Cost-Effectiveness of Docetaxel Versus Immune Checkpoint Inhibitors as Treatment for Advanced Non-Small Cell Lung Cancer: A Targeted Literature Review

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Background

- NSCLC accounts for ~85% of lung cancer cases, with most diagnosed at advanced stages.[1]
- Docetaxel has been a standard second-line treatment, offering limited survival benefits and notable toxicity. [2]
- ICIs such as pembrolizumab, nivolumab, and atezolizumab have improved outcomes with better safety profiles. [3,4]
- High costs of ICIs raise concerns about affordability and cost-effectiveness in routine care. [3,5]

Objective

- Assess the cost-effectiveness evidence comparing docetaxel with immune checkpoint inhibitors (ICIs) in advanced/metastatic NSCLC. [1-7]
- Identify incremental cost-effectiveness ratios (ICERs) across key ICIs (pembrolizumab, nivolumab, atezolizumab). [1-7]
- Highlight regional variations in economic outcomes and main drivers of cost-effectiveness. [2-6]

Methods

Search strategy:

- Targeted search conducted in PubMed.
- Keywords: "non-small cell lung cancer", "cost-effectiveness", "advanced", "docetaxel",

Inclusion criteria:

- English-language studies published in the last 10 years.
- Studies comparing ICIs to docetaxel in advanced/metastatic NSCLC.

Data extraction:

- Interventions and comparators.
- Model type and assumptions.
- Outcomes: ICER per QALY and ICER per life-year gained (LYG).
- Cost drivers: treatment costs, chemotherapy, AE management, supportive/terminal care.

Conclusion

- ICIs represent a valuable clinical advance but remain economically challenging compared to docetaxel.
- ICERs for ICIs often exceed conventional willingness-to-pay thresholds, particularly in high-income markets.
- Findings highlight the need for:
  - Improved clinical outcomes.
  - Reduced drug acquisition costs.
  - Optimized patient selection to enhance cost-effectiveness.
- Future research should assess real-world data and longer-term outcomes to better inform policy and reimbursement decisions.

Results

Studies identified:

- 7 relevant studies.
- ICIs evaluated: pembrolizumab, nivolumab, atezolizumab.

Geographic distribution:[2-5,7]

- 3 U.S. studies.
- 3 China studies.
- 1 France study.
- 1 Switzerland study.

Cost-effectiveness findings:[2-5,7]

- Nivolumab: ICER per QALY $72,127–$200,698; cost/LYG $37,243–$81,294.
- Atezolizumab: ICER €104,835.
- Pembrolizumab: ICER per QALY $107,846–$168,619; cost/LYG $135,552.

Key model drivers:[2-6]

- Cost of intervention (drug price).
- Chemotherapy costs.
- AE management.
- Terminal care.
- Best supportive care.

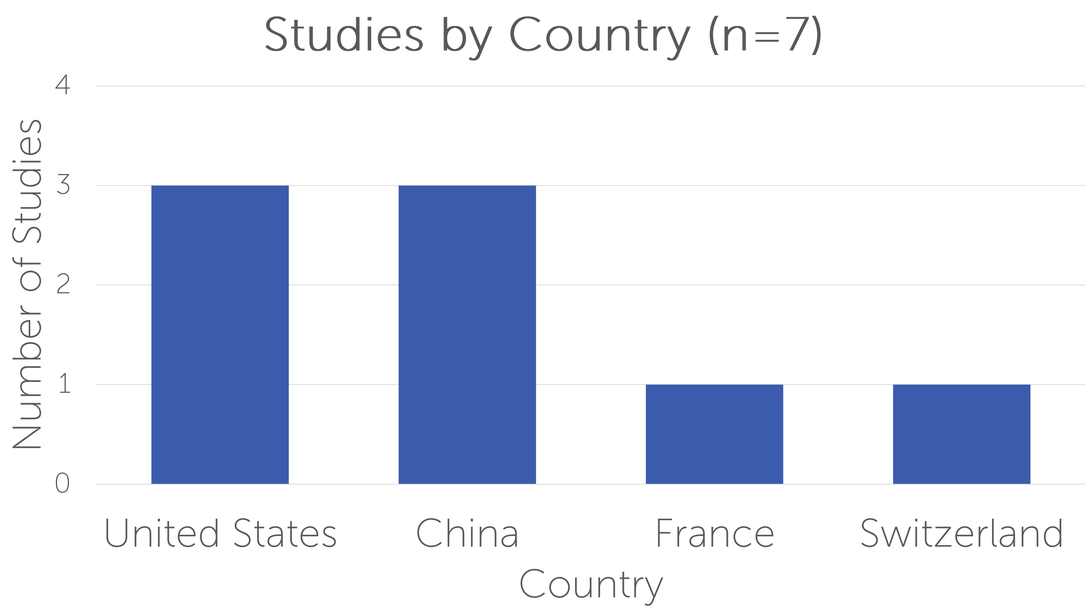

Figure 1: Included studies summary

Intervention	Geography	ICER per QALY (currency)	ICER per LYG (currency)	Notes / Range
Nivolumab	U.S., China	$72,127 – $200,698	$37,243 – $81,294	3 U.S., 3 China
Pembrolizumab	U.S.	$107,846 – $168,619	$135,552	Wide range across studies
Atezolizumab	France	€104,835	N/A	One European study
Mixed (ICIs)	Switzerland	Reported, country-specific	N/A	Limited data

Table 1: Results Summary

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