Project Title: Analysis of the excessive number of hospital admissions in Medical Oncology compared to other hospitals in the Region of Murcia.

Presenter’s Name: Dr. Eduardo Feliciangeli

Institution: Hospital General Universitario Santa Lucía

Date: 30/03/2020
Problem Statement

We have detected, in comparison to other oncology departments, with a similar or greater population area, a disproportionately higher number of hospital admissions.
Institutional Overview

**Hospital General Universitario Santa Lucía**

- University Public Hospital
- Potential patients: 410000 patients
- All specialties available
- Medical Oncology Service
  - 10 Medical Oncologists
  - 1 Medical Oncology Residents
  - 24 nurses / nursing assistant
  - 1040 new patients per year
Institutional Overview

Hospital General Universitario Santa Lucía

- **Hospitalization rooms**
  - 35 beads → 16 double rooms + 3 single rooms
  - Nurse / patient ratio → 11 patients / nurse
  - Doctor / patient ratio → 13 patients / doctor

- **Clinic**
  - 29 seats + 4 beads
  - 10 seats / nurse → 50 treatment administration / day
  - Symptom control office → 0 nurse assigned
Team Members

Sponsor: Dra. Teresa García (Medical Oncology Chief)
Coach: Dra. Ana Blasco (Medical Oncologist)
Leaders
Eduardo Feliciangeli (Medical Oncologist)
María José Martínez-Ortiz (Medical Oncologist)
Collaborators
Ana Fernández (Medical Oncologist)
José Balsalobre (Medical Oncologist)
Measures

Measure:
- Total hospital Oncology admissions between 11/01/2019 and 01/31/2020.
- Origin (Oncology Clinic / emergency / other departments).
- Cause of admission (urgent / scheduled / transfer from another center/hospital).
- Adequacy (inadequate admission in Oncology (avoidable admission and avoidable admission in Oncology) / adequate admission in Oncology).

Patient Population:
- All patients admitted in the Oncology Department
Measures

- **Data Source:**
  - Admissions department. Data collected to an Excel table from the EHRs (Electronic Health Records) through Selene Corporate System.

- **Data Collection Frequency:**
  - For practical reasons data was collected on a weekly basis.

- **Data quality (any limitations):**
  - Some patients were wrongly admitted in Oncology (patients admitted for brachytherapy and were supposed to be admitted in Radiotherapy or some lymphomas that were meant to be admitted in Hematology, so data needed to be checked and debugged.
ADEQUATE ADMISSION IN ONCOLOGY CRITERIA:

- Infections while in cancer treatment.
- Administration of intravenous cancer treatment.
- Non-surgical complication of the neoplasm.
- Non-surgical symptoms secondary to disease progression (tumor bleeding, tumor superinfection, liver failure, CNS progression, BM infiltration, etc.).
- Treatment toxicity.
- End of life (impossibility of home management due to family situation, or symptoms refractory to subcutaneous management by ESAD - home palliative care).
## Diagnostic Data

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td>M: 105 (61.05%)</td>
</tr>
<tr>
<td></td>
<td>F: 67 (38.95%)</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td>Mean: 63.34</td>
</tr>
<tr>
<td></td>
<td>Median: 64</td>
</tr>
<tr>
<td><strong>Type of Admission</strong></td>
<td>Urgent: 139 (80.81%)</td>
</tr>
<tr>
<td></td>
<td>Programmed: 33 (19.19%)</td>
</tr>
<tr>
<td><strong>Adequacy</strong></td>
<td>Avoidable: 66 (38.38%)</td>
</tr>
<tr>
<td></td>
<td>Avoidable Oncology: 43 (25%)</td>
</tr>
<tr>
<td></td>
<td>Adequate: 106 (61.62%)</td>
</tr>
<tr>
<td><strong>Destination at Discharge</strong></td>
<td>Home: 138 (80.24%)</td>
</tr>
<tr>
<td></td>
<td>Exitus: 30 (17.44%)</td>
</tr>
<tr>
<td></td>
<td>To Another Hospital: 3 (1.74%)</td>
</tr>
<tr>
<td></td>
<td>Voluntary Discharge: 1 (0.58%)</td>
</tr>
</tbody>
</table>
Pareto Chart

<table>
<thead>
<tr>
<th>Adequate</th>
<th>Avoidable</th>
</tr>
</thead>
<tbody>
<tr>
<td>106</td>
<td>66</td>
</tr>
<tr>
<td>62%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Aim Statement

Reduce the number of inappropriate admissions in 40% of Medical Oncology patients of the "General University Hospital Santa Lucia" of Cartagena in the period between 01/09/2020 and 31/10/2020, in order to reduce the workload of health personnel and the risk and discomfort of the patient and family.
## Prioritized List Changes (priority/Pay-Off Matrix)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Ease</th>
<th>Difficulty of Implementation</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Creation of guidelines for correct admission criteria.</td>
<td>Education to ER physicians</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Admission protocols for radiodiagnostic procedures.</td>
<td>Reorganization with Radiology of observation criteria after radiodiagnostic procedures (core biopsies, fna biopsies, tumor radiofrequency, etc)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Clinical sessions discussing admission adequacy in our own department.</td>
<td>Education on admission criteria to other centers/hospitals that refer patients.</td>
<td></td>
</tr>
</tbody>
</table>
We decided after the second meeting to reduce the percentage of the aim statement to something more realistic (from 90% to 40% reduction in inadequate admissions). We also decided, in order to avoid confusion, to unify “avoidable admission” and “avoidable admission in oncology” into “inadequate admission”.
Measures: Process

Through July to August 2020 we presented the correct admission criteria in Oncology to the E.R. as well as to other Departments. The criteria were the following:

- Infections while in cancer treatment.
- Administration of intravenous cancer treatment.
- Non-surgical complication of the neoplasm.
- Non-surgical symptoms secondary to disease progression (tumor bleeding, tumor superinfection, liver failure, CNS progression, BM infiltration, etc.).
- Treatment toxicity.
- End of life (impossibility of home management due to family situation, or symptoms refractory to subcutaneous management by ESAD - home palliative care).

During that time we spoke and organized with the Radiology Department to only admit in the ward, those patients that need a 24 hour observation period. The other procedures that needed less observation time, were to be admitted in the Clinic.
Measures: Process

Throughout September and October of 2020, we solicited to the admissions department a record of all the patients admitted in Oncology from the 01/09/2020 to the 31/10/2020 and then we described if the patients were admitted in Oncology correctly or incorrectly based on the criteria described previously.

In total we reviewed 193 total patients admitted in Oncology during that period of time.
## PDSA Plan

<table>
<thead>
<tr>
<th>Date of PDSA Cycle</th>
<th>Description of Intervention</th>
<th>Results</th>
<th>Action Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>February/2020 to April/2020</td>
<td>Collection of data (patients admitted in Oncology throughout Nov/2019-Jan/2020)</td>
<td>Confirmed our thought that we have a very large amount of admissions when compared with other centers we contacted.</td>
<td>Analyzed causes of admission on each patient</td>
</tr>
<tr>
<td>May/2020</td>
<td>Created the Oncology Admission Criteria</td>
<td></td>
<td>Spoke with Direction and Management of our Center to start an Education programme.</td>
</tr>
<tr>
<td>June/2020</td>
<td>Discussed with Radiology observation criteria for hospitalization or clinic (as out-patient)</td>
<td>Created new criteria and discussed it with Management.</td>
<td>Start implementing the new criteria in September/2020</td>
</tr>
<tr>
<td>July/2020 to August/2020</td>
<td>Presentation of the correct admission criteria in Oncology to the E.R. as well as to other Departments and Centers.</td>
<td>Overall acceptance. We decided to start using new criteria in September/2020.</td>
<td>Planned the collection of new data in November (admissions in Oncology throughout September and October/2020).</td>
</tr>
</tbody>
</table>
Measures: Outcome

The measures adopted by the Medical Directorate for the optimal care of COVID patients by Internal Medicine and Pneumology, have led to assume patients by the Oncology department that were even still waiting for anatomo-pathological diagnosis of cancer, as well as admissions from the E.R. of patients that would not meet our criteria of adequacy.

In spite of everything we could see a reduction of 6%, a fact that has surprised us and that indicates that both the education given as well as the presentation of new criteria for admission to both the emergency room and radiology have served despite the situation we are all facing.
Pareto Chart: Before and After

<table>
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<tr>
<th>Adequate</th>
<th>106</th>
<th>62</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidable</td>
<td>66</td>
<td>100</td>
</tr>
</tbody>
</table>

% hospital admissions
Medical Oncology Service

Fundación para la Excelencia y la Calidad de la Oncología
Measures: Outcome

Run Chart

[Graph showing % hospital admissions by Medical Oncology Service, with separate lines for Adequate and Avoidable outcomes, comparing Sept 2020 and Nov 2020.]
Process Map: Future State

- Patient admitted
- From Oncology Clinic
- Urgent
- Follows admission criteria
- Scheduled
- Adequate Admission
- Procedure or observation can be done in Day Hospital?
- Inadequate Admission
- Other Department
- Other Hosp
Conclusions

After working with the E.R. and Radiology we find that this project is feasible even though we did not achieve our goals.

Our results indicate we need to continue giving education on admission criteria to the hospital staff.

We have to emphasize the difficulty that has been carrying out this project in a pandemic situation. We consider that this same project in a normal situation of habitual care burden, the data obtained would have been a lot better.
Next Steps/Plan for Sustainability

We will restart the education of the emergency room staff for the correct fulfillment of the criteria for admission in Medical Oncology when the pandemic improves, since at the present time it is not viable. We will also resume the organization of scheduled admissions for diagnostic and therapeutic tests with Radiology.

Once we restart the plan in the previous point, we believe it is convenient to collect data on a quarterly basis to see the evolution over the next year.

We will also try to establish in other departments the criteria for adequate admission in Oncology through more education to the staff.