

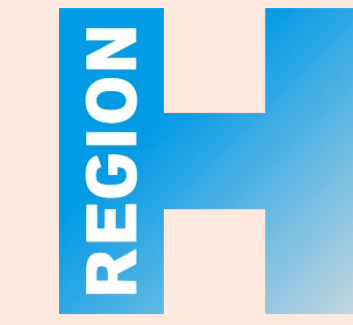
# Cost of implementing alectinib as an adjuvant treatment for ALK+ non-small cell lung cancer in Denmark (C-ALINA)

Beck C\*<sup>1</sup>, Fanø A\*<sup>1</sup>, Hilring P\*<sup>2</sup>, Urbanska EM<sup>3</sup>, Meldgaard P<sup>4</sup>

<sup>1</sup>Roche Pharmaceuticals AS, Copenhagen, Denmark.  
<sup>2</sup>Roche Pharmaceuticals AB, Arvid Tydén's Allé 7, 171 23 Solna  
<sup>3</sup>Rigshospitalet, Department of Oncology, Copenhagen University Hospital, Blegdamsvej 9, 2100 Copenhagen, Denmark  
<sup>4</sup>Aarhus University Hospital, Department of Oncology, Palle Juul-Jensens Blvd. 99, 8200 Aarhus, Denmark  
 \*These authors contributed equally to this work



AARHUS  
UNIVERSITETS  
HOSPITAL



Rigshospitalet



## OBJECTIVES

Analyze the economic consequences of implementing alectinib as an adjuvant treatment for ALK+ non-small cell lung cancer (NSCLC). Alectinib has recently been approved in the adjuvant setting with the potential to reduce disease recurrence [1, 2]. This analysis aims to illustrate the potential saving of subsequent treatment lines by implementing alectinib as a postoperative standard of care in ALK+ NSCLC from a reimbursement perspective.

## METHODS

A semi-Markov model, delineating disease-free survival, non-metastatic recurrence, first metastatic recurrence and second metastatic recurrence, was developed with a 40-year time horizon. The model structure is presented in figure 1. The purpose of the analysis was to compare alectinib vs standard of care chemotherapy for patients with ALK+ NSCLC. This analysis takes a limited social perspective in a Danish setting.

Disease-free survival was generated based on the ALINA study. Parametric distributions was employed to extrapolate data beyond the ALINA study period. Non-metastatic recurrence was based on Nakamichi, et al., 2017 and Wong, et al., 2016 [3-4]. The first metastatic recurrence was based on the ALEX-study and Wong, et al., 2016, while the second metastatic recurrence was based on the ALUR study [4-5]. The outcomes measured included quality-adjusted life-years (QALYs) and the incremental cost-effectiveness ratio (ICER). To demonstrate the robustness of the findings, both deterministic (DSA) and probabilistic sensitivity analyses (PSA) were conducted.

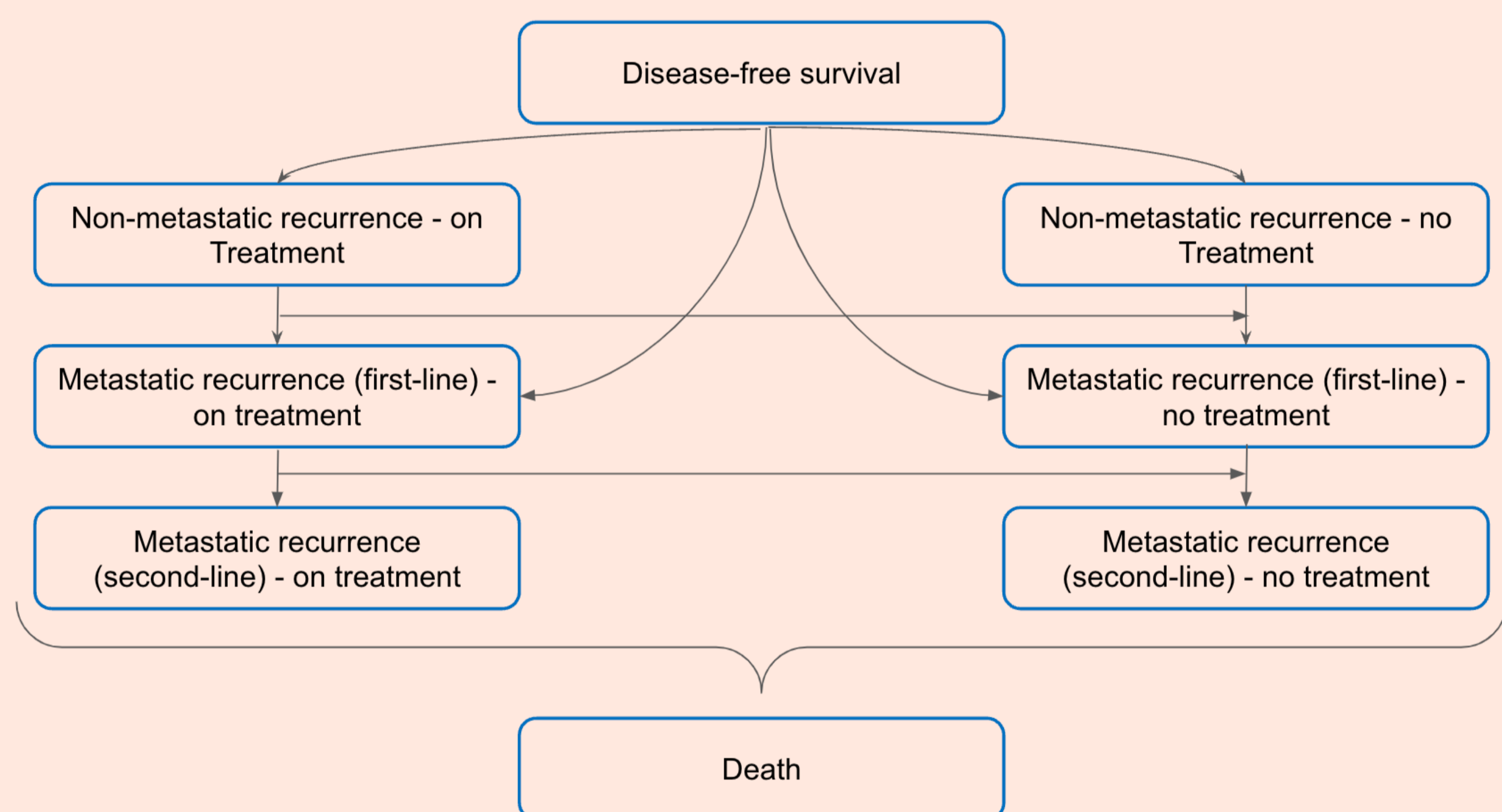


Figure 1: Semi-Markov model of adjuvant treatment with alectinib for ALK+ non-small cell lung cancer

## RESULTS

The results of the cost-effectiveness analysis is presented in table 1. Replacing chemotherapy with alectinib as adjuvant treatment for ALK+ NSCLC will generate an expected cost of approximately € 25.500 per patient. Alectinib has the potential to reduce the number of recurrences and the number of patients requiring treatment by offering patients better clinical outcomes and personalized therapy in the adjuvant setting [1]. Thus, the cost of alectinib in the adjuvant setting is almost offset by reducing costs in subsequent treatment lines while at the same time generating an average QALY gain of 3.6 for each patient. In figure 2 and 3 the DSA and PSA plots show that the results are robust and most sensitive to the assumption of when a patient is considered to be cured (5 years of disease-free survival), the proportion of patients with disease recurrence after adjuvant treatment, and the assumption on rechallenging with an ALK-TKI [7]. In Denmark, the expected number of patients is limited to less than 10 patients per year, so the budget impact will be very minimal [7]. Analysis is based on list prices.

## References

1. Wu YL, Dziadziuszko R, Ahn JS, Barlesi F, Nishio M, Lee DH, et al. Alectinib in Resected ALK-Positive Non-Small-Cell Lung Cancer. The New England journal of medicine. 2024;390(14):1265-76.
2. EMA. Alectinib summary of product characteristics 2024 [Available from: [https://www.ema.europa.eu/en/documents/product-information/alecensa-epar-product-information\\_en.pdf](https://www.ema.europa.eu/en/documents/product-information/alecensa-epar-product-information_en.pdf)].
3. Nakamichi et al. Comparison of Radiotherapy and Chemoradiotherapy for Locoregional Recurrence of Non-small-cell Lung Cancer Developing After Surgery. Clin Lung Cancer 2017;18(6):e441-e448.
4. Wong et al. Impact of age and comorbidity on treatment of non-small cell lung cancer recurrence following complete resection: A nationally representative cohort study. Lung Cancer. 2016 Dec;102:108-117.
5. Mok T et al. Updated overall survival and final progression-free survival data for patients with treatment-naïve advanced ALK-positive non-small-cell lung cancer in the ALEX study. Ann Oncol. 2020 Aug; 31 (8):1056-1064
6. Hansen KH et al. Clinical outcomes of ALK+ non-small cell lung cancer in Denmark. Acta Oncol. 2023 Dec;62(12):1775-1783.
7. Clinically validated by clinical experts 2024

## CONTACT AND CONFLICT OF INTEREST

Contact: Christian Graves Beck, Flakshalsen 17 4., Copenhagen 1799 – Denmark. Tel: +45 23 44 20 83. E-mail: Christian.graves\_beck@roche.com.  
 Conflict of interest: Beck C, Fanø A and Hilring P are employed by Roche Pharmaceuticals A/S.

Table 1: Results of the cost-effectiveness analysis

	Alectinib	Chemotherapy	Difference
<b>Disease-free survival</b>			
Treatment	101.011 €	7.099 €	93.912 €
AE management	211 €	67 €	144 €
Follow-Up Healthcare	4.889 €	3.928 €	961 €
<b>Total</b>	<b>106.112 €</b>	<b>11.094 €</b>	<b>95.017 €</b>
<b>Subsequent treatment lines</b>			
Treatment	42.974 €	106.640 €	-63.667 €
AE management	109 €	272 €	-163 €
Follow-Up Healthcare	1.075 €	2.650 €	-1.575 €
End of Life	6.665	37.305	-30.640
<b>Total</b>	<b>45.046 €</b>	<b>114.536 €</b>	<b>-69.490 €</b>
<b>Total</b>			
<b>Total costs</b>	<b>150.269 €</b>	<b>120.656 €</b>	<b>25.527 €</b>
<b>Life-years</b>	<b>14.47</b>	<b>10.23</b>	<b>4.24</b>
<b>QALY</b>	<b>11.59</b>	<b>8.02</b>	<b>3.57</b>

## ICER

7.148

Abbreviations: AE – adverse event, QALY – quality-adjusted life-year, ICER – incremental cost-effectiveness ratio

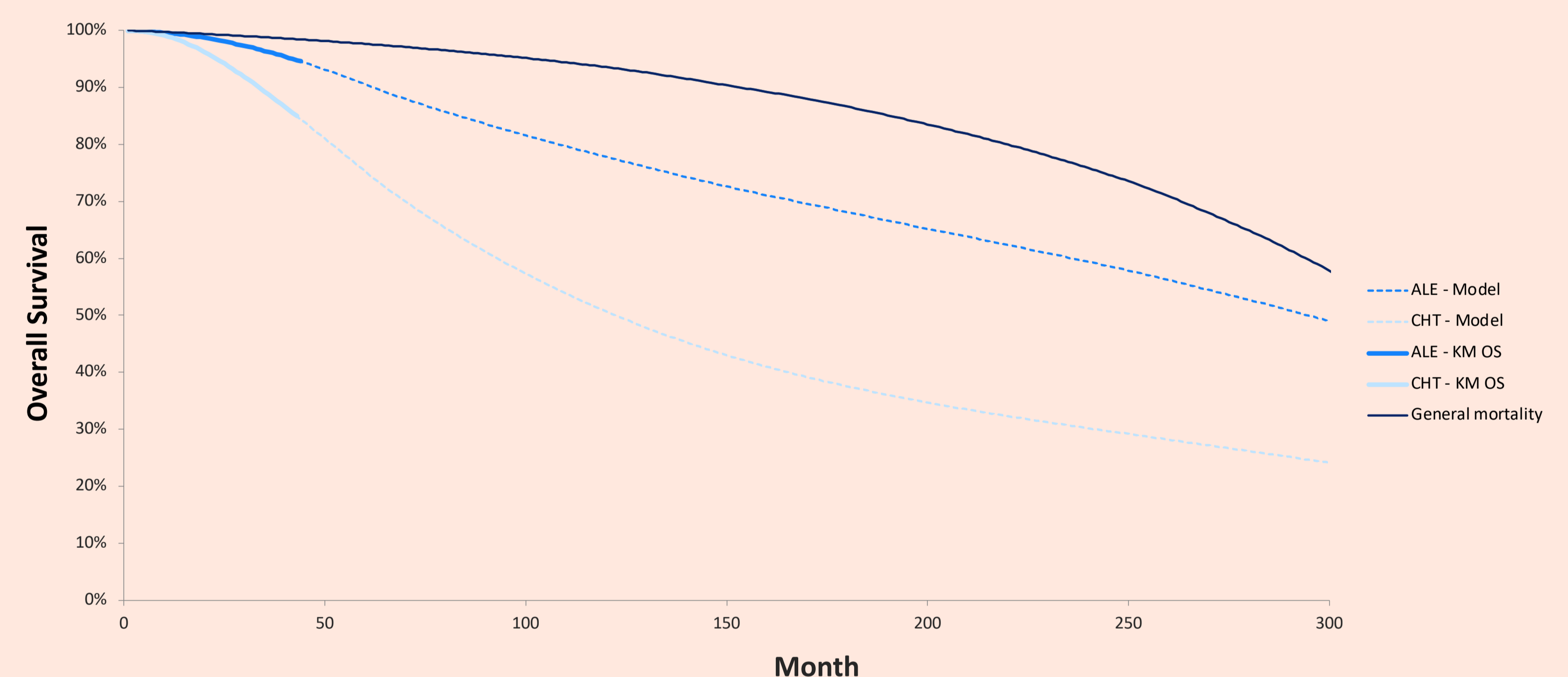


Figure 2: Kaplan-Meier and modeled OS-curves used in the cost-effectiveness analysis



Figure 3: Incremental cost-effectiveness plane

## CONCLUSION

Alectinib is cost-effective with a limited budget impact as an adjuvant treatment for ALK+ NSCLC patients, as the cost of alectinib is almost completely offset by reducing the cost of treating patients in the metastatic setting.