Economic Burden of Grade 3+ Adverse Event Management Associated With Dato-DXd and Docetaxel-Containing Regimens in Previously Treated Advanced or Metastatic Nonsquamous Non-Small Cell Lung Cancer: A European and USA Analysis

Abstract EE244

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Objective

The aim of this study was to quantify costs of managing grade ≥3 treatment-emergent adverse events (TEAEs) associated with datopotamab deruxtecan (Dato-DXd), docetaxel (Doce), and docetaxel-containing regimens in patients with advanced or metastatic (a/m) non-squamous non-small cell lung cancer (NSCLC) whose cancer has progressed following prior treatment, from a France, Italy, Spain, UK, and USA healthcare system perspective.

Conclusions

- **Grade ≥3 TEAEs of docetaxel-containing regimens incur significant costs** to healthcare systems across Europe and USA.
- **Haematological toxicities** are significant contributors to the total per patient cost.
- Despite the inherent limitations associated with conducting a cost analysis of AE management, sensitivity analyses consistently demonstrate a positive trend favouring Dato-DXd across trial datasets and countries.
- Pending approval, Dato-DXd's more favourable safety profile would offer reduced toxicity burden on patients with a/m nonsquamous NSCLC and reduced economic burden on healthcare systems.

Plain language summary

Why did we perform this research?

To quantify costs of managing grade ≥3 adverse events (AEs) associated with Dato-DXd and docetaxel-containing regimens in advanced or metastatic NSCLC.

How did we perform this research?

We retrieved AE incidences from randomised controlled trials (RCTs) and associated costs using International Classification of Diseases (ICD) codes and Diagnosis-Related Group (DRG) costs.

What were the findings of this research?

- Grade ≥3 TEAEs of docetaxel-containing regimens incur significant costs to healthcare systems across Europe and USA .
- Comparative analyses reveal that pending approval, Dato-DXd's more favourable safety profile would offer reduced toxicity burden on patients with a/m nonsquamous NSCLC and reduced economic burden on healthcare systems.

What are the implications of this research?

Health care providers, policy makers, and researchers can be informed of the economic burden associated with TEAEs in advanced and NSCLC setting.

Introduction

- Patients with a/m NSCLC whose tumours progress after platinum-based chemotherapy and either immunotherapy or targeted treatment are often treated with docetaxel-containing regimens, despite the **unfavourable safety profile** and limited efficacy profile of these treatments.
- TROPION-Lung01 trial (NCT04656652) is a global, multicentre, randomized, open-label phase III trial evaluating the efficacy and safety of Dato-DXd versus Doce in patients with previously treated a/m NSCLC with or without actionable genomic alterations (AGA)[1]. A pre-specified subgroup analysis for nonsquamous histology showed that Dato-DXd had fewer grade ≥3 treatment-related adverse events (TRAEs), dose reductions, and discontinuations in comparison to Doce[2].

Methods

Incidences of TEAEs were identified from TROPION-Lung01[3] (Dato-DXd vs. Doce), LUME-Lung01[4] (nintedanib plus docetaxel [NIN+Doce] vs. Doce) and REVEL[5] (ramucirumab plus docetaxel [RAM+Doce] vs. Doce).

Identification of inpatient costs through ICD codes and DRGs[7-12]

Identification of outpatient costs through published costing studies[13-17]

Validation of codes and treatment assumptions with clinical experts

Calculation of unit cost per AE by weighted average inpatient and outpatient cost. And calculation of cost per patient by multiplying the AE incidence with unit cost.***

Network meta-analysis (NMA) to validate the analysis through comparing the odds ratio (OR) of AE incidence from NMA and clinical trials

	Base case	Scenario 1	Scenario 2	Scenario 3	Scenario 4
AE type	TEAE	TEAE	TEAE	TEAE+AESI*	TEAE+AESI*
10% all-grade threshold	In all arms	In all arms	In any arm	In all arms	In all arms
100% hospitalization rate	✓	✗**	✓	✓	✗**

*AESI: Adverse Events of Special Interest for TL-01 even they did not meet the 10% threshold. ** The inpatient rates were obtained from published literature.
*** Comparator treatments were included for only countries where they have marketing authorisation

Results

Base-case analysis results

- Total grade ≥3 TEAE incidence and costs were lowest for Dato-DXd in all five countries, followed by Doce, NIN+Doce, and RAM+Doce (**Figure 1**)
- Total costs per treatment were lowest in Spain and France, and highest in the US (**Figure 1**).
- Hematologic AEs were the main cost drivers for each treatment in the UK, as presented in **Figure 2**. Similar patterns were also observed in the other four countries.
- The relative cost of comparators vs Dato-DXd is shown in **Figure 3**.

Figure 1. Total grade ≥3 AEs management costs per patient among five countries (in local currency)

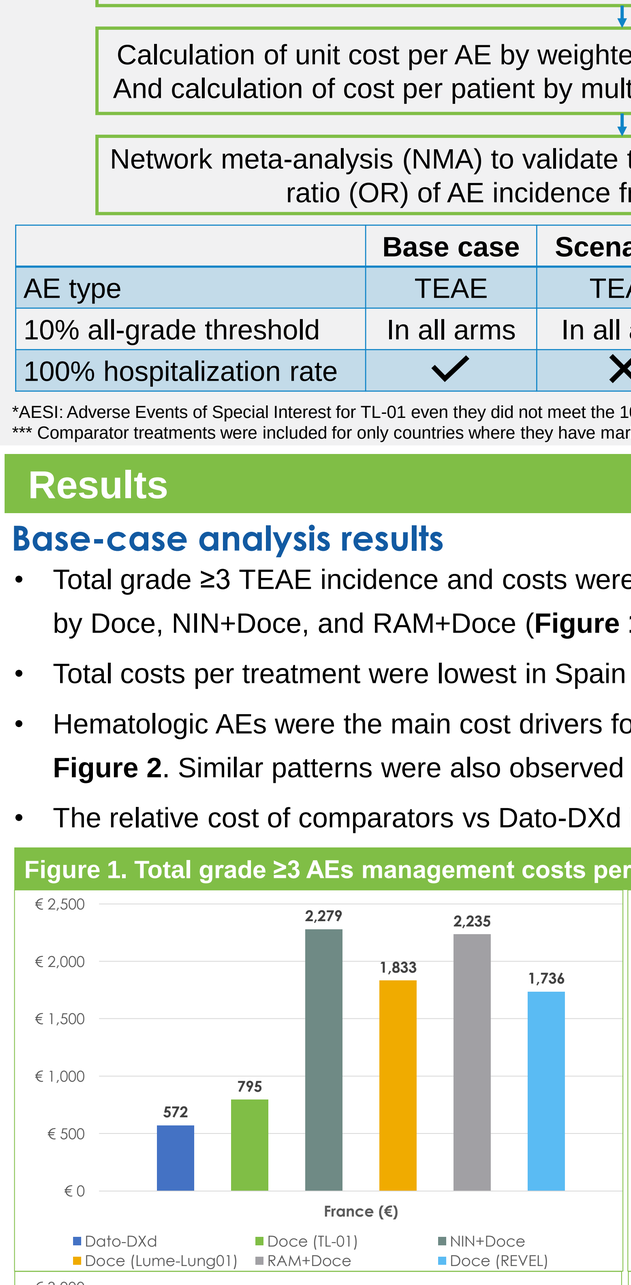
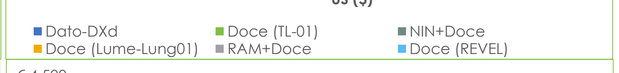


Figure 2. Categorized cost of AE types in the UK



Scenario analysis results

- **Scenario 1:** After applying AE-specific hospitalisation rates derived from literature, the total per patient costs for managing AEs decreased across all five counties compared to the base case.
- **Scenario 2**: Results followed the same trend as in the base case.
- **Scenario 3:** Ocular surface toxicity and interstitial lung disease/pneumonitis were included. Compared to base case, the additional incidence estimates reduced relative differences in total per patient costs for Dato-DXd vs. comparators.
- **Scenario 4:** The same pattern as Scenario 1 but with higher total cost due to inclusion of AESIs.

Table 1. Scenario Analysis: Total per patient costs and relative difference versus Dato-DXd

Scenario		Dato-DXd	Doce		NIN + Doce		RAM + Doce	
		Cost	Cost	Relative difference	Cost	Relative difference	Cost	Relative difference
Scenario 1	UK	£192	£666	3.47	£1,644	8.57	£2,828	14.75
	US	$961	$1,661	1.73	-	-	$6,896	7.17
	Spain	€200	€385	1.92	€1,263	6.31	€1,257	6.28
	Italy	€157	€381	2.42	€1,302	8.27	€1,404	8.91
	France	€234	€843	3.60	€1,979	8.44	€2,157	9.20
Scenario 2	UK	£452	£1,483	3.28	£3,026	6.69	£3,449	7.63
	US	$2,927	$8,077	2.76	-	-	$20,124	6.87
	Spain	€442	€1,042	2.36	€2,629	5.95	€2,584	5.85
	Italy	€616	€1,820	2.95	€4,048	6.57	€4,185	6.79
	France	€572	€846	1.48	€2,348	4.10	€2,235	3.91
Scenario 3	UK	£625	£1,073	1.71	£2,459	3.93	£3,449	5.51
	US	$3,629	$6,447	1.78	-	-	$20,124	5.55
	Spain	€597	€933	1.56	€2,413	4.04	€2,584	4.33
	Italy	€816	€1,539	1.89	€3,635	4.45	€4,185	5.13
	France	€939	€1,068	1.14	€2,279	2.43	€2,235	2.38
Scenario 4	UK	£257	£712	2.78	£1,644	6.41	£2,828	11.02
	US	$1,560	$2,145	1.37	-	-	$6,896	4.42
	Spain	€351	€502	1.43	€1,263	3.60	€1,257	3.58
	Italy	€336	€522	1.55	€1,302	3.87	€1,404	4.17
	France	€572	€1,117	1.95	€1,979	3.46	€2,157	3.77

NMA results

- Compared with Dato-DXd, Doce increased odds of grade ≥3 TEAEs by 81% (OR [95% CI] = 1.81 [1.25, 2.64]), NIN+DOC by 164% (OR [95% CI] = 2.64 [1.59, 4.41]), and RAM+DOC by 183% (OR [95% CI] = 2.83 [1.76, 4.58]) (**Figure 4**)

Figure 3. Relative costs of AEs vs. Dato-DXd

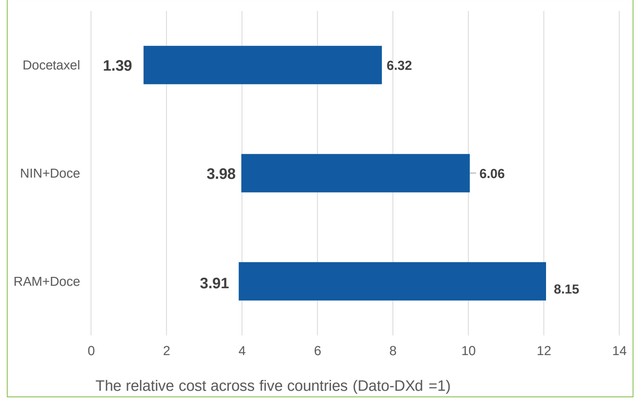
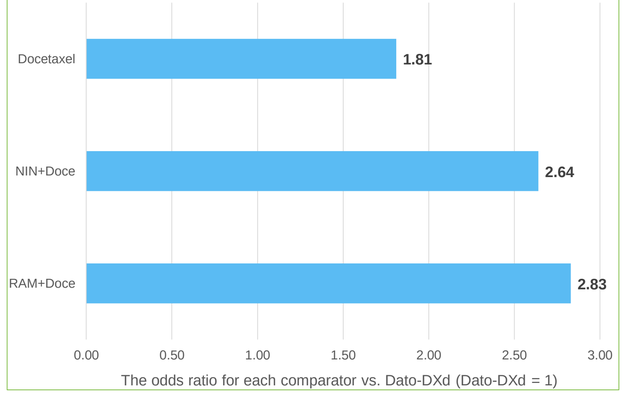


Figure 4. The OR of AE incidence from NMA



Disclosures

Guillem Hopmans Galofré, Max Clayson, and Pauline Le Nouveau are employees of Amaris Consulting, professional fees from Daiichi Sankyo and AstraZeneca were received for this study.

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