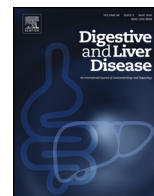




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Alimentary Tract

Efficacy of a “contact center-based communication” in optimizing the care of inflammatory bowel diseases

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ABSTRACT

Background: Telephone helplines are a useful vehicle for the management of chronic diseases even though data on how these can ease management of inflammatory bowel disease (IBD) is still scarce. AIM: to analyze our two-years’ experience with the first telephone helpline dedicated to IBD in Italy.

Methods: The main outcomes of using a contact center (CC) at our Unit were analyzed; all data was prospectively collected. Patients’ requests were classified into medical or non-medical. The percentage of hospitalized patients in the pre-CC period was compared to that after CC activation, to assess the potential clinical gain of using CC. The calls were divided into 5 categories to evaluate a potential correlation between patients’ number of calls and risk of hospitalization.

Results: The CC received 11,080 calls and handled 11,972 requests. In particular, 63% of patients phoned monthly for a medical consultation, and 37% called for non-medical reasons. In 2012, the followed-up patients were 1658 with 230 IBD-caused hospitalizations (14%); in 2014, the followed-up patients were 1962 with 182 hospitalizations (9%) ($p < 0.01$). The risk of hospitalization exponentially increased with the number of calls: from 3% for 0–5 calls to 41% with >30 calls ($p < 0.01$).

Conclusion: A dedicated CC could provide additional clinical gain, care, and support for IBD patients.

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1. Introduction

Inflammatory bowel diseases (IBD) comprise a group of lifelong chronic immuno-mediated inflammatory disorders of the intestinal tract. Among these, the principal types are ulcerative colitis (UC) and Crohn’s disease (CD) [1–3]. The natural history of IBD ranges from periods of remission to periods of flares and relapses. The most common treatment for both diseases is pharmacological therapy. Nonetheless, up to 30% of UC patients need total proctocolectomy due to refractory disease, development of dysplasia, or cancer [4,5]; moreover, up to 80% of CD patients need surgery [6]. The prevalence of CD and UC is increasing globally, with 1.4 million individuals affected in the United States and 2.2 millions throughout Europe [7,8]. The peak incidence of IBD occurs in individuals between 15 and 30 years old [9].

As chronic, lifelong disorders, IBD negatively influence patients’ quality of life. The overall reported quality of life (QOL) in IBD individuals is variable and is often dependent on the severity of the symptoms [10,11]. According to literature, CD usually has a greater negative impact on QOL than UC [11].

Moreover, the management of IBD requires regular outpatient visits, hospitalization and, frequently, several phone calls between patients and physicians. In subjects affected by chronic diseases, the assistance needed does not end with the scheduled outpatient appointments. In fact, patients usually need to contact specialists to solve their daily clinical issues.

For all these reasons, we present the concept of transition from cure to care, understood as the engagement of physicians in all clinical, economic, and bureaucratic aspects of IBD patients’ care. Today, the centrality of the subject emerges as a priority in health care: physicians need not only to cure the patient (to cure) but, also, to carefully look after and understand his or her clinical condition in all its complexity (to care).

To achieve good results in terms of comprehensive and overall care, our team has benefited from the use of a “contact center” (CC) to facilitate the communication between patients and doctors.

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While data on the use of a telephone care service exist in other branches of medicine (e.g. pediatrics, rheumatology, psychiatry) [12,13], scientific literature on gastroenterological settings is still very scarce.

The aims of our study were to prospectively analyze our two-years' experience with a CC based communication for patients suffering from IBD, and to evaluate the benefits of the service for patients and physicians.

2. Materials and methods

We performed a prospective observational study using a CC service set up in the Inflammatory Bowel Disease Unit at School of Medicine "Federico II" of Naples (Italy), from December 2012 to June 2015. The helpline (which is still operating), active from Monday to Friday, and from 9:00 to 17:00, was managed by the highly competent operators of a medical service society (Contact Center Close to Care® TOPS, Rome, Italy). These operators had previously attended training courses and had been prepared by the clinicians of our Unit to deal with the peculiarities of IBD. Thanks to their training and their competence, operators independently solved simple non-medical requests, and only asked doctors to participate in case of clinical problems. From this point of view, CC functions were classified into medical (IBD-helpline) or non-medical (IBD-call center) according to patients' request. The IBD-helpline comprised all requests for medical consultations, concerns with treatment plans (withdrawal medications, and/or missed doses of medication), side effects of drugs, visits, and/or state of the disease. On the other hand, the IBD-call center took care of all non-medical needs, which were handled directly by the call center and solved in real time by the operators. These requests included information on logistics, visits, laboratory tests' appointments, and payment methods. The CC first recorded and classified the need of the patient and then communicated it to the IBD Unit. Four specialized telephone operators managed the call center's burden of work, while three gastroenterologists called back patients, when needed, during breaks from clinical activity.

From a practical point of view, the CC emailed gastroenterologists two daily reports in Excel format: the first report, which included calls received between 09:00 and 13:00, was sent to doctors at 13:30, while the second report, included calls received between 13:00 and 17:00, and was sent at 17:30, on the same day. Each report recorded contained the date and time of the call, the patient's name, the name of the requested doctor, the reason for the call and the patient's phone number. On the phone, operators reassured patients that physicians would reply to requests as soon as possible; in case of clinical urgency/emergency (severe abdominal pain, high fever on immunosuppressors, acute bleeding, direct request by General Practitioner, etc.) the operator was instructed to connect immediately the patient with the physician.

In order to assess the effectiveness of the service, we compared the number of outpatient visits and IBD-caused hospitalization in 2012 (CC was not in use) to the number of outpatient visits and IBD-caused hospitalization in 2014 (CC was active) to directly assess the potential benefits of using a CC for both patient and physician. In addition, we evaluated the relationship between patients' number of phone calls during the two years' period of call center activity and their risk of hospitalization. Indeed, we divided the number of calls into five categories (0–5, 6–10, 11–20, 21–30, and >30), and assessed, for each category, the risk of hospitalization during the study period.

Furthermore, to test the level of satisfaction of the patient, telephone operators administered an anonymous questionnaire after two years from the activation of the call center. The questionnaire consisted of five simple questions to measure whether the service satisfied patients' expectations. Each patient had to sign a written

Table 1
Baseline features of patients with IBD.

	UC	CD	Other diseases ^a
Number	806	930	131
M/F	411/395	511/419	60/71
Mean age (range), yr	39 (16–74)	35 (15–71)	36 (17–70)
Months of disease duration (range)	210 (140–400)	230 (160–410)	190 (120–360)
Location L1–L2–L3		451–344–135	
Behavior B1–B2–B3		489–267–174	
Extension E1–E2–E3	145–528–133		
Treatment with 5-ASA (%)	95%	26%	
Treatment with steroids (%)	16%	18%	23%
Treatment with thiopurines (%)	27%	24%	29%
Treatment with anti-TNF (%)	38%	46%	22%
Previous surgery (%)	10%	32%	9%
Active disease (yes/not)	201/605	316/614	38/93

^a Collagenous colitis, lymphocytic colitis, eosinophilic gastroenteritis or unclassified colitis.

informed consent. The CC operators collected data and sent them to physicians.

2.1. Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS software v.16.0, Chicago, IL, USA) for Windows. The descriptive statistics used included the calculation of mean values and standard deviation (SD) of the continuous variables, and calculation of the percentages and proportions of the categorical variables. The Chi-square (χ^2) test was used to compare categorical variables; the analysis of variance (ANOVA) was performed with and without adjustment for covariates. The odd ratio (O.R.), to quantify the statistical difference between the dichotomous variables, was also calculated. All differences were considered significant in presence of $p < 0.05$.

3. Results

During the first two years of activity, the call center received 11,080 calls from 1867 patients (a total of 2980 patients on database at our IBD Unit at the end of 2014), with a daily average of about 20 ± 5 calls, and handled 11972 requests (sometimes patients made more than one call).

In our population, we found 930 patients (49.8%) with CD and 806 subjects (43.1%) with UC; additionally, 131 patients (7.1%) with other diseases (collagenous colitis, lymphocytic colitis, eosinophilic gastroenteritis or unclassified colitis) used the CC. Patients' main characteristics are reported in Table 1.

An analysis of calls' place of origin showed that about a quarter of the calls were made by patients living outside of Naples (74% of calls originated from Naples vs 26% from other provinces) ($p < 0.01$). While demographic analysis did not reveal any clear difference in terms of gender (males 45% vs females 55%, $p = ns$), it showed that young patients called more frequently than the elderly ($p < 0.01$). In particular: 8% of patients were in the 0–20 age range; 22% in the 21–30 range; 19% in the 31–40 range; 17% in the 41–50 range; 14% in the 51–60 range; 10% in the 61–70 range; and 8% of patients were over 70 years old; in 2% of the questionnaires, no information on age was provided.

An analysis of the calls handled by the CC showed that 63% of patients called for medical reasons (IBD helpline) while the remaining 37% called for non-medical concerns (IBD call-center).

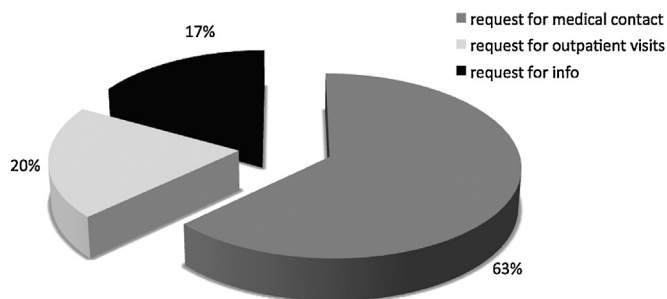


Fig. 1. Types of monthly phone requests.

In particular, for what concerns the IBD-helpline requests, 63% of patients phoned monthly to request a medical consultation (patients expressed concerns with drug prescriptions and/or changes in disease activity). A further analysis of medical requests revealed that 63% of patients were concerned with the status of their disease and/or wanted to know additional details about their therapy; 11% were interested in the result of performed procedures; 5% needed a renewal of their treatment plan; 1% wanted details about hospital admission; 1% called to require or withdraw certificates; and 18% for other reasons.

An analysis of the data collected by the IBD-call center showed that 37% of patients called for non-medical reasons. Among them, 20% needed an outpatient appointment and 17% called for information. These findings are shown graphically in Fig. 1. A deep analysis of non-medical requests showed that 63% of patients called for logistic information; 15% for information about their first visit to our ambulatory; 5% for an endoscopy; 7% for follow-up visits; 4% for information about tickets' costs; 3% for a day-hospital; 1% for a bowel ultrasound; 1% for medical records; and 1% to change their visit's date. Moreover, among patients who called to book ambulatory visits, 17% called for an urgent visit, 46% for a follow-up visit, 32% to schedule a bowel ultrasound; and 5% to schedule a first appointment to our ambulatories. These results are summarized in Table 2. A monthly analysis of the distribution of calls for a follow-up visit showed a trend of higher call activity in January (18%) and September (15%) ($p < 0.01$) while a weekly showed a trend of higher call activity on Monday (30%) ($p < 0.01$). Fig. 2A and B shows these outcomes.

Table 2
Details of medical and non-medical requests.

Type	Details	%
Medical requests	Disease status and treatment	63%
	Result of carried out or sent tests	11%
	Private visits	6%
	Renewal of the treatment plan	5%
	Details about hospital admission	1%
	Certificates	1%
	Other	13%
	Outpatient visits	Bowel ultrasound
Follow-up visit		46%
Urgent visit		17%
First appointment		5%
Logistic information		63%
Info requests	Info about first visit in our ambulatories	15%
	Colonoscopy	5%
	Follow-up visits	7%
	Ticket's costs	4%
	Day-hospital	3%
	Bowel ultrasound	1%
	Medical records	1%
	To change visit's date	1%

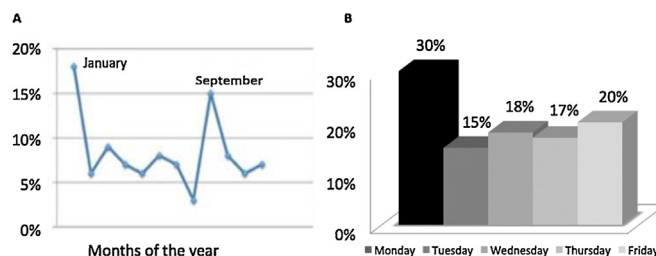


Fig. 2. Monthly (A) and weekly (B) distribution of phone calls.

In order to assess the benefits of using a CC for physicians' practice, we compared the number of outpatient visits and IBD-caused hospitalization in 2012 (when our Unit did not offer this service) to the number of outpatient visits and IBD-caused hospitalization in 2014 (year when bookings were done through the CC). In 2012, the number of outpatient visits was 1658 (2735 patients on database at our IBD Unit) with 230 IBD-caused hospitalizations (14%); in 2014, ambulatory visits were 1962 (2980 patients on database at our IBD Unit) with 182 IBD-caused hospitalizations (9%) ($p < 0.01$). In addition, we evaluated the relationship between patients' risk of hospitalization and patients' number of phone calls during the period of CC activity. Remarkably, we found that the risk of hospitalization exponentially increased with the number of phone calls: risk was 3% from 0 to 5 calls, 7% from 6 to 10 phone calls, 15% from 11 to 20 calls, 23% from 21 to 30 calls, and 41% if patient called >30 times in 2 years ($p < 0.01$). A calculation of the odds ratio (OR), achieved comparing the different categories of phone calls, revealed that: 0-5 vs 6-10 = $p < 0.01$; OR 2.4 (C.I. 1.60-3.75); 0-5 vs 11-20 = $p < 0.01$; O.R. 5.5 (C.I. 3.61-8.64); 0-5 vs 21-30 = $p < 0.01$; O.R. 9.7 (C.I. 5.65-16.05); 0-5 vs >30 = $p < 0.01$; O.R. 21.6 (C.I. 10.20-46.01). Fig. 3 better explains these findings.

Furthermore, CC operators randomly selected a sample of 111 patients from the database to evaluate their level of satisfaction with the call center. After two years of activity, the operators administered a questionnaire and used patients' responses to assess their satisfaction with the service. The majority of patients reported that the service eased communication with doctors (98%) and allowed for a faster appointment management (97%). Moreover, 95% of respondents appeared to be more satisfied with the care provided after the activation of the CC. Table 3 reports patients' answers to the questionnaire.

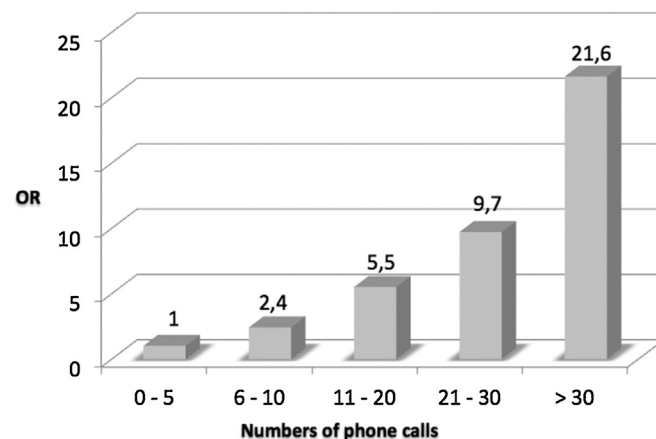


Fig. 3. Relationship between the number of phone calls (0-5, 6-10, 11-20, 21-30, >30) and the risk of hospitalization in a 2-year period. Odds ratio (OR) was calculated confronting each category (6-10, 11-20, 21-30, >30) with the baseline (0-5).

Table 3
Administered questionnaire and patient's answers.

	Questions	Answers		
1	Compared to the past, has the contact center facilitated contact with the medical staff?	Very much	92/111	83%
		Quite a lot	17/111	15%
		Occasionally	1/111	1%
		Not at all	1/111	1%
2	Compared to the past, has the contact center facilitated the appointment for ambulatory visits or tests?	Very much	91/111	82%
		Quite a lot	17/111	15%
		Occasionally	2/111	2%
		Not at all	1/111	1%
3	Before the activation of the contact center, how many times did you call the center?	3–5	47/111	42%
		1–3	51/111	46%
		5–8	9/111	8%
		>8	4/111	4%
4	Do you feel better followed since the activation of a contact center?	Very much	77/111	69%
		Quite a lot	29/111	26%
		Occasionally	4/111	4%
		Not at all	1/111	1%
5	If the helpline had not been available, what would you have done?	I would have waited for the appointment	4/111	4%
		I would have visited my general practitioner	6/111	5%
		I would have come despite no appointment	27/111	24%
		I would have done nothing	30/111	27%
		I would have called the doctors	12/111	11%
		Not ever	32/111	29%

4. Discussion

Currently, the prevalence of chronic diseases is very high, especially in Western countries. Most IBD patients not only require constant clinical attention and reassurance, but also bureaucratic and logistical information. Therefore, the use of a simple tool, able to enhance both medical practice and patients' care, seems to be a necessity for the patient, but also for the doctor and the IBD Unit.

Several studies have shown that telephone helplines are useful in the management of chronic diseases: data regarding the use of a telephone care service exist in other branches of medicine (e.g. pediatrics, rheumatology, psychiatry) [12,13] but, to the best of our knowledge, ours is the first study to evaluate the experience of an IBD-dedicated CC.

Thanks to the use of a CC, we were able to satisfy the needs of a great number of patients. In effect, the CC received a considerable number of incoming calls (11,080) and managed an equally significant number of requests (11,972) in the first two years of activity.

In our paper, we reported that 63% of patients phoned monthly to request a medical consultation (IBD-helpline), a percentage that testifies the importance of a telephone service for subjects affected by chronic diseases, such as IBD. By contrast, 37% of users called for non-medical reasons (IBD-call center), and, in particular, 20% needed an outpatient appointment and 17% called for logistic information. This means that about a third of patients, in absence of a call center service, would overcrowd ambulatories for non-medical requests, causing discomfort to both clinicians and patients. According to a recent study conducted by Scrivo et al. [13], many patients (47.5%), in absence of a dedicated CC, go to the hospital, even without an appointment, and thus, potentially represent for physicians a cause of overwork and/or distraction from daily activities.

Moreover, for what concerns non-medical requests (37% of total calls), we found that 63% of patients called for logistic information (Table 1). These inquiries were easily handled by operators in the course of the telephone conversation.

The use of a call center appears to be even more convenient if we consider that 26% of patients who used the service called from other provinces, and thus were spared the costs of actually reaching the hospital.

A demographic analysis of the study population did not reveal any clear difference in terms of gender (males 45% vs females 55%, $p = ns$), but it showed that young patients called more frequently than the elderly. While the first result of the analysis was not expected, given that all previous studies conducted [13,14] had shown a tendency of women to use call centers more frequently than men, the fact that young patients were the main users of the service was not surprising. As a matter of fact, young patients are not only the most affected by IBD, but also the most reluctant to adhere to therapy and/or accept their own disease [15,16]. From this point of view, the CC represents for the patient a reassuring instrument, a tool to feel closer to the doctor and find a quick answer to his or her problems.

Our data confirmed this psychological aspect in IBD patients: in fact, an analysis of the distribution of the calls for a follow-up visit showed a trend of higher call activity in January (18%) and September (15%). In our opinion, these results signify that patients used the service more frequently after a period of "medical detachment", that is, after winter and summer vacation, when outpatient activity is discontinued. Also, an analysis of the distribution of calls during the week supports the same hypothesis: we registered a peak on Monday (30%), the day after the weekend, when the contact center is not active. A possible explanation for this result, also confirmed by other studies [13,17,18], could be patients' need of restoring interrupted contact and of being reassured.

Even though our study did not explore physicians' opinions, our results underline the potential practical benefit of such a CC for both patients and physicians. In fact, comparing the number of outpatient visits and IBD-caused hospitalization in 2012 (CC was not in use) to the number of outpatient visits and IBD-caused hospitalization in 2014 (CC was active), we noted a significant reduction of hospitalizations (14–9%; $p < 0.01$) despite an increase of patients visited (from 1650 to 1962). In addition, the increased number of visits (>200 visits in two years) was better managed thanks to the service of the CC. Perhaps, the use of a CC, which has doubtlessly contributed to optimize daily clinical practice, has partially determined this outcome. As these considerations and results demonstrate, our experience with a CC has led to substantial changes in the organization of patient care, which is now more focused on patients' needs. To our knowledge, this is the first study reporting data on the direct benefits for clinical activity of using a CC service.

Furthermore, we evaluated the relationship between a patient's risk of hospitalization and the number of his/her phone calls during the period of CC activity. Remarkably, we found that the risk of hospitalization exponentially increased with the number of calls: from 3% in case of 0–5 calls to 41% with >30 calls ($p < 0.01$). Patients calling more than 30 times had multiple hospitalizations a sign of a more aggressive IBD. Similar results were obtained by Ramos-Rives et al. [19]: the authors aimed to assess associations between clinical factors and logged telephone encounters, and between patterns of telephone encounters and future visits to emergency department or hospitalization. They concluded that 42% of patients with >8 telephone encounters within 30 days were seen in the emergency department or hospitalized within the subsequent 12 months. Our study confirms these relevant results, underlying that patients calling more times tend to have a more severe condition and need urgent care.

Our data also confirm that patients found the dedicated phone service beneficial: the administered questionnaires revealed that a high percentage of patients appreciated the service of the CC; the majority of patients reported that the service eased communication with doctors (98%) and allowed for a faster appointment management (97%). Moreover, 95% of respondents appeared to be more satisfied with the care provided after the activation of the CC.

However, there were some limitations to our study. Our findings were generated from a single tertiary referral center and, even though our sample was large (2980 patients in the database), these results may not be completely reflective of the general IBD population.

We are aware that most IBD helpline services are managed by nurses. Evidence suggests that nurse-led telephone consultations are both effective and safe, but legal implications should be considered [13,14,20]; in fact, in some countries, local sanitary regulations do not allow the use of a nurse-based helpline. Moreover, we are aware that the administered questionnaire, which included very general questions, was completed by a relatively small sample of 111 patients (while our study population was considerably vaster). Further prospective studies, to provide certain answers to our study questions, should include a wider IBD population.

In summary, a dedicated telephone helpline could provide additional clinical guidance, care, and support to IBD patients. The use of a contact center could implement the routine outpatient service and enhance physicians' practice. We strongly believe that such a communication tool could be an excellent instrument to guarantee a better management of "chronic" patients' care in all its complexity.

Conflict of interest

None declared.

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