

A Review of US Budget Impact Analysis of Treatments in Metastatic Non-Small Cell Lung Cancer

Objective

To examine the budget impact analysis (BIA) of treatments used in metastatic non-small cell lung cancer (mNSCLC) from the US payer perspective.

Methods

- A literature review of the PubMed and Embase databases for full-text and conference abstracts published in the past 10 years up till 10/28/2022 was conducted.
- BIA studies reporting results of treatments in mNSCLC from the US payer perspective were included.
- Studies on biomarker testing were excluded.
- Data extracted from included studies were study characteristics (first author, year of the study, study type, treatment, model parameters, and patient population), the endpoints, and results.

Conclusions

A significant amount of heterogeneity exists with how BIA for treatments used in mNSCLC from the US payer perspective were conducted and reported.

References

References: 1. Bajaj PS, et al. Journal of Medical Economics. 2014;17(8):538-546. 2. Bly CA, et al. Journal of Managed Care & amp; Specialty Pharmacy. 2018;24(6):534-543. 3. Cai B, et al. Journal of Medical Economics. 2021;24(1):131-139. 4. Duff S, et al. Journal of Managed Care & amp; Specialty Pharmacy. 2022;28(2):218-231. 5. Goldstein et al. JNCI: Journal of the National Cancer Institute. 2017;109(11). 6. Graham J, et al. Journal of Managed Care & amp; Specialty Pharmacy. 2018;24(6):544-553. 7. Hess L.M., et al. Hospital Pharmacy, 51(6), 452-460. 8. Nilsson J, et al. Journal of Thoracic Oncology, 16(3), S322-S323. 9. Stargardter M, et al. Journal of Medical Economics, 24(1), 816-827.

Study	Payer	Trea
Total Annual Costs		
Goldstein et al. 2017 [5]	Medicare	Perr
Hess et al. 2016 [7]	Institutional	Ram Doc
Per Patient Per Month (PM	1PM)	
Bajaj et al. 2014 [1]	Commercial	Erlo
	Commercial	
Bly et al. 2018 [2]	Medicare	– Nec
	Commercial	C
Cal et al. 2021 [3]	Medicare	– Сар
Duff et al. 2022 [4]	Mixed	Pral
Graham et al. 2018 [6]	Commercial	Afat
Nilesen et al. 2021 [0]	Commercial	Ram
Nilsson et al. 2021 [8]	Medicare	Erlo
Stargardter et al. 2021 [9]	Medicare	Тер

- and PD-1 inhibitors (n=1).

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	Results						
atment	Treatment Type	Patient Population	Time Period	Model Cost Inputs	Sensitivity Analyses	Budget Impact (1 year)	
ıbrolizumab	PD-1 inhibitor	First line treatment of mNSCLC	1 year	Drug costs using fixed vs personalized dosing	Monte Carlo (100, 000 times)	\$3.4 B with fixed dosing	
iucirumab + etaxel	VEGFR2 antibody , Taxanes	Second line treatment of mNSCLC	NA	Drug and administration costs	Nil	\$30,000	
tinib	EGFR TKI	aNSCLC w EGFR mutations	1 year	Drug and administration, AE costs	OWSA	\$0.0130	
itumumab	EGFR TKI	First line treatment of squamous mNSCLC	3 years	Drug and administration, AE costs, disease costs (additional cancer attributable healthcare expenditures)	OWSA	\$0.0070	
matinib	MET inhibitor TKI	mNSCLC w MET exon 14 mutation	3 years	Drug and drug administration, medical costs associated with pre-progression, AE costs, progression, terminal care and testing costs (NGS)	OWSA	\$0.0008 \$0.0118	
setinib	RET inhibitor	RET fusion+ mNSCLC	3 years	Drug acquisition, molecular testing, treatment and AE costs	OWSA, MWSA	\$0.0042	
inib	EGFR TKI	mNSCLC w EGFR mutations	5 years	Drug and administration, AE costs, disease management costs	OWSA	\$0.0001	
nucirumab + tinib	VEGFR2 antibody, EGFR TKI	mNSCLC with EGFR mutations	5 years	Drug and administration, pre-med, follow up costs, AE costs, hospitalization, post-progression costs	OWSA	\$0.0040 \$0.0040	
otinib	MET inhibitor TKI	mNSCLC w MET exon 14 mutation	3 years	Drug and administration, treatment and AE costs	OWSA \$(0.0029)		
-small cell lung cancer, EGFR TKI: epidermal growth factor receptor tyrosine kinase inhibitor, MET: mesenchymal epithelial transition , MWSA: multi-way sensitivity analyses, NGS: next-generation sequencing, OWSA: one-way sensitivity analyses and the sequence of the sequencing of the sequencing of the sequencing of the sequencing of the sequence of							

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9 studies reporting BIA results of treatments in mNSCLC from the US payer perspective were identified [1-9].

Treatments studied included EGFR inhibitors (n=4), MET inhibitors (n=2), RET inhibitors (n=1), taxanes (n=1)

- A majority of the studies simulated the change in total direct costs of adding the treatment(s) to a hypothetical
 - insurance health plan (either commercial, Medicare or mixed) except for Hess 2016 [7] and Goldstein 2017

[5] which reported models for an institutional and Medicare payers respectively.

Time periods modeled ranged from 1 to 5 years with 3 years as the most commonly reported.

- life costs.
- model inputs were conducted in 7 studies.

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Direct costs modeled typically included drug acquisition and administration, treatment monitoring, disease and adverse event management, post-progression care and end of

Endpoints reported included total annual cost, per patient per year (PPPY) costs or per member per month (PMPM) costs. One-way deterministic sensitivity analyses of the

Total budget impact reported were as high as \$3.4B annually for Medicare payer.