health Council of the Netherlands. Opportunities for improvement of the breast cancer screening programme.

The Hague: Health Council of the Netherlands, 2024; publication no. 2024/04.

The Hague, March 12, 2024. All rights reserved.