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Abstract ICSN 2017 meeting (300 words max)

Title

Benefit-to-harm ratio of the Danish breast cancer screening programme

Authors

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Background

The primary aim of breast cancer screening is to reduce breast cancer mortality, but screening also has negative side-effects as overdiagnosis. To evaluate a screening programme, both the benefits and harms should be considered. Published estimates of the benefit-to-harm ratio, the number of lives saved from breast cancer death divided by the number of overdiagnosed breast cancer cases, varied considerably from 0.33 to 2.5. The objective of the study was to estimate the benefit-to-harm ratio of breast cancer screening in Denmark using the long-term cohort data on the screening outcomes.

Methods

The numbers of lives saved and overdiagnosed cases (invasive and ductal carcinoma in situ (DCIS)) were calculated per 1,000 women aged 50-79, using Danish published estimates for breast cancer mortality and overdiagnosis, and incidence and mortality rates in Denmark. Estimations were made for both invited and screened women.

Results

Among 1,000 women invited to screening from age 50 to age 69 and followed until age 79, we estimated that 5.4 lives would be saved from breast cancer death and 2.1 cases overdiagnosed, under the observed scenario in Denmark of a breast cancer mortality reduction of 23.5% and 2.3% of the breast cancer cases being overdiagnosed. The estimated benefit-to-harm ratio was 2.6 for invited women and 2.8 for screened women.

Conclusions

Among 1,000 women invited in the Danish breast cancer screening programme, 2-3 women would be prevented from dying from breast cancer for every woman overdiagnosed with invasive breast cancer or DCIS. The difference between the previous published ratios and 2.6 for Denmark is probably more a reflection of the accuracy of the underlying estimates than of the actual screening programmes. Therefore, benefit-to-harm ratios should be used cautiously.

Keywords (min 3)

screening, breast cancer, live saved, overdiagnosed cases, benefit-to-harm ratio