

A real-world data study regarding hospital resources use and costs associated with lung cancer in Spain

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BACKGROUND

- Lung cancer (LC), more frequent in men, is the third most common tumor in Spain, after colorectal and prostate cancer with an incidence estimated in 27,351 and rising up to 31,356 (14.1% increase) in 2,025 (1).
- The 5-year prevalence reaches up to 28,833 cases (1), representing the 10.7% of lung cancer patients.
- In 2018 it is foreseen 22,896 deaths caused by lung cancer, and it will continue raising in the coming years, up to 26,262 deaths in 2,025, considering demographic changes (1). In 2012 lung cancer was responsible for the highest for the highest number of deaths worldwide.(2)
- Mortality is increasing in women due to tobacco.

OBJECTIVES



The present analysis aims to identify patients with lung cancer who visited hospital during 2,016 and to describe the corresponding hospital resources used and costs through a healthcare claim database (3).

METHODS

Study design and patients

- Retrospective data from the Ambulatory and Patient's Hospitalization database (3) for 2016 of the Spanish Minimum Basic Data Set (MBDS) were extracted. It covers 6.5 million inhabitants as reference population.
- All hospital contacts of patients who had at least one diagnosis for lung cancer (coded C-33-C34) using the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) were collected.

RESULTS

- 3,336 patients with lung cancer were identified, 70.3% were men and mean age (SD) was 67.2 (10.9). Rate per 100,000 inhabitants of patients who contact inpatient or outpatient care was estimated in 63,7, slightly below than the Spanish 5-year prevalence rate according to Globocan data (1). Overall, 1,913 and 22,273 hospitalization and outpatient episodes were observed, respectively (Table 1).

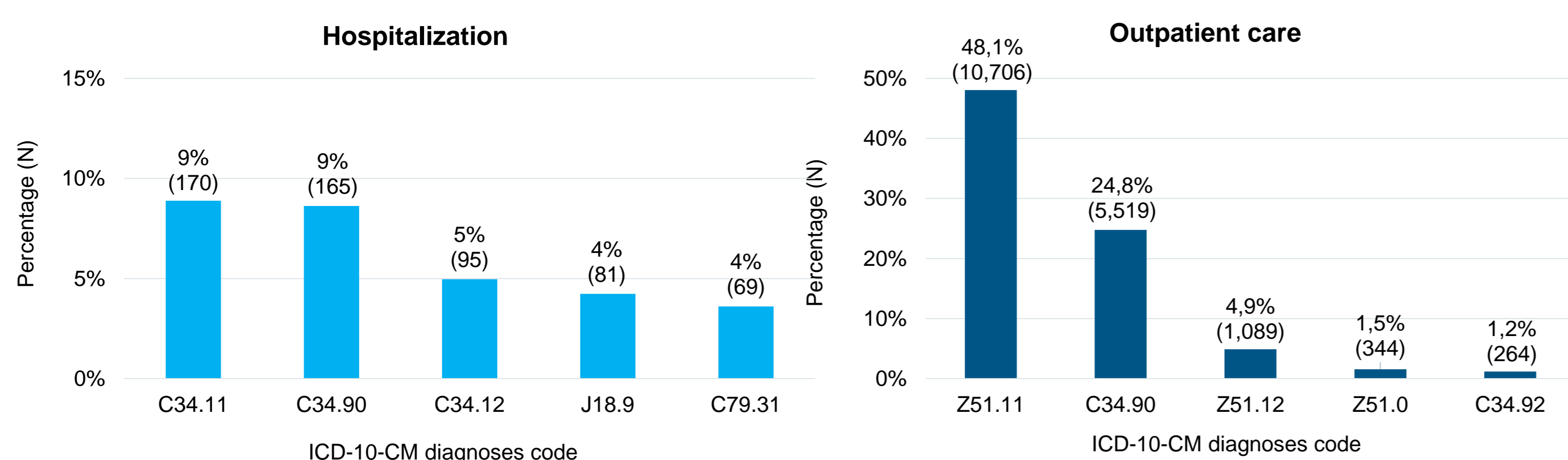
Table 1. Patient characteristics and episodes by type of care.

Characteristics	Hospitalization (N=1,049)	Outpatient care (N=2,928)	Total (N=3,336)
Age, mean years (SD)	69.6 (11.3)	66.3 (10.5)	67.0 (11.0)
Sex – Men, n (%)	765 (72.9)	2,036 (69.5)	2,344 (70,3)
Number of episodes, n	1,913	22,273	24,186

*According to inhabitants in Comunidad de Madrid in 2016 (4)
N: number of patients; SD: standard deviation

- 284 (1.2%) patients died during a hospital episode. In that subpatient population, mean age (SD) at first episode was 70.9 (11.5) years and, overall, a total of 1,360 previous episodes were reported during 2016 before exitus, of which 553 were hospitalizations.
- Most frequent main diagnoses related to hospitalization and outpatient episodes are shown in figure 1; and most frequent procedures performed during the episodes are detailed in Figure 2.

Figure 1. Most frequent main diagnoses in hospitalization and outpatient care.



C34.11: Malignant neoplasm of upper lobe, right bronchus or lung; C34.90: Malignant neoplasm of unspecified part of unspecified bronchus or lung; C34.12: Malignant neoplasm of upper lobe, left bronchus or lung; J18.9: Pneumonia, unspecified organism; C79.31: Secondary malignant neoplasm of brain; Z51.11: Encounter for antineoplastic chemotherapy; C34.90: Malignant neoplasm of unspecified part of unspecified bronchus or lung; Z51.12: Encounter for antineoplastic immunotherapy; Z51.0: Encounter for antineoplastic radiation therapy; C34.92: Malignant neoplasm of unspecified part of left bronchus or lung

CONCLUSION

- Lung cancer patients in Madrid attend inpatient or outpatient care more than 5 times per year, causing to the Health System more than €26 million. Patients who died during the study period presented an increased use of inpatient care compared to the overall patient population, leading to a relevant increase in the overall cost per patient.
- Lung cancer caused a relevant use of healthcare resources, corresponding to 0.35% of the overall health budget for 2,016 in the region of Madrid (5).
- Real-world data studies provide useful information regarding the use of healthcare resources for a range of diseases with regular contact to inpatient or outpatient care.**

(1) Globocan. Global Cancer Observatory. Cancer tomorrow. Available at: <https://gco.iarc.fr/tomorrow/>; (2) Sociedad Española de Oncología Médica (SEOM). Las Cifras del Cáncer en España 2018; (3) Comunidad de Madrid. Portal de transparencia. Datos Estadísticos. Accessed April 2018, available at: <http://www.madrid.org/es/transparencia/informacion-economica/datos-estadisticos>. (4) Series detalladas desde 2002. Resultados por Comunidades Autonomas. Accessed in August 2018, available at: <http://www.ine.es/>; (5) Presupuestos Generales comunidad de Madrid 2016. Accessed in October 2018, available at: <http://www.comunidad.madrid/gobierno/transparencia/presupuestos-antiguos>.

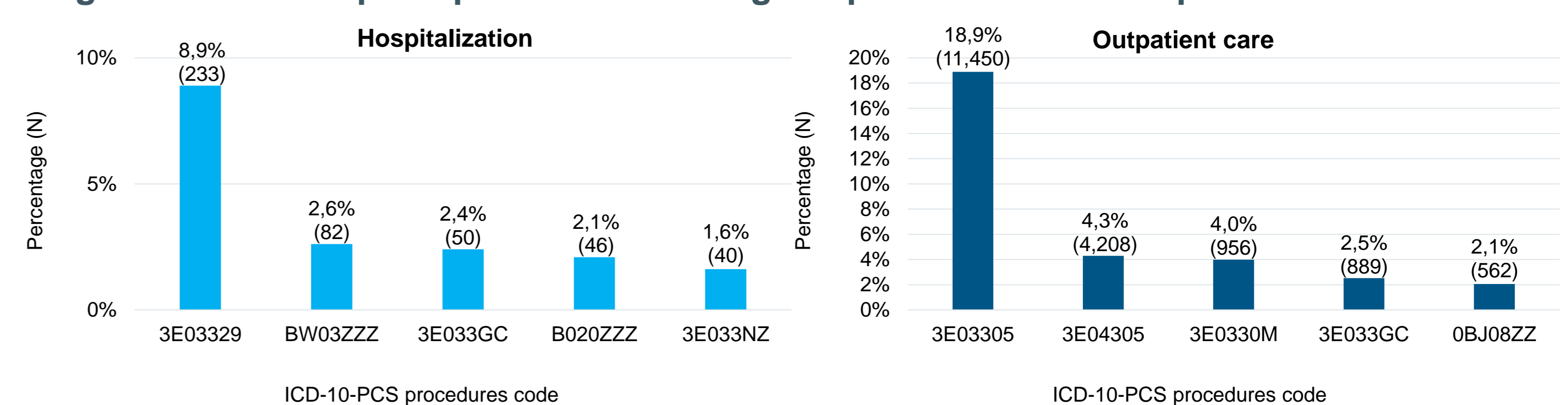
Data extraction

- Socio-demographic information (age and sex), number of hospital contacts (hospitalization and outpatient care), length of stay (days), main diagnoses, procedures performed during hospitalization and outpatient care, and costs associated.

Statistical analysis

- A descriptive statistical analysis was performed and the following measures were calculated: mean, standard deviation (SD), rate per 100,000 inhabitants and percentage.

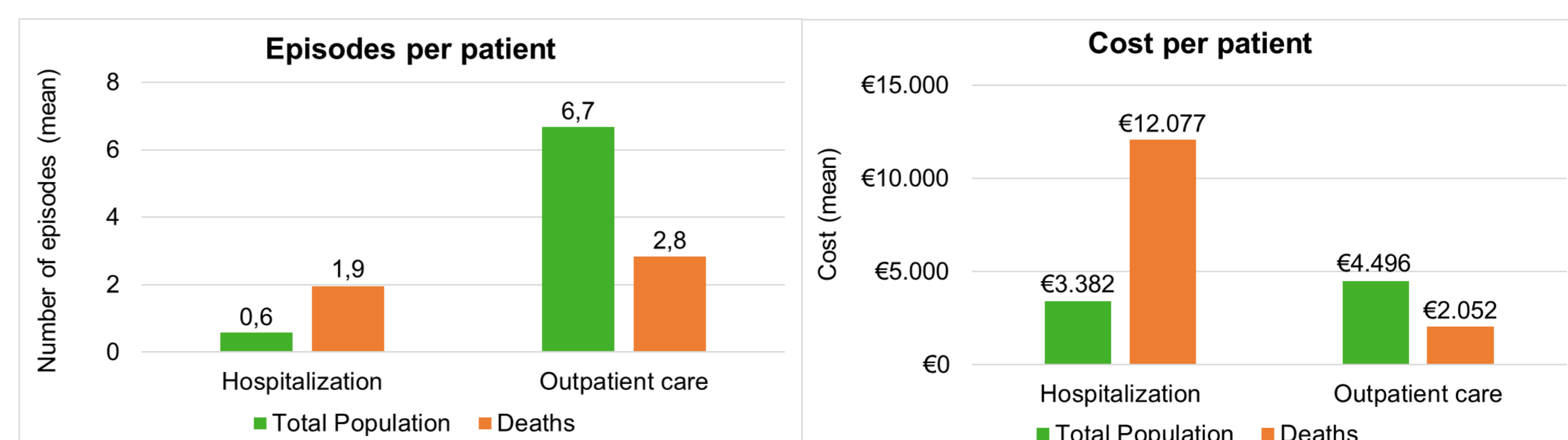
Figure 2. Most frequent procedures during hospitalization and outpatient care.



3E03329: Introduction of Other Anti-infective into Peripheral Vein, Percutaneous Approach; BW03ZZZ: Plain Radiography of Chest; 3E033GC: Introduction of Other Therapeutic Substance into Peripheral Vein, Percutaneous Approach; B020ZZZ: Computerized Tomography (CT Scan) of Brain; 3E033NZ: Introduction of Analgesics, Hypnotics, Sedatives into Peripheral Vein, Percutaneous Approach; 3E03305: Introduction of Other Antineoplastic into Peripheral Vein, Percutaneous Approach; 3E04305: Introduction of Other Antineoplastic into Central Vein, Percutaneous Approach; 3E0330M: Introduction of Monoclonal Antibody into Peripheral Vein, Percutaneous Approach; 3E033GC: Introduction of Other Therapeutic Substance into Peripheral Vein, Percutaneous Approach; 0BJ08ZZ: Inspection of Tracheobronchial Tree, Via Natural or Artificial Opening Endoscopic

- The average hospitalization episodes and outpatient contacts per patient were 0.6 and 6.7 respectively (Figure 3). The overall length of hospitalization was estimated in 17,606.2 days, and the average per patient came to 16.8 days. For the subpopulation of patients who died during 2,016, the average hospitalization episodes and outpatient contacts per patient were estimated in 1.9 and 2.8 (Figure 3), and the average length of hospital stay per patient who died was 20.7.

Figure 3. Number of episodes and cost per patient by type of care and patient population



*Patients who died during the study period.

- The overall healthcare costs including inpatient and outpatient care are estimated in €26,280,322.6, of which €11,281,328 corresponded to hospitalization and €14,998,994.6 to outpatient care. Cost per patient associated to the overall patient population included and to the patients who died during the study period are shown in Figure 3.