

# Cost-Effectiveness Analysis of Adjuvant Alectinib Compared to Platinum-Based Adjuvant Chemotherapy in Patients with Resectable Alk-Positive NSCLC in Italy

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## INTRODUCTION and OBJECTIVES

Lung cancer is the leading cause of cancer mortality worldwide [1]. A subset of patients with non-small cell lung cancer (NSCLC) have genetic alterations such as the anaplastic kinase lymphoma gene rearrangement (ALK). A significant proportion of early-stage ALK-rearranged NSCLC patients experience recurrence after treatment (67% [2]), highlighting an unmet need for more effective strategies to prevent relapse in this patient population.

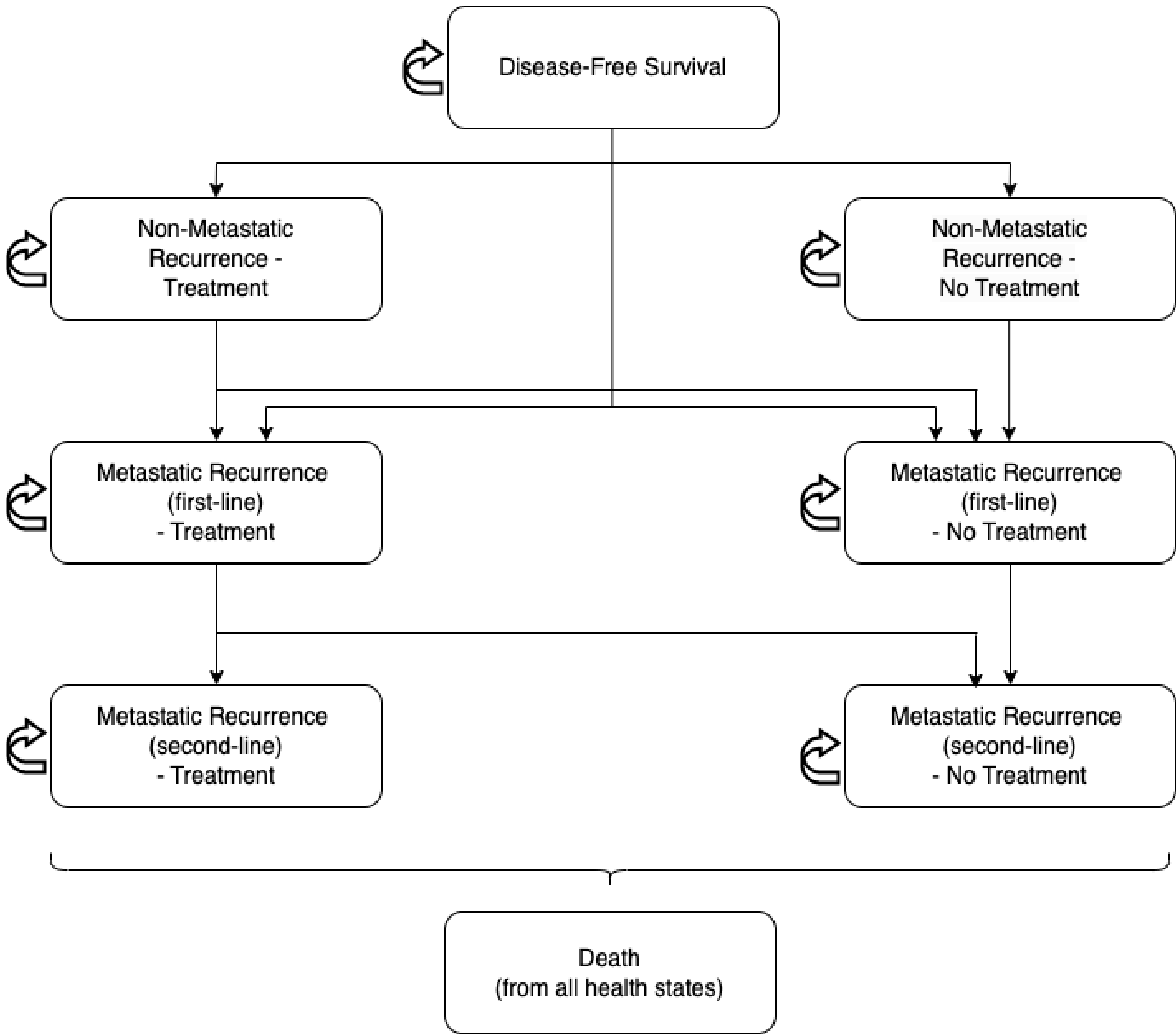
Alectinib has shown important results as adjuvant therapy for patients with NSCLC positive for ALK at the early stage. Clinical trials have shown an improvement in disease-free survival (DFS) in alectinib-treated patients compared to standard platinum-based chemotherapy.

The analysis evaluates the cost-effectiveness of adjuvant alectinib in Italy compared to platinum-based adjuvant chemotherapy for patients with anaplastic lymphoma kinase (ALK)-positive Non-Small Cell Lung Cancer (NSCLC) in completely resected stage Ib (tumors ≥ 4 cm) to stage IIIA.(\*)

## METHODS

The model is based on a semi-Markov cohort model with eight health states and a lifetime horizon (40 years) (Figure 1).

Figure 1: Model structure overview



Clinical inputs were derived from the ALINA study. The outcomes considered were life-years (LYs) and quality-adjusted life-years (QALYs), while results were expressed in terms of incremental cost-effectiveness ratio (ICER). Costs included were related to treatment, healthcare resource use, adverse events and terminal care. Costs and outcomes were discounted at 3%. Deterministic and probabilistic sensitivity analyses were conducted to test the impact of parameters on the base case results. The analyses were conducted from the National Health Service (NHS) perspective.

## RESULTS

The results by cost item and health states are shown in Table 1, while the results in terms of total discounted costs, LYs and QALYs of alectinib and chemotherapy are summarized in Table 2.

Table 1: Costs by model health status

Health state	Resource utilization	Total cost per resource utilization		Total cost per health state	
		Chemotherapy	Alectinib	Chemotherapy	Alectinib
Disease-Free Survival	Treatment	2.857 €	79.312 €	77.309 €	181.204 €
	Adverse events	58 €	237 €		
	Helthcare resource use	74.394 €	101.655 €		
Non-Metastatic Recurrence	Treatment	13.844 €	6.778 €	29.703 €	23.121 €
	Adverse events	31 €	13 €		
	Helthcare resource use	15.828 €	16.329 €		
Metastatic Recurrence/Progression (1L)	Treatment	24.873 €	4.968 €	74.322 €	16.705 €
	Adverse events	309 €	64 €		
	Helthcare resource use	49.140 €	11.673 €		
Metastatic Progression (2L)	Treatment	4.224 €	926 €	15.370 €	4.211 €
	Adverse events	30 €	9 €		
	Helthcare resource use	11.116 €	3.276 €		
Death	Palliative care	2.218 €	547 €	2.218 €	547 €

(\*) 7th TNM staging

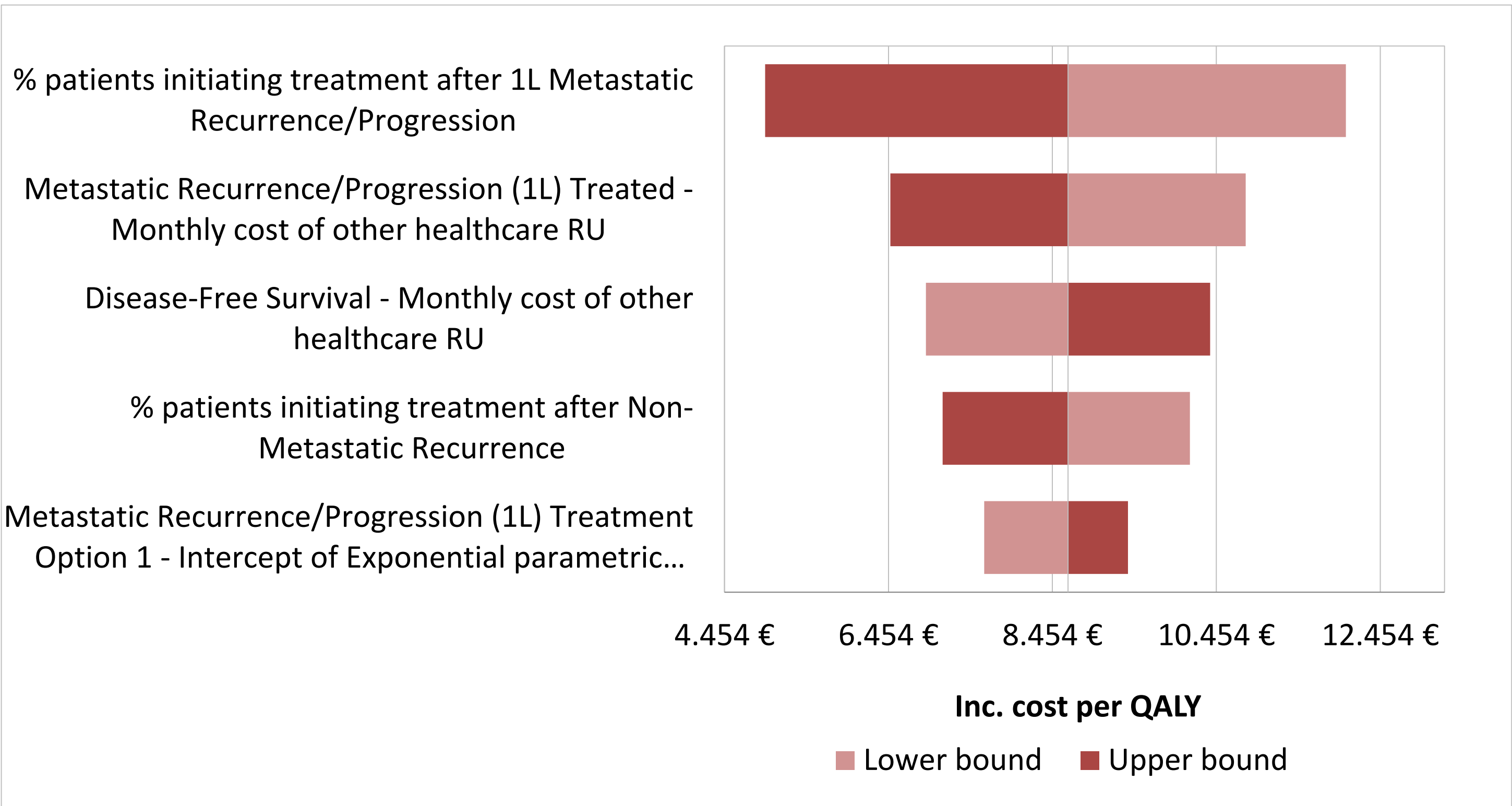
Over a lifetime time horizon (40 years), adjuvant alectinib for ALK-positive NSCLC patients is the most expensive treatment compared to the chemotherapy arm. The higher cost, amounting to € 26,864, is mainly due to treatment expenses. However, alectinib is also the most effective, providing an increase of about 5 LYs and 3 QALYs. Additionally, it is expected to reduce adverse events costs, healthcare resource use costs and terminal care costs. The resulting ICER is € 8,645 per QALY.

Table 2: Results of cost-effectiveness analysis

	Chemotherapy	Alectinib	Δ	ICER
Costs	198.923 €	225.787 €	26.864 €	
LYs	11	16	5	5.319 €
QALYs	7	10	3	8.645 €

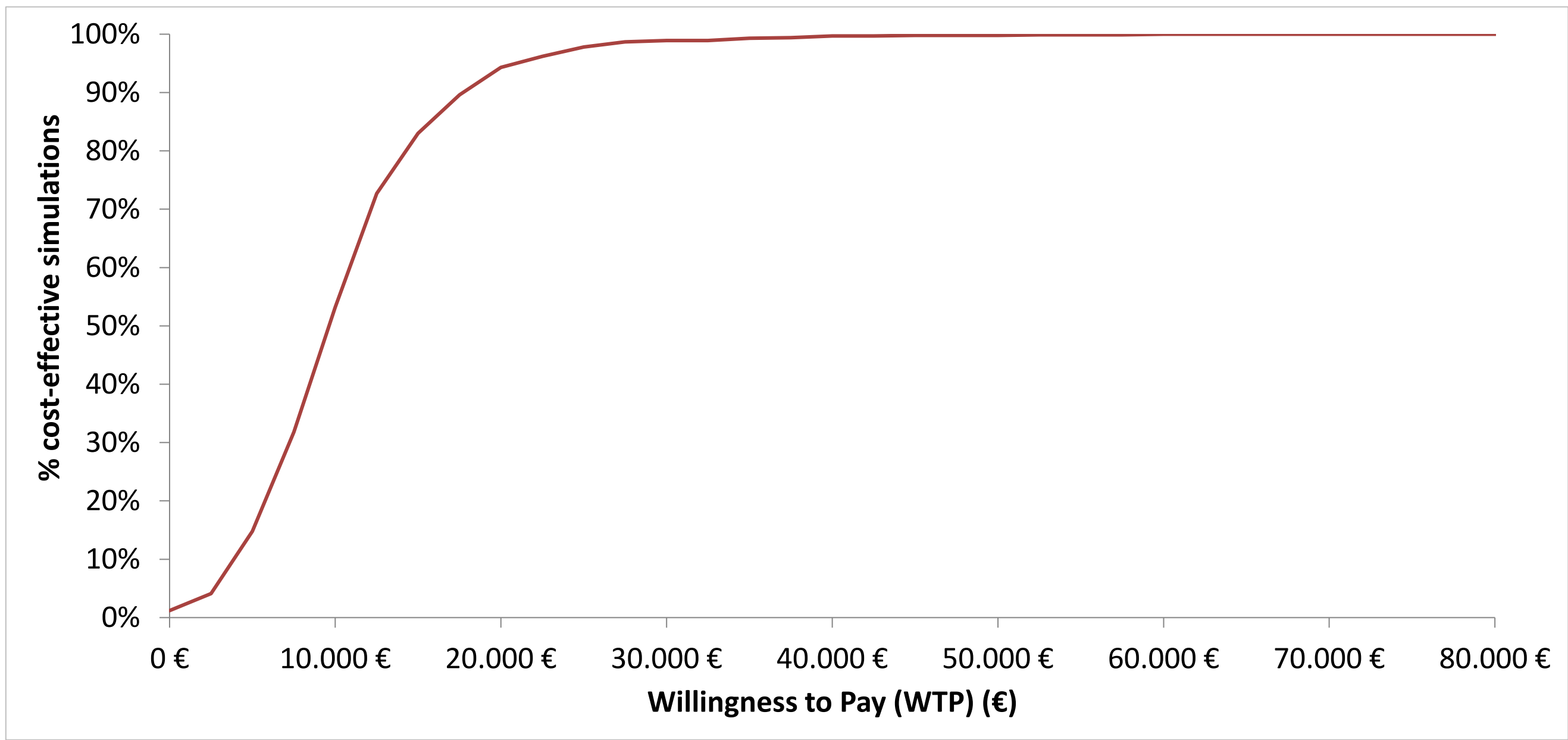
A Single Deterministic Sensitivity Analysis (UDSA) was performed considering a 20% variability of each parameter compared to the base case. The first 5 parameters which have a major impact on the incremental cost per QALY are shown in Figure 2.

Figure 2: Tornado diagram



The cost-effectiveness acceptability curve (Figure 3) shows that there is a probability of about 99% that alectinib is cost-effective with a willingness-to-pay threshold of € 33,000 per QALY.

Figure 3: Cost-effectiveness acceptability curve (CEAC)



## CONCLUSIONS

The study provides that alectinib represents a cost-effective treatment option for the NHS compared with chemotherapy in the treatment of ALK-positive non-small cell lung cancer (NSCLC). Despite higher costs, alectinib offers significant clinical benefits, with increased Life Years (LYs) and Quality-Adjusted Life Years (QALYs) for patients.

## REFERENCES

[1] M. Araghi et al., “Recent advances in non-small cell lung cancer targeted therapy; an update review,” 2023. doi: 10.1186/s12935-023-02990-y.  
[2] S. Schmid *et al.*, “Treatment patterns and outcomes in early-stage ALK-rearranged non-small cell lung cancer,” *Lung Cancer*, vol. 166, 2022, doi: 10.1016/j.lungcan.2022.01.020.

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