#### **Peer Review File**

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#### Reviewer A

This is a retrospective cohort study of patients diagnosed with lung cancer from a single centre. The aims of the study were to determine the frequency and factors associated with unplanned care, specifically unplanned hospital admissions and ED presentations, in this cohort of patients. The investigators evaluated data from 5 years and identified 821 patients. Not surprisingly, the investigators found that the 1-year cumulative incidence of ED presentations were very high. Interestingly, they also identified factors associated with more frequent admissions.

#### **Comment 1:** Introduction:

Please provide a reference for the following statements in Introduction: In some cases, given that more than 50% of lung cancer patients are diagnosed with metastatic disease, the ED is the entry door to the final diagnosis. Small cell lung cancer is especially prone to this situation.

**Reply 1:** The following references have been added:

- (5).- Siegel RL, Miller KD, Wagle NS, Jemal A. Cancer statistics, 2023. CA Cancer J Clin. 2023 Jan;73(1):17-48. doi: 10.3322/caac.21763. PMID: 36633525.
- (6).- Meert AP, Sculier JP, Berghmans T. Lung cancer diagnosis in the emergency department. Eur Respir J. 2015 Apr;45(4):867-8. doi: 10.1183/09031936.00198814. PMID: 25829427.
- (7).- Haque N, Raza A, McGoey R, Boulmay B, Diethelm L, Kantrow S. Small cell lung cancer: time to diagnosis and treatment. South Med J. 2012 Aug;105(8):418-23. doi: 10.1097/SMJ.0b013e3182601198. PMID: 22864099.

The percentage of diagnosis of stage IV disease has been modified according to the most current reference available (5) and finally used.

Changes in the text: The new references incorporated were inserted in the text: Page 6; line 87: "In some cases, given that more than 44% of lung cancer patients are diagnosed with metastatic disease (5), the ED is the entry door to the final diagnosis (6). Small cell lung cancer is especially prone to this situation (7)."

Comment 2: Was there any information about patient social situations, specifically availability of carers?

Reply 2: We do not have enough information about the social situation, especially the

careers of the patients. The retrospective design of the study limited the ability to incorporate this information as it was absent in the majority of clinical records.

**Changes in the text:** No changes to the text.

**Comment 3:** There is a lot of information (Results and Figure 2 & 3) regarding the MTS times and duration while in the ED. While a summary is useful, such details may only be of interest to hospital administrators. Please consider shortening this section.

**Reply 3:** We synthesize the part referring to the evaluation of the classification in emergencies by MTS referring to the figures where the data of quality indicators are described. The paragraph that specifically described these results is removed from the text by referring the reader to the figures.

Changes in the text: Page 12; line 223: "The classification of the need for attention according to the MTS was as follows: 0.3% immediate, 12.8% very urgent, 64.9% urgent, 21.6% standard and 0.4% nonurgent, Figure 2E. The quality indicators: attention time and resolution time according to the level of MTS, as well as the admission rate are described in Figure 3."

The following paragraph has been removed:

"The median time between classification and medical attention was 13.6 minutes (IQR: 6.2-27.1), achieving 91.5% compliance according to the recommended times for each level of the MTS. A total of 42.2% of emergency visits required hospital admission, and the median total time spent in the ED until resolution (discharge or admission) was 7.5 hours (IQR: 3.9-21.8). A significant association was observed between the level of severity in the emergency classification and hospital admission. The results according to the severity are shown in Figure 3."

**Comment 4:** After admission, the in-patient mortality was 17.3%. Any information on the causes of death? Did these patients die from disease progression or treatment side-effects?

**Reply 4:** Coded diagnoses were analyzed for all admission episodes, also for those that ended with the death of the patient.

In 88.6% of the cases the cause of death was cancer, its progression or its complications. In 1.5% of cases, the cause of death was attributed to toxicity or a complication of treatment.

Among other causes we found: heart disease 2.5%; stroke 1.5%; respiratory complications or exacerbation of COPD 2.5%; thromboembolism without tumor progression 2.5%.

Changes in the text: When describing hospital mortality, we add the proportion of patients who die from cancer or from treatment toxicity.

Page 13; line 241: "The median length of stay for unplanned hospital admissions was

**Comment 5:** There is no mention of the disruptions to the health services causing the CoVID 19 pandemic. What impacts did the lockdowns and subsequent disruption/delays to outpatient care have on this cohort of patients?

**Reply 5:** To further explore this issue, we observed that both the number of emergency visits and the number of admissions during the months of March and April 2020 were below the median for emergencies and admissions for the entire study period, but within the interquartile range.

In this work we have focused on evaluating the care process over a prolonged period of time, not considering the impact of confinement and the months with the highest incidence of the covid 19 pandemic, which were March and April 2020, in the design.

However, we studied this event in another project with a more appropriate design, the results of which we communicate at the 2021 ASCO Annual Meeting in the form of an abstract:

Abstract: e13527. 2021 ASCO Annual Meeting I: CARE DELIVERY AND REGULATORY POLICY.

Sanchez JC, et al. Impact of COVID19 pandemic on the hospitalization burden of cancer patients: Results of a quasi-experimental study. Journal of Clinical Oncology 2021 39:15\_suppl, e13527-e13527. DOI: 10.1200/JCO.2021.39.15\_suppl.e13527 Journal of Clinical Oncology 39, no. 15\_suppl.

In this quasi-experimental study on the Impact of the COVID 19 pandemic on the hospitalization burden of cancer patients, we observed a lower number of admissions to the Medical Oncology service during the two months of lockdown, with an increase in viral pneumonia in that period and a non-significant trend towards greater mortality from these viral pneumonia events, although mortality in hospitalization due to all causes for cancer patients was similar between the pandemic period and the reference period, as other indicators for hospitalization process.

The long period evaluated, 5 years, with all incident cases, should reflect the impact of unplanned care in the course of care for lung cancer in a Medical Oncology service, even though in the most acute period of the pandemic COVID19 would have increased unplanned care in lung cancer, a fact that we have not been able to demonstrate in our previously referenced quasi-experimental study.

Changes in the text: No changes to the text.

**Comment 6:** It would be useful to have some information about the costs of these unplanned ED presentations and hospital admissions.

Reply 6: We have information on the costs but initially we did not consider publishing

them because this is not a health economics study and the measure must be interpreted with caution. We have calculated the cost of hospital admissions by the diagnosis related group (DRG), a code that is assigned to each admission process together with its severity, with an attributed cost for each with an attributed cost for each DRG established by the Spanish Ministry of Health.

**Changes in the text:** The following information was added to the objectives described in the methods:

Page 10; line 182: "For unplanned admissions: admission to the Oncology Hospitalization Unit, length of stay, mortality during admission, readmission rate at 30 days, reasons for admission and total cost of hospitalization for the entire cohort of lung cancer patients using the values specified by the Spanish National Health System for each diagnosis related group."

The following information was added to the results:

Page 13; line 248: "The direct cost attributed to unplanned admissions in the study period for the entire cohort, based on the reference prices for the diagnosis related group that codes each admission for each patient, amounted to  $6,280,006 \in$ ."

**Comment 7:** Provide more information on future planned studies or suggestions for future studies.

**Reply 7:** At the final part of the discussion, we suggest future plans based on the findings of our study. Plans that should be measured in new studies within the plan-do-check-act continuum for quality improvement.

Since the risk of unplanned care is very high in lung cancer patients, this must be considered in the management of Medical Oncology Departments. However, not all patients have the same risk, so we should not offer the same care to all patients. We suggest the incorporation of remote monitoring and rapid access pathways based on risk, as well as the development of Oncology-Dedicated Emergency Services.

**Changes in the text:** We have added and clarified the following statements:

Page 19; line 369: "The management of an oncology service must offer channels and fast tracks for unplanned care, considering the use of strategies and devices for remote monitoring adapted to the risk of each patient and guided by patient-reported outcomes".

Page 19; line 376: "The difference identifies consultations that could be attended in another route, being possible to identify the severity of consultations, the attention and resolution time according to the severity, and finally observing the proportion of patients who are discharged after hours in an emergency department, as shown in Figure 3, all together pointing out the need to recognize the particularities of cancer patients and supporting the development of Oncology-Dedicated Emergency Services".

# Reviewer B

I read with interest the article entitled "Patterns and outcome of unplanned care in lung

cancer patients: an observational study in a medical oncology department. A data science approach to manage the unpredictable".

This is a very important question. I think studying death as competing risk to unplanned care is an appropriate statistical plan.

Unfortunately, method and results are unclear, and the whole manuscript is hard to read. It should be optimized.

### **Major comments:**

**Comment 8:** The conclusion of the abstract is unclear. The last sentence should open perspectives and not discuss the method.

**Reply 8:** We have modified the conclusion to open future perspectives as advised, and therefore the second sentence of the conclusion in the abstract has been modified.

# Changes in the text:

The second paragraph of the conclusion has been changed in the text:

Page: 21; line: 412: "Unplanned care is unpredictable but measurable, and metrics represents a key step to quality improvement of health systems. Once the problem has been assessed, the necessary changes must be applied to achieve a true transformation and improvement of care. We must optimize the follow-up of patients with a higher risk of unplanned care, advanced lung cancer, symptomatic or with functional deterioration patients, incorporating remote monitoring strategies wich allows for early interventions, as developing specific urgent care pathways for a better comprehensive cancer care".

The second sentence of the conclusion of the abstract has been changed in the text: Page: 4; line: 64: "We must optimize the follow-up of patients with a higher risk of unplanned care, advanced lung cancer or symptomatic patients, incorporating remote monitoring strategies and early interventions, as developing specific urgent care pathways for a better comprehensive cancer care".

The following sentence has been removed from the conclusion of the abstract: "Using data systematically collected in hospitals, our study determined the burden and risk of ED visit and UHA, establishing benchmarks for evaluating interventions for a specific cancer population".

**Comment 9:** Method section should be divided into clear parts.

**Reply 9:** We have divided the methods into four parts: 1.- study design and population; 2.- data sources; 3.- outcomes; 4.- Statistical Analysis.

**Changes in the text:** We have modified our text as advised:

Page 7; line 114: "Study design and population".

Page 7; line 124: "Data sources".

Page 9; line 164: "Outcomes".

Page 10; line 187: "Statistical analysis".

**Comment 10:** Why do you exclude patients referred directly to a palliative care unit?

**Reply 10:** One of the motivations to evaluate unplanned care in patients with lung cancer is to assess the management of the medical oncology service from a quality improvement point of view.

Patients who are referred directly to a palliative care unit without being evaluated by the medical oncology department are usually patients with a clinical situation of the last few days of life or severe comorbidity that prevents treatment, and as they have not been evaluated by medical oncology, the information analyzed could confuse the interpretation of the management of the process. The care received by these patients does not depend on the medical oncology service and therefore its analysis does not reflect the lung cancer care process or its management.

However, this group of patients was only a minority, 48 patients. We do include patients with lung cancer evaluated by medical oncology even though they did not receive any systemic treatment and only received palliative treatment but followed up by our service and within the process of lung cancer (101 patients included only received supportive-palliative care), because data related to their care can contribute to improving the management of the oncological process since they were part of it.

Changes in the text: No changes to the text.

Comment 11: The objectives are not defined in the abstract. They are not clearly defined in the method. And the results sections provide results of analyses not describe as objectives in the method (hour and date of unplanned care). Time from fist consultation in medical oncology is described in the statistical part but not in the objectives and not in the results.

**Reply 11:** As advised we have clearly defined the objectives and together with a better structure of the results we ensure that they are related correctly.

We have incorporated the objectives in the abstract, in the methods section.

"Time from fist consultation in medical oncology is described in the statistical part but not in the objectives and not in the results": we have described this issue better, the objective is the incidence of unplanned care from the first visit to the medical oncology service, thus it is defined in the objectives and therefore in the statistical plan where it is explained as "an analysis of time from the first consultation in Medical Oncology to the first consultation in the Emergency Department and until the first unplanned admission was carried out by means of survival analysis techniques. Time to event was analyzed considering patient death as a competitive event in the observation of both outcomes; therefore, the cumulative incidence function (CIF) is shown instead of Kaplan-Meier estimates". This objective is reported in Results, section Incidence and risk factors of unplanned care: Pages 13-14; lines 245 – 265.

#### Changes in the text:

Definition of objectives in the abstract has been added:

Page 3; line 43: "The main objective was to assess the incidence of unplanned care, ED visits and unplanned hospital admissions, from the first visit to the medical oncology

service and its potential conditioning variables, considering patient death as a competitive event. As secondary objectives, a description and a quality of unplanned care evaluation was carried out".

### Objectives definition:

Page 9; line 165: "The main objective of the study was to assess the incidence of unplanned care, ED visits and unplanned hospital admissions, from the first visit to the medical oncology service and its potential conditioning variables. Admissions for planned chemotherapy, radiotherapy or surgery were excluded."

The results related to this objective are found in Results, section Incidence and risk factors of unplanned care: Page: 13; line: 253.

### Objectives definition:

Page 10; line 178: "As secondary objectives, a description and a quality of unplanned care evaluation was carried out. Measures and indicators used for ED visits were: reason and origin of ED consultation (referring physician), day and hour of care, time from hospital arrival to classification, time from classification to medical evaluation according to the MTS recommended times (21), admission rate and total time from hospital arrival to resolution (discharge or admission)".

The results related to this objective are found in Results, section Emergency visits: Page: 11; line: 212.

## Objectives definition:

Page 10; line 182: "For unplanned admissions: admission to the Oncology Hospitalization Unit, length of stay, mortality during admission, readmission rate at 30 days, reasons for admission and total cost of hospitalization for the entire cohort of LC patients using the values specified by the Spanish National Health System for each diagnosis related group."

The results related to this objective are found in Results, section Unplanned hospital admission: Pages 13; line: 239.

**Comment 12:** The method should be better presented. The objective clearly explained before information abstract, excluded criteria in the objectives' paragraph...

**Reply 12:** The presentation of the methods has been modified, largely guided by the recommendations in comments 9, 10, 12 and 13.

The structure is better defined in 4 parts introduced by the subtitles: "study design and population", "data sources", "outcomes", and "statistical analysis".

The main changes have been made in a better explanation of the data sources, described in comment 13, and in the definition of the objectives, described in comment 11.

Regarding the exclusion criteria, it is defined in "study design and population" and it is explained in comment 10.

"Admissions for planned chemotherapy, radiotherapy or surgery were excluded": with this sentence we intend to clarify the defined objective of unplanned hospital admission and therefore that is explained in the outcomes paragraph.

**Changes in the text:** modifications of text are specified in the responses to comments 9, 11 and 13.

**Comment 13:** You should better explain the databases: what variables were extracted from which database. What are these "records" in the method: patients, hospitalization, ED admission? How could you merge these databases? For example, a figure could be proposed.

**Reply 13:** We have modified the data sources section to better explain where each variable is obtained from and how the data sources are related.

The identification of the patients is made from the tumor registry and we specify which variables are obtained from it.

We completed the data from the tumor registry incorporating variables from the individual review of the clinical history of each patient.

Extraction of administrative data on activity in the medical oncology consultation, in the emergency room, hospital admissions and systemic treatments in the hospital during the study period. The records of each care provided in each area of the hospital were cross-referenced using the hospital identification number with our cohort identified through the tumor registry. The variables obtained from the described administrative records are described.

What are these "records" in the method: patients, hospitalization, ED admission?: Every time a patient is treated at the hospital, an individual record of the care provided is generated, admissions, emergencies, outpatient treatments and consultations, and in each record we have administrative care variables, with the assigned patient identification number.

Changes in the text: We have added and clarified the following information:

Identification from the tumor registry and variables extracted from it:

Page 7; lines: 125: "Patients were identified from the PHUH tumor registry, wich includes the following variables: cancer diagnosis, sex, birth date, diagnosis date, cancer site, and stage".

Individual review of the clinical history of each patient and variables that are collected: Page 8; line: 126: "Data was expanded by reviewing individual patient records, adding clinical and pathological variables: history of personal and family cancer, history of smoking, CHARLSON comorbidity score, Eastern Cooperative Oncology Group Performance Status (ECOG PS), drugs used and symptoms at first consultation, histology and molecular studies carried out, follow-up status and date of relapse and death".

Variables obtained from administrative and activity data in the hospital during the study

period and identification of the information corresponding to our cohort through the hospital identification number:

Page: 9; line: 151: "The information on care throughout the oncological process was obtained from administrative data, extracted from the data warehouse system of the Electronic Medical Record. Between January 1st 2016 and June 30th 2021 we identified 121,878 medical oncology appointments, 881,738 emergency service attendance, 140,432 hospital admissions, and 62,277 records for systemic treatments administered. Data obtained was cross-referenced using the hospital identification number with the study cohort previously selected from the tumor registry, obtaining the variables: date of first medical oncology visit, date and time of ED visits and hospital admissions; reason and origin of ED consultation (referring physician); ED time of attendance (times among hospital arrival, triage, medical attention, and resolution); triage classification according to the Manchester Triage System (MTS) (21), and hospital admissions diagnoses coded by ICD-10".

**Comment 14:** Paragraphs of the results should be introduced by a subtitle to help the reader. Results should correspond to the objectives and be clear explained.

**Reply 14:** According to the recommendation we have incorporated subtitles for each part of the results. The subheadings of the results are related to the objectives of the study as previously described in comment 11.

**Changes in the text:** We have modified our text as advised:

Page 11; line 211: "Emergency visits".

Page 13; line 238: "Unplanned hospital admission".

Page 13; line 252: "Incidence and risk factors of unplanned care".

**Comment 15:** The discussion is too long. You must focus on the most important messages. You can use the structured discussion proposed in the guidelines. Key points at the beginning need to be more concise.

**Reply 15:** We have reduced the discussion focusing on the most important aspects, going from 1570 words in the first version to 1314 words in the modified version according to the reviewers' suggestions.

We have not exactly followed the structure proposed in the guides but all the points have been discussed in a very similar order:

a) Key findings; b) Comparison with similar research and explanations of findings; c) Implications and actions needed; d) Strengths and limitations.

Key points paragraph at the beginning has been modified to be more concise and to focusing on main results.

### **Changes in the text:**

Structured discussion used:

Page: 14; line: 276: Key findings.

Page: 15; line: 294: Comparison with similar research and explanations of findings.

Page: 18; line: 364: Implications and actions needed.

Page: 20; line: 392: Strengths and limitations.

# Key points paragraph modified:

Page: 14; line: 276: "Our study shows that unplanned care for lung cancer patients after the first consultation in a medical oncology department is a very frequent event, with 82.9% of patients requiring consultation in the ED and 68% having an unplanned hospital admission. Unplanned care is, in addition to frequent, an early event for patients with lung cancer, with a 1-year cumulative incidence of 71.3% and 56.7% for ED consultation and for unplanned hospitalization admission, being cancer-related in more than 80% of those episodes. A higher stage increased the risk of ED consultation, while a higher stage, male sex, ECOG 2 and treatment with opioids or steroids in the first consultation increased the risk of unplanned admission".

We have removed some phrases from the discussion, reflected with the text change tracker.

#### **Minor comments:**

**Comment 16:** The title is too long in my opinion. But I do not see a limit in the guidelines. I think you could delete the 2nd sentence.

**Reply 16:** We accept the suggestion to shorten the title and remove the second sentence.

Changes in the text: Page 1; line 3: The second sentence of the title has been removed.

**Comment 17:** Too many abbreviations were used. For example: UHA is not usual; it should not be used. Same thing for EPR. After the first use, please use ED at each time: for example line 99.

**Reply 17:** In accordance with the suggestion we have removed the abbreviations UHA and EPR. We have corrected the use of Emergency Department (ED) for use in the text each time.

Changes in the text: All abbreviated notations in the text with "UHA" have been replaced by "unplanned hospitalization admission" or "unplanned admission". All abbreviated notations in the text with "EPR" have been replaced by "Electronic Medical Record".

**Comment 18:** I noticed that informed consent was waived. But how did you inform the patients?

**Reply 18:** All patients in the first consultation are informed that they are being attended in a university teaching hospital and that therefore the information about their care is used for academic, teaching and research purposes, always anonymously.

Specifically, we have a quality assessment strategy in which we analyze the care information in an aggregate manner and to communicate any results, the projects must be approved by the institutional ethics committee.

Any patient can refuse to have their data analyzed or shared, even when it is done anonymously.

**Changes in the text:** No changes to the text.

**Comment 19:** References: Sources should be referenced according to the Vancouver reference style as recommended in the authors guidelines.

**Reply 19:** The bibliographical references have been modified to the Vancouver style.

**Changes in the text:** Page: 22; line: 447: the bibliographical references have been modified to the Vancouver style as advised.

**Comment 20:** For performance status: ECOG is used in the abstract and ECOG PS in the rest of the manuscript.

**Reply 20:** We have reviewed the text and as advised the ECOG annotation has been used in all cases.

**Changes in the text:** The ECOG PS annotation has been replaced by ECOG. Page 8; line: 129: "Eastern Cooperative Oncology Group performance status (ECOG)".

Comment 21: Please provide a reference for the Fine and Gray competing risk regression.

**Reply 21:** The following reference has been added:

(22).- Austin PC, Fine JP. Practical recommendations for reporting Fine-Gray model analyses for competing risk data. Stat Med. 2017 Nov 30;36(27):4391-4400. doi: 10.1002/sim.7501. Epub 2017 Sep 15. PMID: 28913837; PMCID: PMC5698744.

Changes in the text: The new reference incorporated was inserted in the text: Page 11; line 197: "Fine&Gray competing risk regression was performed to establish the association of variables with time to event (22)".

Comment 22: In the discussion, you should discuss advanced care planning.

**Reply 22:** The need to shorten the discussion, as noted in comment 15, limits the possibility of a more in-depth description of advanced care planning. However, we believe that the most important thing is to demonstrate that the measurement of the cancer care process is feasible and therefore can guide possible interventions that can

in turn be evaluated.

# **Changes in the text:**

Page 19; line 369: "The management of an oncology service must offer channels and fast tracks for unplanned care, considering the use of strategies and devices for remote monitoring adapted to the risk of each patient and guided by patient-reported outcomes".

Page 19; line 376: "The difference identifies consultations that could be attended in another route, being possible to identify the severity of consultations, the attention and resolution time according to the severity, and finally observing the proportion of patients who are discharged after hours in an emergency department, as shown in Figure 3, all together pointing out the need to recognize the particularities of cancer patients and supporting the development of Oncology-Dedicated Emergency Services".

The second paragraph of the conclusion has been changed in the text:

Page: 21; line: 412: "Unplanned care is unpredictable but measurable, and metrics represents a key step to quality improvement of health systems. Once the problem has been assessed, the necessary changes must be applied to achieve a true transformation and improvement of care. We must optimize the follow-up of patients with a higher risk of unplanned care, advanced lung cancer, symptomatic or with functional deterioration patients, incorporating remote monitoring strategies wich allows for early interventions, as developing specific urgent care pathways for a better comprehensive cancer care".

**Comment 23:** Figure 2 should be simplified with n and % in the same figure.

Reply 23: Figure 2 has been simplified by illustrating n and % in the same figure.

**Changes in the text:** Figure 2 is sent modified according to the suggestion.

**Comment 24:** Figure 3 should be discussed. It reports important results.

**Reply 24:** Specifically, we do not discuss Figure 3 in depth, partly because of the need to reduce the length of the discussion and partly because of the suggestion of the first reviewer's comment 3. In our opinion, it is not so important to discuss the exact results obtained from our clinical practice as it is a study in a single center, but it is important to communicate that it is feasible to measure unplanned care with quality indicators, and therefore discuss that these metrics can contribute to evaluating the care provided and possible interventions to improve it. For this reason, figure 3 is referred to in the discussion according to the suggestion.

## **Changes in the text:**

Page: 19; line: 375: "Regarding unplanned outpatient care, 82.9% of patients visited the ED, and the hospitalization rate was 42.2%. The difference identifies consultations that could be attended in another route, being possible to identify the severity of consultations, the attention and resolution time according to the severity, and finally observing the proportion of patients who are discharged after hours in an emergency department, as shown in Figure 3, all together pointing out the need to recognize the

particularities of cancer patients and supporting the development of Oncology-Dedicated Emergency Services".

**Comment 25:** Table 1 should be simplified: only male (and note male and female), ECOGPS 3 and 4 could be presented together. For symptoms, drugs and metastases, you can delete the line "No".

**Reply 25:** Table 1 has been simplified as advised.

**Changes in the text:** Table 1 has been simplified as advised.

**Comment 26:** Table 2: which mortality is reported? At what time? What does the p-value describe?

**Reply 26:** Inpatient mortality is described, the proportion of admissions that end with the death of the patient among the total number of unscheduled admissions.

As it is described in the objectives: "For unplanned admissions: admission to the Oncology Hospitalization Unit, length of stay, **mortality during admission**, readmission rate at 30 days, reasons for admission and total cost of hospitalization for the entire cohort of lung cancer patients using the values specified by the Spanish National Health System for each diagnosis related group".

All unplanned admission processes were considered during the study period for all the patients included.

The p-value in Table 2 refers to the association between tumor stage and hospital mortality for unplanned admissions.

**Changes in the text:** We modified the structure of Table 2 to clarify that the p-value refers to the association between stage and hospital mortality.