

LUCIEN – Cost variation across lung cancer pathway clusters: a nationwide real-world analysis of 18 569 French patients

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Background

Pre-treatment diagnostic-care pathways vary widely in lung cancer and likely drive substantial differences in healthcare resource use and spending, yet these costs have not been quantified at national scale in France. Leveraging real-world claims allows us to map pathway patterns and the cost burden incurred during the year before first therapy.

Objectives

To quantify how data-driven clusters of pre-treatment diagnostic-care pathways relate to healthcare resource use and reimbursed costs in the 12 months preceding primary lung-cancer treatment (surgery or systemic therapy) in France's 2018–2019 national claims.

Methods

Study Design:

- Retrospective cohort study with an inclusion period between July 1, 2018, and June 30, 2019, and a 5-year historical period to confirm the primary pulmonary cancer diagnosis (see Figure 1).
- Inclusion criteria: Adults with a first inpatient diagnosis of primary lung cancer (ICD-10 C34) ; treated with surgery, radiotherapy, or drug therapy within the inclusion/characterization windows.
- Exclusion criteria: Under 18 years of age; residing abroad; diagnosed with lung cancer or cancer in another location within 5 years prior inclusion; absence of treatment characteristic of lung cancer.

Data sources:

- The French Cancer Data Platform cohort (FDCP) is an extract from the National Health Data System (NHDS) containing outpatient and inpatient claims for over 8 million cancer patients or high-risk individuals.

Analysis:

- Stage-specific finite-mixture models were applied to our study population, diagnosed with **local/locally-advanced (LLC)** or **advanced/metastatic (AMC)** tumours, using all reimbursed activity in the 12 months (index date excluded) before primary lung cancer treatment (systemic or surgery). Mean cost per patient (€2023) was reported. Costs are presented from a health insurance perspective.

Results

Four pre-treatment care-consumption trajectories were identified—**early**, **late** (distinguished by care escalation 6 versus ≤ 3 months before treatment), **continuous** (steady year-round use), and **last-minute** (minimal pre-cancer care). Among **LLC patients** (n=6,964) we observed an early cluster (49%) and a late cluster (38%), a continuous (5%); and a last-minute cluster (8%). **AMC patients** (n=11,605) displayed analogous late (82%), continuous (10%) and last-minute (8%) trajectories, with no early cluster detected.

For details on clustering, the pathway, and extra cost categories, scan the QR code at the bottom right of this poster to open the document.

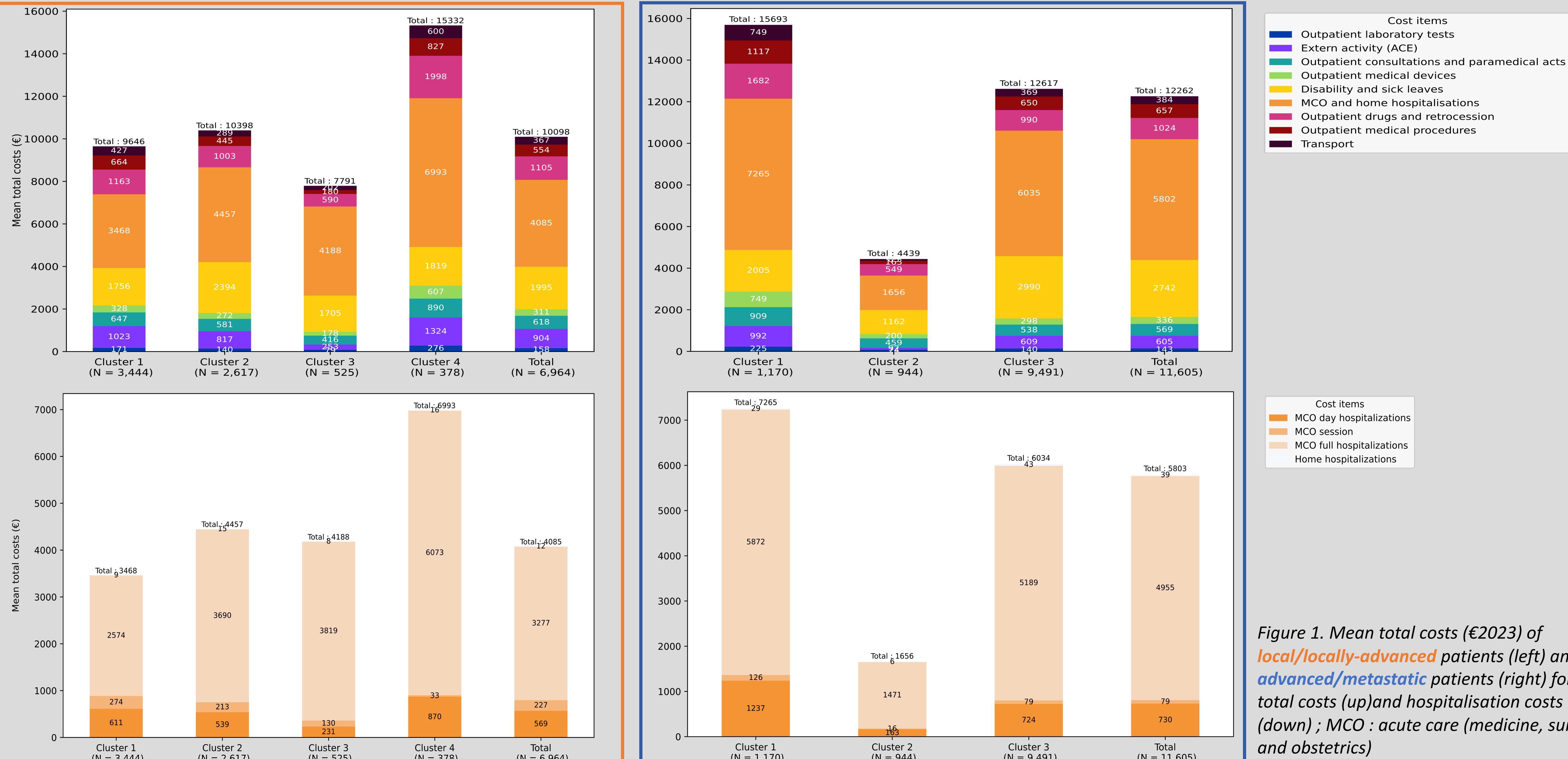


Figure 1. Mean total costs (€2023) of **local/locally-advanced** patients (left) and **advanced/metastatic** patients (right) for total costs (up) and hospitalisation costs (down); MCO : acute care (medicine, surgery and obstetrics)

Table 1. Mean number of healthcare reimbursement for **local/locally-advanced** and **advanced/metastatic** patients in the year preceding inclusion (index date excluded)

	N
	Mean (\pm SD)
Consultations outpatient general medicine	N
	Mean (\pm SD)
Consultations with an outpatient pulmonologist	N
	Mean (\pm SD)
Biopsies (all types combined)	N
	Mean (\pm SD)
Chest X-ray	N
	Mean (\pm SD)
CT scan and/or chest CT angiogram	N
	Mean (\pm SD)
PET scan	N
	Mean (\pm SD)

Local / Locally-advanced (LLC) (N=6,964)			
Early cluster (cluster 1) n=3,444	Late cluster (cluster 2) n=2,617	Continuous cluster (cluster 3) n=378	Last-minute cluster (cluster 4) n=525
3,335	2,434	427	371
8.84 (5.68)	8.24 (5.04)	6.88 (5.13)	10.18 (6.35)
3,289	1,919	63	373
3.24 (1.91)	2.27 (2.47)	1.21 (0.81)	6.55 (4.13)
3,140	2,313	392	351
1.91 (0.91)	1.86 (0.91)	1.54 (0.71)	2.36 (1.46)
3,348	2,477	469	375
2.31 (1.33)	2.10 (1.31)	1.70 (0.96)	3.73 (3.09)
2,994	1,871	304	370
1.79 (0.86)	1.46 (0.76)	1.20 (0.52)	2.79 (1.20)
3,251	2,130	183	365
1.11 (0.33)	1.06 (0.24)	1.02 (0.13)	1.41 (0.62)

Advanced / Metastatic (AMC) (N=11,605)		
Standard cluster (cluster 1) n=9,491	Continuous cluster (cluster 2) n=1,170	Last-minute cluster (cluster 3) n=944
1,141	822	8,928
10.38 (6.39)	7.02 (4.89)	8.45 (5.43)
1,143	29	6,676
5.32 (4.21)	1.00 (0.00)	2.77 (2.79)
1,029	633	7,752
1.86 (1.15)	1.08 (0.29)	1.39 (0.76)
1,129	779	8,303
3.41 (2.57)	1.35 (0.57)	2.26 (1.55)
990	495	5,862
1.78 (1.03)	1.12 (0.33)	1.30 (0.62)
1,074	183	6,096
1.22 (0.48)	1.00 (0.00)	1.06 (0.24)

Conclusions & perspectives

Using a national, stage-stratified cohort and clustering of pre-treatment care sequences, this study provides a reproducible framework to map and compare healthcare resource use and reimbursed costs in the 12 months before first lung-cancer therapy. The approach enables benchmarking of pathway-level spending and highlights actionable opportunities to streamline diagnostic work-ups while preserving timeliness of care.

