

## **Summary**

**Introduction:** The direct costs of palliative care of cancer patients in their last month of life were compared between a group treated in an NHS hospital and a group treated in the community.

**Methods:** Two groups of terminally ill cancer patients were selected to be followed during their last month of life. The first was managed entirely within an NHS hospital, while the second was managed by a community based palliative care team. Data were gathered to compare costs in the two situations. Hospital costs were provided by the accounts department of the hospital, whereas the costs of the community based care were available in the team's own accounts records.

**Results:** The total cost of care of patients managed within the hospital was about double of the cost of care in the community. There were also other significant differences between the two groups in respect of the number of hospitalizations and number of trips to the emergency department, both higher in the hospital group.

**Conclusion:** Palliative care of cancer patients in their last month of life provided by a community based team, represents a significantly saving compared to care provided by an NHS hospital. Cost-benefit studies over longer periods of time, also taking account of quality of care, are warranted to guide healthcare decision makers.

### **Key words:**

Palliative care, costs, economy evaluation, community team

## **Introduction:**

The assessment of costs in the service implementation of health programs has been the subject of many studies in recent years. Many countries are struggling with the exponential growth of health spending which is not accompanied by the growth of its resources.

Palliative care in Portugal began in the nineties. The first home team who devoted most of his time in palliative care emerged in 1996, linked to the Odivelas Health Center. Indeed, the existence of palliative care emerged in Portugal rather than a government initiative, but in fact for individual initiative who decided to devote part of their time to patients at end of life.

In 2004 was published the National Palliative Care Government Program, this program was revised in 2010; this document advocated the development of palliative care at various levels of provision. In 2011, was approved by the Government the basic law of palliative care that provides the creation of a network structure for the provision of care across the country.

In 2006 was created in Portugal a network of integrated continuous care, a structure created by the health ministry to implement health care to populations with chronic and disabling and incurable diseases in advanced stage and end of life. This network is currently under construction and provides for units of admissions in acute hospitals, domiciliary palliative care teams and teams inside hospitals.

There are currently in Portugal 10 domiciliary palliative care teams.

The aim of this study is to provide a comparative evaluation of the resources used by a cancer patient's population in the last month of life, followed by a palliative care home team and another group followed by conventional manner, in other words, followed by the referral hospital in Faro region, Algarve, Portugal.

## Methods

it is a correlational descriptive study; an economic cost-minimization evaluation, where only the direct costs are taken into account and where the consequences were not formally study target. This study includes patients with cancer, in the last month of life, which lived in the district of Faro in Algarve.

The study population was; all patients followed in the Oncology Service in Faro Hospital and all patients followed by the Community palliative Supportive Team in the year of 2009. The study excluded patients admitted in 2009 with less than 30 days of follow-up; patients whose last days have not been fully passed in 2009 and patients who died of different causes from cancer.

The estimated time of the study was 2009 and the work was done in view of the National Health Service. For the allocation, only the direct cost was attributed.

The elements for calculating the costs were: Days hospitalized in the Oncology Service, day's hospitalization in other services (Gastroenterology and Surgery), number of emergency visited department; number of outpatient visits, number of Oncology Service visited, and the number of domiciliary palliative team visited.

The resource quantification of the costs was collected by the hospital analytical accounting and The quantification of cost in palliative Home Team was performed using a direct method, has been carried along the production process, by accounting team.

The cost of each home visit was € 276.82, which included cost of health professionals, medication, and transportation. The final average cost per patient followed in both groups was € 6,469.52 for the patients followed in hospital and € 3,155.26 for the patients followed by domiciliary support team home.

Resources consumed in the last month of life

Resources	Domiciliary team	Hospital
Number of admissions	28	127
Average of total hospital days	05	11
Average days of hospitalization in oncology	5,07	10,29
Average Hospitalizations in other services	-	0,59
Average number of urgency Department	0,75	1,24
Average of outpatient visited	-	1
Average of Oncology service	-	1
Average of domiciliary visit	10,61	-

## Results

The Faro district covers a population of 520,000 inhabitants and includes Albufeira, Loulé, Faro, São Bras, Olhão, Tavira, Alcoutim, Vila Real de Santo António and Castro Marim counties. These counties have as referral hospital, the Algarve Central Hospital.

The Community Palliative Care Team serving the areas of Tavira, Olhão and Faro counties, with 123,856 inhabitants.

Died in Portugal in 2009 24,277 individuals with cancer. In the Algarve died in the same year 1075 patients with cancer, about 0.22% of deaths from cancer in the country.

Below is shown the main characteristics of two populations:

	Domiciliary Team	Hospital	Statistical significance
Average age	70,79	68,06	Not significant
% Female	53,6	55,1	Not significant
% Male	46,4	44,9	Not significant

As we can see the two samples are very homogeneous in age and sex, which makes the evaluation more reliable, since studies show that young patients consume more resources.

#### Type of tumor in the two samples

%	Domiciliary Team	Hospital	Statistical significance
Digestive	42,9	40,9	Not significant
Respiratory	21,4	3,1	
Urinary	10,7	3,9	
Male Genital	3,6	0,8	
Female Genital	10,7	26,8	
blood and lymphatic	0	11,8	
Nervous	7,1	5,5	
skin and muscle	3,6	3,1	
endocrine system	0	0,8	
unknown	0	3,1	
Total	100%	100%	

The type of primary tumor and its metastasis require different resources. Therefore, in terms of costs that are classically tumors are more expensive, as is the case of digestive tumors, then we can say that the types of tumors of the two samples were not responsible for the cost difference found in the study. The most prevalent in both tumor samples were derived from the digestive system.

#### Mean of inpatient days and visits urgency department

Mean	Domiciliary Team	Hospital
Inpatient days	0,75	1,24
Urgency visits	5,07	10,29

The differences were statistically different for a confidence interval of 95, with  $P = 0,004$ .

We observed that patients followed by palliative domiciliary team were less time to emergency room and were hospitalized less often

The following costs were recorded in two samples:

Cost €	Domiciliary Team	Hospital

Medication	√	√
Clinical Materials	√	√
Transport	√	-
Human Resources	√	√
Inpatient Oncology Service	√	√
Other Inpatient Services	√	√
Visits to the urgency department	√	√
Visits to outpatient oncology	√	√
Visits to the Oncology Service		√
Domiciliary visits	√	-
Total	√	√

As we can see the costs calculated in the two samples were similar. The difference is that the patient followed to hospital service don't received domiciliary visits and where the transportation is not accounted.

Next I will describe the total mean cost of both samples:

€	Domiciliary Team	Hospital
Average total cost per patient	€3155,26	€6469,52

The patients followed by the community team cost half the price of the patients followed by hospital only, and this difference was significant for a confidence interval of 95% and a P= 0,05

### Discussion

The cost difference is significant in both populations. Patients followed only by the referral hospital and have not had the support of a team that specializes in home hospice care had twice the cost.

Two main reasons can explain this, the first is that patients followed by the home team were hospitalized less often and had lower hospital days. The higher cost of cancer patients was due to his hospitalization. We can conclude that when there is a domiciliary support teams the patients are hospitalized less often and thus save resources for the National Health Service. The second reason found due to the fact that patients followed by domiciliary team will less frequently to the emergency room and these situations because of uncontrolled symptoms. The present study, however, has a limitation; the impossibility to harvest the cost over the production process in the two samples, and the methodology used in the team was kind of bottom-up and used in the sample hospital was the top-down, or is collected by the accounting central hospital, where the breakdown of the information is not desirable. However, we can infer that if this were possible, would be expected that the values in hospital costs will be even more expensive.

In conclusion, the existence of the community team support in palliative care resources spared the National Health Service and is therefore an asset for the Health Public System.

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