

Long term cost-effectiveness of Oncotype DX test vs current clinical practice from a Dutch cost perspective

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Introduction

Optimizing therapeutic regimens for breast cancer patients has an important role to play in improving outcomes and optimal use of resources. Oncotype DX[®] testing has been shown to provide clinically valuable information in addition to traditional measurements (such as tumor size, tumor grade and lymph node status) to support chemotherapy treatment decision making in women with breast cancer.

Objective

The aim of this study was to evaluate the expected incremental cost-effectiveness of Oncotype DX testing to support adjuvant therapy decision making vs. current clinical practice in the treatment of patients with ER+, early-stage breast cancer in the Netherlands.

Methods

A Markov model was developed to project distant recurrences, survival, quality-adjusted life years (QALYs) and direct medical costs for patients with ER+, node-negative or micrometastatic (pN1mic) early-stage breast cancer, over a time horizon of 30 years from a Dutch health systems perspective. The model compared Oncotype DX testing to inform treatment recommendations to conventional diagnostic procedures including Adjuvant! Online. The model was run with Dutch specific life tables for mortality and three respective datasets for net change in treatment recommendations following Oncotype DX testing:

- A published meta-analysis (Hornberger et al. 2011) on treatment recommendations with and without Oncotype DX served as the base case for the model;
 - Oncotype DX study in Germany (Eiermann et al. 2012)
 - Oncotype DX study in Wales (Holt et al. 2011).
- Costs (in 2012 euros) were derived from published Dutch sources.

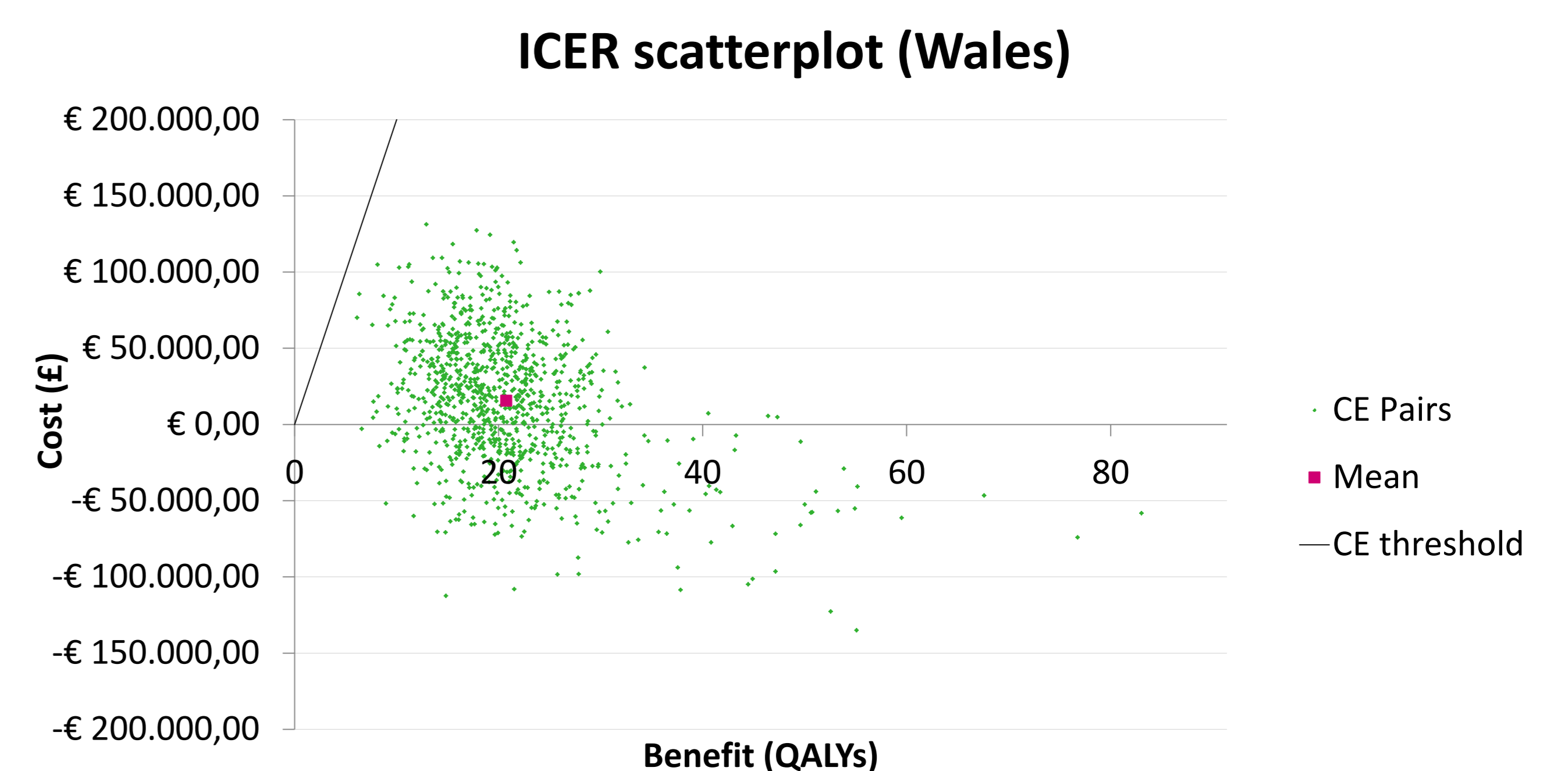
	Cost	Source
Chemotherapy, endocrine therapy, Hospitalisation, administration	€ 12.360	DBC-
Distant recurrence	€ 1,721,00	Thomas, 2009 (converted to €)
Oncotype DX [®]	€ 3.180,00	Genomic Health

Following Dutch pharmacoeconomic guidelines, future costs were discounted at 4% and clinical benefits at 1.5% annually. A probabilistic sensitivity analysis was performed.

Results

Oncotype DX was projected to increase mean expected life years (LY) by 0.07 to 0.23 years and mean expected QALYs by 0.20 to 0.36. Clinical benefits were driven by optimized allocation of adjuvant chemotherapy in the Oncotype DX group. Depending on which dataset was used, direct medical costs were estimated to be lower or slightly higher with Oncotype DX testing. This led to a range of incremental cost-effectiveness ratios (ICERs) from cost-saving to €626 / LY and €717 / QALY gained.

Cost-effectiveness of Oncotype DX testing was sensitive to net changes in chemotherapy for low risk patients.



Per patient data 30 year time horizon	Meta-Analysis (Hornberger et al. 2011)	German data (Eiermann et al. 2012)	Wales data (Holt et al, 2011)
ICERs	DOMINANT	DOMINANT	€ 626 / LY
% cost effective at €20,000 / QALY	100%	99,90%	100%

Conclusion

Reallocation of adjuvant chemotherapy based on Oncotype DX test results was associated with improvements in long-term survival and QALYs. The ICERs indicated that Oncotype DX would be cost saving or highly cost-effective, depending on the dataset used.

At a willingness to pay threshold of €20,000/QALY (lowest cost-effectiveness threshold applied in the Netherlands), the probabilistic sensitivity analysis showed a 100% probability that Oncotype DX testing would be cost-effective versus current clinical practice in the Netherlands.

Oncotype DX represents an effective and affordable approach to favorably affect the lives of women with early-stage breast cancer in the Netherlands.