# A cost-effectiveness analysis of adjuvant pembrolizumab in the treatment of patients with early-stage (Stages IB-III) Non-small cell lung cancer (NSCLC) following complete resection and platinum-based chemotherapy

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# BACKGROUND

- Lung cancer is the second most commonly diagnosed cancer and the leading cause of cancer **death** in 2020, with an estimated 2.2 million new cases and 1.8 million deaths <sup>1</sup>
- Early detection of lung cancer can lead to better prognosis and decreased **mortality rates**<sup>2</sup>

#### Table 1. Disaggregated Pairwise Efficacy Results

<u>Effectiveness</u>			
Quality-adjusted life years (QALYs), total and by state	7,62	6,70	0,92
Disease-free	6,14	5,08	1,06
Local-regional recurrence	0,81	0,80	0,01
Distant metastases	0,90	1,00	-0,10
AE-related disutility	-0,0067	-0,0068	0,0001
Age-related disutility	-0,22	-0,17	-0,05
Life years (LVs) total and	0 37	8 24	1 1 2
bv state	3,37	0,24	1,13
Disease-free	7,22	5,97	1,25
Local-regional recurrence	0,98	0,97	0,01
Distant metastases	1,17	1,30	-0,13

- Both US and European clinical Practice guidelines recommend the use of adjuvant therapies for patients with resected NSCLC high-risk of recurrence (Stages IB, IIA, IIB and IIIA)<sup>3,4</sup>.
- People whose NSCLC is initially diagnosed as stage I, II, or IIIA may experience local or distant recurrence<sup>5</sup>. It was postulated that undetectable micrometastases still remain in the body even after complete resection and may play an important role in leading to recurrence<sup>6</sup>
- Pembrolizumab has been approved in Europe on 31 October 2023 as monotherapy for the adjuvant treatment of adults with NSCLC who are at high risk of recurrence following complete resection and platinumbased chemotherapy.

## AIM

This analysis aims to estimate the **cost-effectiveness** of Pembrolizumab vs SoC (Watch and wait) for the for the adjuvant treatment of early-stage NSCLC patients with high risk of recurrence following complete resection and platinum-based chemotherapy in Greece.

## **METHODOLOGY**

#### **Model Structure**

A cost-effectiveness model was developed using a Markov cohort structure, consisting of four mutually exclusive health-states (diseasefree, locoregional recurrence, distant metastases, and death). The model

#### Figure 2. Tornado diagram: Pembrolizumab vs. placebo



was developed using the **Greek payer** perspective over a **lifetime** horizon.

#### **Figure 1. Model Structure**



### **Model Inputs and settings**

Efficacy and safety data were derived based on patient-level data from the **KEYNOTE-091** trial, clinical trials in metastatic NSCLC, and U.S. real-world data, whereas drug acquisition and healthcare resource utilization data were obtained from the literature and official public sources. An **annual** discount of 3% was applied to both costs and outcomes. Model uncertainty and robustness were assessed through one-way (**OWSA**) and probabilistic (**PSA**) sensitivity analyses.

#### Figure 3. Probabilistic Sensitivity Analysis – A. Pairwise costeffectiveness plane B. Pairwise cost-effectiveness acceptability curve



# RESULTS

#### **Base-case Results**

Total incremental costs for pembrolizumab vs SoC were € 31,196. Total lifeyears were estimated at 9.37 for Pembrolizumab versus 8.24 for SoC, whereas total quality-adjusted life years (QALYs) were estimated at 7.62 and 6.70 for Pembrolizumab and SoC, respectively. The Incremental costeffectiveness ratio was calculated at € 33,880/QALY for pembrolizumab vs. SoC, which is below the Greek willingness-to-pay threshold of € 52,770 (as per WHO: **3xGDP/Capita**).

## <u>OWSA</u>

According to the findings of the OWSA, the factor with the highest impact on the resulting ICER was the selection of the discount rates (See Figure 2).

## **PSA**

The **PSA** (See **Figure 3**) which yielded a **70%** probability of Pembrolizumab being cost-effective, confirmed the robustness of our findings.

# CONCLUSIONS

From the Greek payer perspective, the present model suggests that Pembrolizumab is a cost-effective treatment option for NSCLC patients with high risk of recurrence following complete resection and platinum-based chemotherapy. Pembrolizumab therefore represents a clinically effective and cost-effective adjuvant treatment option, and a good value proposition for Greek payers.

# REFERENCES

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