POSTER EE501

Healthcare costs of mammography screening and breast cancer treatment: A registry-based study from Norway

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BACKGROUND

Breast cancer is the most common cancer among Norwegian women, with around 4,000 new cases and 600 related deaths in 2022 [1]. Mammography screening is a preventative measure aimed at identifying cancer in earlier stages, enabling more effective treatment and reducing mortality rates. However, mammography screening involves the potential for overdiagnosis and requires substantial resources.

OBJECTIVES

The purpose of this study is to support Norwegian decision making related to breast cancer prevention and treatment; by estimating the healthcare costs of the current Norwegian breast cancer screening program (BreastScreen Norway) and breast cancer treatment by stage of diagnosis.

METHODS

We estimated the annual costs of the Norwegian mammography screening program in 2025 based on data on the number of performed screening examinations, follow-up examinations and cancer cases from the Norwegian Cancer Registry and the unit costs of all associated procedures. We estimated costs from both the health service and extended healthcare perspectives, including time and travel costs to attend healthcare visits. The estimation is structured in three components:

- **Screening examinations:** Number of examinations is based on the female Norwegian population. Costs include program administration, invitations, facilities and mobile units, mammography procedures, health care resource use, and patient co-payments. Time and travel costs are added.
- **Follow-up examinations:** Number of follow-ups is based on recall rates for prevalent and subsequent screens. Costs include invitations, procedures, patient co-payments. Time and travel costs are added.
- **Treatment of cancer:** Stage-specific breast cancer incidence is multiplied with unit costs for surgery, radiotherapy, medical treatment, and outpatient consultations. Drug prices are given by publicly-available prices, and treatment intensity from expert clinical opinion. Time and travel costs are added.

RESULTS

In 2025, BreastScreen Norway is projected to include about 258 000 primary screenings and 7 500 follow-up examinations. The estimated cost per examination was NOK 2 300 and NOK 4 500, respectively. Treatment costs for 2 459 breast cancer cases range between NOK 145 000 to 430 000 per woman by stage **(Figure 1).** Estimated annual total costs were NOK 589 million for primary screening, NOK 33 million for follow-up examinations, and NOK 620 million for cancer treatments, including time and travel costs **(Table 1)**.

KEY FINDINGS

In 2025, the Norwegian breast cancer screening program is projected to cost NOK 622 million for screening and follow-up, while annual treatment costs amount to NOK 620 million. Time and travel costs constitute 30 percent of screening and follow-up costs, and 10 percent of treatment costs. Treatment of overdiagnosed cases is estimated to add NOK 67 million.

Table 1: Annual examinations/cases and estimated costs of breast cancer care, Norway 2025

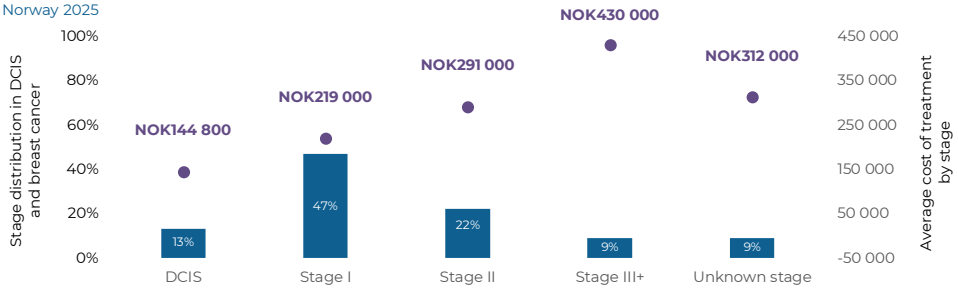
Cost component	Annual examniation/ cases	Costs: Health service perspective (NOK 2025)	Costs: Extended health care perspective (NOK 2025)
Screening examinations	257 900	411 414 200	588 823 900
Follow-up examinations	7 400	22 282 400	33 118 600
Cancer treatments	2 500	555 295 100	619 869 900

Note: Costs for cancer treatment are weighted averages across subtypes of cancer. Extended healthcare perspective includes patients' time and travel costs. All costs rounded to nearest 100.

DISCUSSION

- BreastScreen Norway requires considerable resources each year.
- Estimates of FTEs varied across diagnostic centra, and it is difficult to isolate screening-related activity. Given expected shortages of health personnel, the program's resource requirements should be carefully considered prior to potential policy changes.
- This analysis has several limitations. Our cost estimated are uncertain, as reimbursement rates and DRG averages may not fully reflect true resource use. Further, we did not include costs of complications, long-term follow-up, or end-of-life care.
- Compared to the study by Moger et al. (2015) [2], which estimated mean 10-year treatment costs of EUR 31 940, our results are somewhat lower. This difference likely reflects both changes in treatment practice, such as introduction of new, costly therapies and less extensive surgery, and differences in methodology.
- While screening may reduce breast cancer mortality, overdiagnosis adds costs and health burden. New technologies reduce the negative effects, e.g. overdiagnoses and false positives, however improvement in treatment could reduce the relative benefit of screening.

Figure 1: Proportion of breast cancer cases by stage at diagnosis and weighted average treatment cost per patient, Norway 2025



Note: Analysis by Oslo Economics based on Cancer Registry data (2013–2024). Including cost related to time and travel, across subgroups of cancer. DCIS = ductal carcinoma in situ. All costs rounded to nearest 100.

CONCLUSION

The Norwegian breast cancer screening program requires considerable resources. Estimates on resource use associated with both prevention and treatment of breast cancer may help inform future analyses that evaluate breast cancer control policies, including cost-effectiveness analyses used to inform priority setting.

Funding

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References

1. Cancer in Norway 2023 - Cancer incidence, mortality, survival and prevalence in Norway. *Oslo: Cancer Registry of Norway*; 2024.
2. Moger, T., Bjørnelv, G. & Aas, E., 2016. Expected 10-year treatment cost of breast cancer detected within and outside a public screening program in Norway. *Eur J Health Econ*, 17(6), pp. 745-54.

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