Is There a Role for Primary Care in the Follow-Up of Colorectal Cancer Patients? The Case of a Portuguese University Hospital

Maria Margarida Costa Ferreira Bandarra[a]   Ana Escoval[b]
Luís Marques da Costa[c]

[a]Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Lisbon, Portugal; [b]Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa, Centro Hospitalar Universitário de Lisboa Central, EPE, Lisbon, Portugal; [c]Serviço de Oncologia do Hospital de Santa Maria, Centro Hospitalar Lisboa Norte, EPE, and Instituto de Medicina Molecular & Faculdade de Medicina de Lisboa, Lisbon, Portugal

Abstract
Background: In Portugal, colorectal cancer is the second most common type of cancer. With the increasing number of cancer survivors, follow-up is perceived as a chronic disease, with a significant impact on hospital care. **Objective:** To characterize colorectal patients in follow-up at Centro Hospitalar Lisboa Norte, EPE, and to determine the profile of economic resources consumed as well as the consultation workload. **Materials and Methods:** We characterized colorectal patients in follow-up at Centro Hospitalar Lisboa Norte, EPE, registered from 2008 until 2013 and the profile of economic resources consumed. **Results:** The Department of Oncology is responsible for 56.2% of colorectal patients' follow-up. In this study, only 0.4% of cases had follow-up secured in primary care, which translates to a significant impact in terms of resources allocation and consultation management, especially if we consider that 41% of patients are in follow-up for longer than 3 years. The average annual adjusted cost of follow-up per patient is EUR 539.09. Patients who were alive on 31 January 2014 had generated 2,930 follow-up hospital appointments per year, representing 12% of the total number of oncology appointments reported in 2013. **Discussion and Conclusions:** The follow-up of colorectal cancer patients is associated with significant hospital resource allocation and physicians' time consumption. Other follow-up models might emerge as an alternative to traditional hospital-centered follow-up, such as the shared-care follow-up, which requires a multidisciplinary and survivor-centered approach, ensuring that information and communication are shared between settings with a clear definition of responsibilities, a survivor care plan, and mechanisms for future referencing when justified.

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Dr. Margarida Bandarra
Escola Nacional de Saúde Pública da Universidade Nova de Lisboa
Avenida Padre Cruz
PT–1600-560 Lisboa (Portugal)
E-Mail m.bandarra@ensp.unl.pt

Podem os Cuidados de Saúde Primários desempenhar um papel no *follow-up* de doentes com cancro colorretal? O caso de um Hospital Universitário português

Palavras Chave

Integração de cuidados · Gestão da doença · Cancro colorretal · Seguimento · Sobrevivente

Resumo

Introdução: Em Portugal o cancro colorretal é o segundo cancro mais frequente. Com o aumento do número de sobreviventes de cancro, o seguimento acaba por ser encarado como uma condição crónica, com impacto significativo nos cuidados assistenciais hospitalares. *Objetivo:* Caraterizar os doentes com cancro colorretal em seguimento no Centro Hospitalar Lisboa Norte, EPE. e determinar o perfil de recursos económicos consumidos, bem como a carga assistencial. *Material e Métodos:* Procedeu-se à caraterização dos doentes com cancro colorretal em seguimento no Centro Hospitalar Lisboa Norte, EPE. registados de 2008 a 2013 e à determinação do perfil de recursos económicos consumidos. *Resultados:* A oncologia é responsável pelo seguimento em 56,2% dos doentes com cancro colorretal. Neste estudo, apenas 0,4% dos casos tiveram um seguimento nos Cuidados de Saúde Primários, o que se traduz num impacto significativo em termos dos recursos alocados e gestão de consultas, em especial se considerarmos que 41% dos doentes estão em seguimento há mais de 3 anos. O custo anual ajustado por doente é em média 539,09 €. Os doentes vivos a 31 janeiro de 2014 geraram 2930 consultas de seguimento por ano, equivalentes a 12% do total de consultas reportadas em 2013 pela oncologia. *Discussão e Conclusão:* O seguimento dos doentes com cancro colorretal está associado a uma alocação significativa de recursos hospitalares e consumo de tempo dos médicos. Outros modelos de seguimento, tais como o seguimento partilhado, poderão emergir como uma alternativa ao seguimento tradicional centrado no hospital, os quais requerem uma abordagem multidisciplinar e centrada no sobrevivente de cancro, assegurando que a informação e comunicação são partilhadas entre níveis de prestação de cuidados, com uma definição clara de responsabilidades, um plano de cuidados para o sobrevivente e mecanismos de referenciação futura se necessária.

Introduction

The incidence of colorectal cancer in Portugal is 7,127 new cases/year, and the 5-year prevalence is 19,613 cases, which makes it the second most common type of cancer [1]. In 2013, colorectal cancer was responsible for the second highest number of life years lost due to cancer [2]. The treatment and prognosis depend on disease staging, and stages I, II, and III are treated with surgical resection.

In Western countries, colorectal cancer survivors represent the third largest group of cancer survivors (~11% of the population) [3], and the costs associated with oncologic care are growing and might be associated with a lack of coordination and organization in care, duplicated services and health-care fragmentation [4, 5].

Some reviews of the literature including studies from different countries (USA, Canada, Australia, UK, The Netherlands, Denmark, Sweden, Norway, Finland, Germany, Italy, Japan) suggest that follow-up, a standard practice after surgical resection or treatment, when performed by family physician is as effective as the follow-up held in the hospital setting and generates a higher degree of satisfaction and subjective health reported by the patient [4, 6].

Colorectal cancer follow-up performed by general practitioners versus surgeons was not associated with a significant difference between groups at 2-year follow-up in patient satisfaction, showing a difference only in the type and number of tests requested, with similar results for death or recurrence rate ($p = 0.67$) ($p = 0.92$), time to detection of recurrence ($p = 0.76$), and time to death ($p = 0.69$)[7]. A French study found that patients under routine clinical examinations performed by general practitioners had significantly less advanced disease (odds ratio: 0, 45; 95% CI), fewer preoperative complications (odds ratio: 0, 28; 95% CI) and fewer examinations by gastroenterologists/oncologists (odds ratio: 0, 37; 95% CI), without any influence on 3- and 5-year survival [8].

Another study concluded that a decentralized colon cancer follow-up program does not impair quality of life, and is associated with an improvement in subscales such as role functioning, emotional functioning and pain, and cost savings due to decreased costs of primary care consultations and fewer trips to hospital, without an increase in time to diagnosis of a serious clinical event or a difference in frequency of a serious clinical event [9].

Additionally, the use of extensive information from specialist clinics has been assessed in several studies, and the absence of primary care physicians in hospital multidisciplinary teams identified as a weakness, while the in-

formation shared by hospital specialists with patients is insufficient [10–12].

A Canadian study concluded that 49.1% of general practitioners are responsible for the exclusive follow-up of colorectal cancer patients 5 years after diagnosis, and 22.3% are willing to assume exclusive responsibility for follow-up immediately after completion of active treatment, while 37.7% are willing to assume such responsibility 1–3 years after completion of active treatment [13]. General practitioners believe that specialist follow-up is important mainly because it ensures that, in case of recurrence, patients are in the system (67.2%); however, they also believe that specialist clinics are overcrowded (55.6%), better placed to provide psychosocial support to patients (79.8%) and should be involved at an early stage of follow-up (63.7%) [13].

Most oncologists agree that the greatest advantage of primary care setting involvement is that it allows them to concentrate on the acute phase of oncologic disease [14] and that follow-up is a distinct type of consultation due to its low efficiency and simplicity, the supportive and educational role of the physician being crucial but also associated with a considerable workload [15].

Although comorbid conditions might represent a major threat to cancer survivors' lives, they can be put in the background due to the centralization of hospital follow-up and focus on cancer [16, 17]. An analysis of 18,699 colorectal cancer survivors revealed that they may have a lower probability of receiving the recommended care for chronic medical conditions or preventive care not related to oncologic disease, which seems to improve when primary care physicians are involved in follow-up [17–19].

Follow-up by primary care practitioners is not associated with significant differences in quality of life, anxiety, depression, or patient satisfaction; in fact, a shared care model is associated with amelioration of patient satisfaction, trust in caregivers, and intersectorial cooperation [20–21]. The use of information integrated systems seems to facilitate the implementation of such a model [22].

Nevertheless, despite the evidence in favor of alternative models to hospital follow-up, some patients continue to be discharged without the proper information and opportunity to choose their follow-up model [23]. About one-third of patients 5–16 years after diagnosis continue without hospital discharge, and some mention insufficient time, information, or adverse emotions when they are discharged [24]. Although the expectations of patients, oncologists, and general practitioners are different, with oncologists expecting from general practitioners a bigger intervention in the follow-up, patients and prima-

ry care physicians believe that there is also an important role in diagnosis and treatment phases [25], with a clear need to redefine the role of the primary care setting and ensure better communication and integrated management of oncologic disease.

Objectives

The objectives of this work were (a) to characterize colorectal patients in follow-up at Centro Hospitalar Lisboa Norte, EPE, and (b) to determine the profile of economic resources consumed as well as the consultation workload.

Material and Methods

Literature Research Strategy

A B-On (Online Knowledge Library) comprehensive literature search was conducted using the key words "integration of care in oncology," "integrated disease management in cancer," "cancer patients follow-up," "colorectal cancer follow-up," "cancer survivorship," and "colorectal cancer primary care follow-up." In total, 110 papers with available full texts and directly related to the scope of the topic were selected.

Study Design

For the clinical and sociodemographic characterization of colorectal cancer patients in follow-up at the University Hospital Centro Hospitalar Lisboa Norte, EPE (CHLN, EPE), we developed an observational and cross-sectional study, based on available information obtained from the tumor bank database regarding colorectal cancer patients registered from 2008 to 2013, including only patients diagnosed up to 31 December 2013. The information was anonymized, and the study approved by the Hospital Ethics Committee.

The determination of the profile of resource consumption by colorectal patients in follow-up at this institution was based on the analysis of anonymized data for a sample of stage II colorectal cancer patients available at the Clinic Electronic Record. The information was collected by two health-care professionals from the Lisbon Medicine Academic Center based on two registry spreadsheets previously approved by the Hospital Ethics Committee.

The economic-financial impact on the institution was calculated using as a reference the prices of Portaria No. 20/2014, which defines the prices associated with National Health Care services. For each category, we grouped laboratory and imaging tests (Table 1). The human resource workload was assessed using as a reference the number of follow-up consultations registered at that institution.

Additionally, a comparative analysis was conducted of the average per patient resource consumption according to the study results and when applying ESMO Guidelines at the follow-up of colorectal cancer patients [3].

Study Population and Exclusion Criteria

Patients with histologically confirmed colorectal cancer, aged at least 18 years, living in continental Portugal, in follow-up from

Table 1. NHS costs of tests/procedures (Portaria No. 20/2014)

Tests	Category	DRG	Cost, EUR
Physical examination	= Clinical visit	Article 15°	31.00
Complete blood count	Laboratory tests	24209	4.70
Liver function tests: Alk Fos, SGOT, SGPT, LDH, total bilirubin, GGT	Laboratory tests	25013, 24347, 21935, 21217, 21220, 21665, 21344, 21340	8.10
Carcinoembryonic antigen test (CEA)	Laboratory tests	21258	7.20
Total colonoscopy	Endoscopy	50940	73.80
Colonoscopy with biopsy or polypectomy	Endoscopy	50940, 31016	122.20
Flexible sigmoidoscopy	Endoscopy	52270	55.20
Chest radiography (two incidences)	Imaging	10406	9.00
Barium enema radiography	Imaging	11200	23.00
Ultrasonography (echography of the abdomen superior)	Imaging	17130	20.12
CT of the thorax, abdomen, pelvis	Imaging	16060, 16070, 16080	220.79
CT of the abdomen, pelvis	Imaging	16070, 16080	146.09
CT of the thorax	Imaging	16060	74.70
CT of the thorax, abdomen	Imaging	16060, 16070	159.20
CT cranioencephalic	Imaging	16010	67.00
CT of the column	Imaging	16041, 16042, 16043, 16044	72.40
Magnetic resonance imaging of the abdomen	Imaging	18070	127.90
Magnetic resonance imaging of the abdomen, pelvis	Imaging	18070, 18080	255.80
Magnetic resonance imaging of the column	Imaging	18042	127.90
Magnetic resonance imaging cranioencephalic	Imaging	18010	127.90

2008 to 2013 at CHLN, EPE, and registered at the tumor bank database of the Medicine Academic Centre were included in the study. From an initial sample of 520 patients, we excluded all the cases without a confirmed histology of the primary tumor as adenocarcinoma of the colon, adenocarcinoma of the rectum or colorectal carcinoma metastasis, which ended in a final sample of 511 patients.

For the determination of the resource consumption profile, we selected 30 cases of patients with colorectal cancer stage II stratified into 20 cases without recurrence (67%) and 10 cases with recurrence (33%). Cases without the required information available or with incomplete information were excluded. To compare the average consumption of resources per patient follow-up based on the study and using ESMO Guidelines, we selected a sample of 14 cases of patients with colon cancer without recurrence in which the most intensive follow-up approach had been adopted. Chest and abdominal computed tomography are only recommended in patients at high risk of recurrence. Due to the absence of such information in patients' records, we adopted an intermediate scenario in which all patients in the study sample would be considered eligible on an annual basis for those exams.

Statistical Methods

For the characterization of colorectal cancer patients in follow-up, descriptive statistics were computed based on frequency tables for categorical variables and mean, median, mode, and standard deviation for numerical variables. The follow-up period was computed considering the range between the date of surgery and the last date of the database update (January 31, 2014). The characterization of resource consumption (MCDT tests, costs of follow-up) was also based on descriptive statistics, stratified by gender and type of tumor.

To compare the distributions of follow-up costs with recurrence occurrence, we used the Mann-Whitney test. Considering the recurrence occurrence as the event under study, the association with follow-up costs was analyzed through the area under the ROC curve. The correlation between the adjusted annual cost of follow-up and the duration of follow-up was performed by linear regression. All the tests were bilateral and with a significance level of 5%. All data were analyzed using IBM SPSS® Statistics (version 21). The resource consumption profile of patients in follow-up was determined using Microsoft Excel 2010.

Results

Characterization of Patients in Follow-Up at CHLN

The average age of patients included in the study was 69.0 years, the median was 70 years, and the majority were male (57.7%). A very high proportion of primary tumors were adenocarcinomas of the colon (72.4%) followed by adenocarcinomas of the rectum (26.2%). At diagnosis, most patients had disease stage II (36.4%) or III (32.1%). Only 13 patients (5%) experienced a recurrence during the period of analysis, and 29 patients (9%) developed distant metastases. Around 79% of patients had multiple metastases in two or more organs. Liver involvement was present in 71% of patients; in 52%, it was the only site, while 35% and 8% of patients had lung and peritoneal involvement, respectively.

Table 2. Descriptive statistics analysis: tests and cost of follow-up per patient

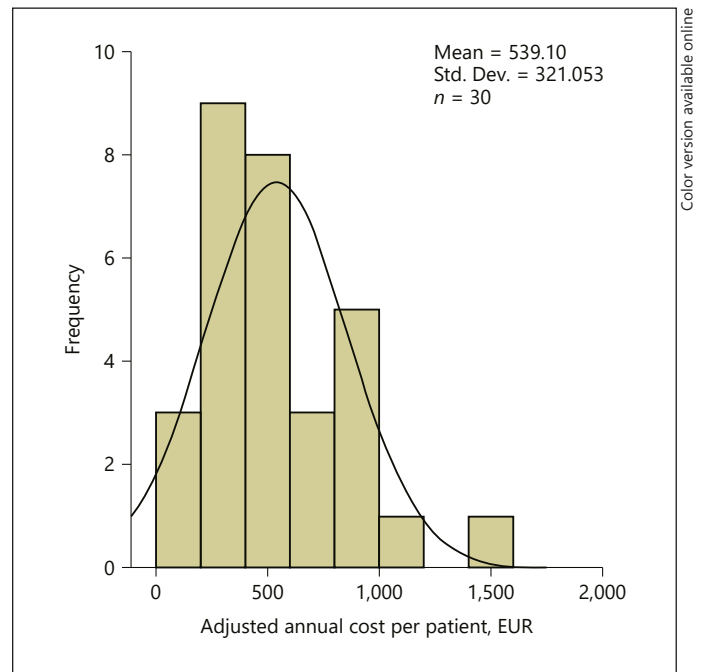| Variable	Cases	Mean	Median	SD	Min	Max
Physical examination, total number	30	35.70	29.50	21.27	8.00	90.00
Laboratory tests, total number	30	84.33	82.00	43.13	10.00	173.00
Endoscopy, total number	30	1.70	2.00	1.29	0.00	4.00
Imaging, total number	30	14.67	11.00	12.45	0.00	55.00
Cost per patient, EUR	30	2,444.85	2,469.39	1,202.86	510.62	4,918.79
Average adjusted annual cost per patient, EUR	30	539.09	435.14	321.05	122.47	1,521.82

The status alive/dead was known in 485 of 511 patients included in the analysis, 77.1% of whom were alive during the analysis period. Around 9% of patients were treated with neoadjuvant radiotherapy (47/508), 9% with neoadjuvant chemotherapy (48/507), 4.7% with adjuvant radiotherapy (24/473), and 52.6% with adjuvant chemotherapy (269/468), which, in some cases, was a combination of both chemo- and radiotherapy.

The specialty responsible for follow-up was oncology in more than half of the cases (56.2%), surgery in 21%, both in 0.4%, and primary care in 0.4%. The average follow-up time was 31.9 months, with a maximum of 80 months. Of all patients, 40.9% were in follow-up for more than 3 years, 8.8% of those ($n = 44$) for more than 5 years. We did not find any statistically significant difference in follow-up duration, gender ($p = 0.114$), or disease staging ($p = 0.174$), but we found statistically significant differences in histology ($p = 0.014$), age at diagnosis ($p = 0.020$), and recurrence ($p = 0.019$).

Profile of Economic Resource Consumption and Consultations

On average, 36 physical examinations per patient were performed (range: 8–90), 84 laboratory tests (range: 10–173), 2 endoscopies (colonoscopies) (range: 0–4), and 15 imaging exams (range: 0–55). These consisted mainly of chest X-rays, ultrasonography, and computed tomography and, very rarely, magnetic resonance imaging. The average cost of follow-up per patient was EUR 2,444.85, ranging between EUR 510.62 and 4,918.79. The average adjusted annual cost of follow-up per patient was EUR 539.09 (Table 2) (Fig. 1). The main contribution to this cost was the physical exam (45%), followed by laboratory tests (23%), imaging (26%), and lastly, endoscopies (6%).

A positive association was identified between the cost of follow-up and recurrence ($p = 0.003$). The average adjusted annual cost was EUR 796.08 per patient with recurrence and EUR 410.61 per patient without recurrence. The association between the cost of follow-up and the recurrence determined by the area under the ROC curve obtained a value of 77%, which reveals a good quality adjustment. For a confidence interval of 95%, the lower limit was 69% and the upper limit 99%.

We did not identify any statistically significant difference by the Mann-Whitney test in the profile of resource consumption in patients before and after recurrence; however, the size of the sample probably did not have enough power to detect statistical significance ($p = 0.257$). In absolute value, for the sample used ($n = 10$) there was a 1.27-fold increase in the cost of follow-up after recur-

Fig. 1. Descriptive statistics analysis: adjusted annual cost of follow-up per patient.

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Table 3. Resource consumption per patient in the study when applying ESMO Guidelines at follow-up

Variable (tests/procedures held on average per patient with colon cancer with and without recurrence)	Study sample		ESMO Guidelines at follow-up					
	57.6 months		36 months		21.6 months		57.6 months	
	n	EUR	*n*	EUR	*n*	EUR	*n*	EUR
Physical examination (total number)	27	837.00	12	372.00	4	111.60	16	483.60
Laboratory tests (total number)	65	424.30	12	86.40	4	25.92	16	112.32
Complete blood count	29	136.30	0	0.00	0	0.00	0	0.00
Liver function tests	24	194.40	0	0.00	0	0.00	0	0.00
Carcinoembryonic antigen test (CEA)	13	93.60	12	86.40	4	25.92	16	112.32
Endoscopies (total number)	2	196.00	1	73.80	0	0.00	1	73.80
Colonoscopy	1	73.80	1	73.80	0	0.00	1	73.80
Colonoscopy with biopsy or polypectomy	1	122.20		0.00		0.00	0	0.00
Imaging (total number)	9	1,318.29	3	477.60	2	286.56	5	764.16
Chest radiography	5	45.00		0.00		0.00	0	0.00
Barium enema radiography	0	0.00		0.00		0.00	0	0.00
Ultrasonography	1	20.12		0.00		0.00	0	0.00
CT of the thorax, abdomen, pelvis	2	441.58		0.00		0.00	0	0.00
CT of the abdomen, pelvis	1	146.09		0.00		0.00	0	0.00
CT of the thorax	1	74.70		0.00		0.00	0	0.00
CT of the column	1	72.40		0.00		0.00	0	0.00
CT of the thorax, abdomen	0	0.00	3	477.60	2	286.56	5	764.16
CT cranioencephalic	5	335.00		0.00		0.00	0	0.00
Magnetic resonance imaging of the abdomen	1	127.90		0.00		0.00	0	0.00
Magnetic resonance imaging of the abdomen, pelvis	0	0.00		0.00		0.00	0	0.00
Magnetic resonance imaging of the column	0	0.00		0.00		0.00	0	0.00
Magnetic resonance imaging cranioencephalic	1	127.90		0.00		0.00	0	0.00
Total	**103**	**2,775.59**	**28**	**1,009.80**	**9**	**424.08**	**37**	**1,433.88**
Average adjusted annual cost per patient		**578.25**				**298.73**		**298.73**

rence (EUR 7,598.46 vs. EUR 9,642.80), attributable to imaging exams ($p = 0.059$) and laboratory tests ($p = 0.650$). We also concluded that the duration of follow-up had a negative impact (coefficient –0.36) on the adjusted annual cost of follow-up per patient ($p = 0.049$).

When we compared the profile of resource consumption obtained in the study with that obtained by applying the ESMO Guidelines, we obtained a cost of EUR 2,775.59 in the first scenario and EUR 1,433.88 in the second, that is, the profile of resource consumption per patient in the study was 1.9-fold higher than that obtained when applying ESMO Guidelines. The main difference can be explained by the higher number of laboratory tests and imaging procedures. The annual adjusted cost of follow-up per patient was EUR 578.25 for the study sample and EUR 298.73 when applying the ESMO Guidelines to the follow-up procedures (Table 3).

Lastly, those patients generated 2,930 follow-up consultations per year, which corresponds to 12% total oncology consultations in 2013, 25% of total general surgery unit consultations, 35% of total surgery I consultations, and 37% of total surgery III consultations at the same institution.

Discussion

The ongoing discussion in the scientific community about the role of primary care in the follow-up of cancer patients and the need to define a clinical pathway, clarify the follow-up objectives, and identify a discharge cut-off from hospital to primary care, as well as a higher focus on survivorship are considered essential pillars [25–27]. The moment of discharge is considered critical and is aligned with cancer survivors' concerns about the format and content of the information shared at the moment of discharge from hospital, among others [28–30]. A choice centered on a shared-care model might be considered suitable and essentially is the result of a higher proximity of care, as identified by several authors [11, 14, 31].

The population characterized in this study is concordant with others in the literature. As observed in other studies, patients stay in hospital during follow-up, and the majority are followed up by the Oncology Department [32]. In this study only 0.4% of cases had follow-up secured in primary care, which translates to a significant impact in terms of resource allocation and consultation management, especially if we consider that 41% of patients are in follow-up for more than 3 years.

The determination of the profile of resource consumption allowed us to calculate an annual average cost of follow-up per patient of EUR 539.09. A Norwich cost-effectiveness study [9] found an average cost of follow-up per patient of GBP 351 every 3 months, the equivalent of EUR 484.47 (exchange rate 1.38024 on 14 June 2015), which means EUR 1,937.88 per year, above the number we reached in our study. It is important to highlight the difference in terms of unit costs between the two countries related to the treatment of recurrence and travel to hospital, which have not been accounted for in our study.

When we compared the profile of resource consumption at follow-up of the patients included in the study with the projected resource consumption applying ESMO Guidelines, we found that the average cost in the study was 1.9 times higher than the theoretical one applying ESMO Guidelines. This result should be interpreted with caution, since the simulated scenario does not consider laboratory tests and imaging exams, which might have been needed during a suspicion of recurrence or other need, and only included the routine tests and/or exams performed. The consultation burden with these patients is considerable; putting in perspective around 2,930 follow-up appointments per year compared with 1,585 first consultations registered by the Oncology Department in 2013 [33]. The hospital production in continental Portugal in 2014 was 9,308 patients with colon cancer, rectal cancer, rectum-sigmoid junction cancer, and anal cancer. Of the total number of patients submitted to oncologic surgery, 16.0% waited longer than the maximum recommended time [2]. Bearing in mind that in our study oncology and surgery were the specialties that played the largest role in the follow-up of colorectal cancer patients, we can assume a significant impact on hospital care management with those patients as the number of new cancer patients and first-time appointments increases.

This study has several limitations. The fact that the analysis was based on a single, highly differentiated university hospital as the source of patients might have biased some of the results, and the study population may not have been representative of the national reality; however, we chose it because it is a centralized general hospital with an important oncology component. Secondly, a sample power calculation was not performed. Also, it is important to mention that the data access goes back to the Medicine Academic Centre of Lisbon database, which includes colorectal patients registered from 2008 to 2013. The quality of data depends on the quality and reliability of the information registered by physicians.

Thirdly, the calculation of the profile of resource consumption took into consideration only patients at stage II of disease, since it was the most common stage in the study sample (36.4%) and associated with a 5-year survival rate of 82.5%, which is associated with an increase in the number of colorectal cancer survivors [34]. The sample used represents 6% of the total study sample ($n = 506$) but 16% of total stage II patients ($n = 186$), which was the sample analyzed. As a descriptive analysis of only resource consumption, we divided the sample into two groups, 20 cases without recurrence (67%) and 10 cases with recurrence (33%). At stage II, local recurrence after surgery with curative intent ranged between 3% and 30%, which serves as a reference for the split used [35].

The data collection was retrospective, which might have introduced bias. To minimize limitations due to the lack of registry by physicians, electronic patient files were used, which nevertheless does not exclude the cases where patients were doing some procedures in a private health-care setting.

For the resource consumption profile, we used as a reference the values at Portaria No. 20/2004 as an acceptable costs approach and not the values for hospital financing from Contrato Programa. As an example, we used EUR 31 (Portaria No. 20/2014) per hospital appointment and not EUR 70.12 for subsequent appointments at Contrato Programa, which also includes exams.

Fourthly, the fact that experts have been chosen based on their knowledge and higher engagement with this topic cannot exclude the possibility of different conclusions being obtained in another context, although the conclusions in our study are completely aligned with the international literature. In agreement with other investigators [10], we conclude that there exist three key elements: knowledge transfer, communication channels, and active patient involvement.

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Conclusion

Colorectal cancer is the third most prevalent cancer. Two-thirds of currently diagnosed cancer patients will survive for at least 5 years, and among those, two-thirds are older than 65 years; as such, the probability of a family physician having a cancer survivor older than 65 years is 1 in 6 [36], implying serious challenges to health-care professionals and managers, with a varied range of needs to be answered – physical, psychosocial, and economic. The follow-up of cancer patients is centered on recurrence detection, late side effect monitoring, identification of new primary cancers, and psychological support. Follow-up in hospital is under discussion, and a new variant based on the role of the primary care setting is being introduced [37]. The available evidence supports the hypothesis that follow-up by family physicians is a valid option and that they are willing to assume such a role. The existence of channels between the family physician and the hospital team beyond the patient's clinical information is fundamental, as is a protocol for follow-up accepted by both parties where one is available.

As verified in the case study, the impact of in-hospital colorectal patient follow-up on economics and the number of appointments is meaningful. Follow-up in the primary care setting can emerge as an equally effective but less costly modality. To generate a virtuous cycle, regulators and payers have an important role to play, ensuring proper primary care financing and an organizational model with the creation of specific indicators for shared-care follow-up in conjunction with health-care professionals, which compensate good performance and represent a health gain to the cancer survivors, translating to more and better care while respecting cost-effectiveness, quality of care, and the results obtained.

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Disclosure Statement

The authors declare no potential conflicts of interest.

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