

A Budget Impact Analysis of Pertuzumab, Trastuzumab, and Chemotherapy in the Neoadjuvant Setting for HER2-Positive High-Risk Early Breast Cancer Patients: Insights from the Tuscany Regional Health Care System Perspective.

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Background

Clinical trials show pertuzumab (P) combined with trastuzumab-chemotherapy (TC) increases pCR rate in neoadjuvant HER2+Breast Cancer (BC) patients. Italy doesn't reimburse this treatment, and economic impact of TPC vs. TC regimen is uncertain. The study evaluated the possible economic impact of TPC from the Tuscany Regional Health Care System perspective.

Material and Methods

A 3-year dynamic budget impact model (BIM) was developed to assess the economic impact of TPC in neoadjuvant HER2+BC patients eligible for primary systemic therapy. The BIM included a 9 health states Markov model (Figure 1), incorporating treatment costs, patient management, and recurrence. Input data were gathered from 3 Tuscan Breast Units and literature. The BIM performed two analyses:

1) assessing the impact of TPC in neoadjuvant treatment of 100 patients followed for 3 years, and 2) evaluating the impact of TPC in neoadjuvant treatment of expected incident HER2+BC patients over 3 years in Tuscany. Healthcare costs with and without TPC were compared.

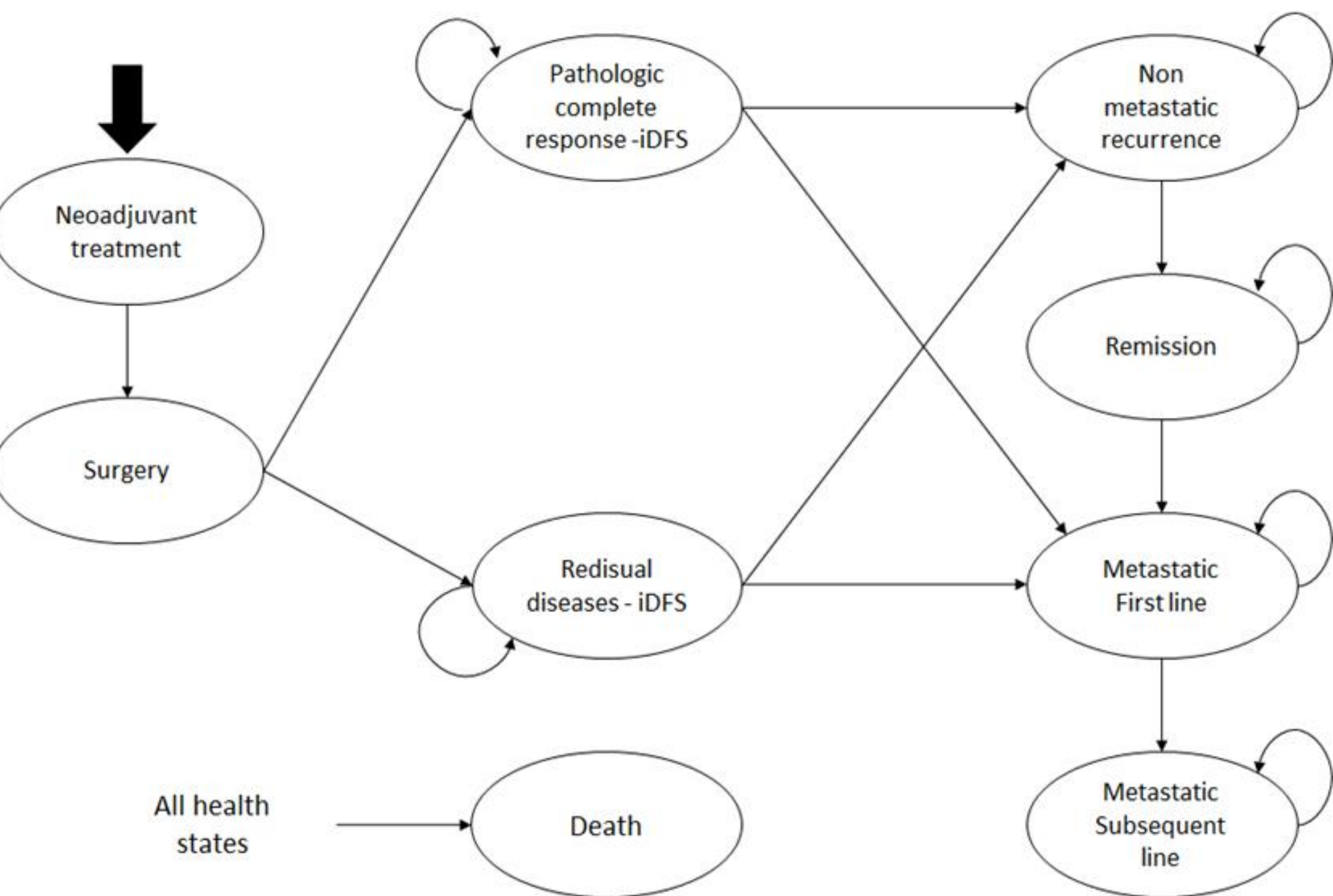


Figure 1. Markov model structure.

Results

The analysis conducted on 100 patients over 3-year time-horizon showed an increase cost of € 64.542 (Table 1). The higher cost of neoadjuvant TPC were offset by the lower use of TDM-1 in the adjuvant therapy due to the higher rate of pCR, with an overall additional cost of € 151.314 per 100 patients. Further the higher pCR rate reduced the cost of disease and sequelae (recurrence) management and treatment (-€ 86.773 per 100 patients). In the second analysis the overall budget impact associated to neoadjuvant TPC was € 966.733 in the 3-year simulated assuming 605 patients treated with TPC instead of TC in Tuscany region.

	Year 1	Year 2	Year 3	Overall
100 patients cohort budget impact				
Δ drug cost	271,853	-120,539	0	151,314
Δ other direct cost	-6,328	-30,209	-50,235	-86,773
Δ Overall cost	265,525	-150,748	-50,235	64,542
Incident cohort budget impact				
Δ drug cost	455,113	346,849	398,721	1,200,682
Δ other direct cost	-10,594	-63,344	-160,010	-233,949
Δ Overall cost	444,519	283,504	238,710	966,733

Table 1. Total drug and non-drug cost (€) in the budget impact analysis.

Conclusion

TPC in neoadjuvant HER2+BC yielded €645.42/patient cost over 3 years, with increased pCR rate. Implementing TPC in Tuscany requires an additional cost of €966,73 in 3 years. This data could be helpful for clinicians and regional decision makers to discuss the sustainability and use of TPC in the neoadjuvant setting.

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