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# Implementation of the Liverpool Care Pathway (LCP) for the Dying Patient in the Inpatient Hospice Setting: Development and Preliminary Assessment of the Italian LCP Program

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## Abstract

**Background:** The Liverpool Care Pathway (LCP) is extensively used in hospices, but the literature on the process of implementation is scarce. **Aim:** Developing, piloting, and preliminarily assessing the LCP program within the inpatient hospice setting. **Methods:** This is a phase 0-I study, according to the Medical Research Council (MRC) Framework, divided into three phases: literature review on LCP in hospice and development of the Italian version of the LCP program (LCP-I), development of a procedure for assessing the quality of the implementation process and assessing the feasibility of the implementation process, and piloting the procedure in 7 inpatient Italian hospices. **Results:** The LCP was implemented in all the hospices involved. A high proportion of physicians (50%-100%) and nurses (94%-100%) attended the self-education program. The self-implementation of the LCP-I program was completed in all hospices. The proportion of patients who died on LCP-I ranged between 35.6% and 89.1%. Professionals from 2 hospices reported a positive impact of the LCP-I. Conversely, professionals from 2 hospices did not recognize a positive impact of the program and did not agree to maintain the LCP-I in hospice. Finally, professionals from the other 3 hospices reported intermediate evaluations (I stopped to use the LCP-I). Some weaknesses emerged from the external audits, related to the self-education and the self-implementation approach. Professionals required an external support from a trained palliative care team with reference to both phases. **Conclusions:** The LCP-I implementation within hospices is feasible, and the process of implementation is evaluable. Issues that occurred within the implementation process suggest the introduction of an external support from a trained palliative care team in implementing the LCP program.

## Keywords

End-of-life care, dying, hospice, Liverpool Care Pathway, implementation process, complex interventions

## Introduction

There is a worldwide increased risk of death from chronic diseases, and palliative care has been identified as a public health priority.<sup>1-3</sup> As part of a palliative care program, providing optimal care for dying patients in all settings of care is essential.

A number of obstacles to effective care of the dying have been identified and include difficulty in recognizing the dying phase and in withdrawing futile diagnostic procedures and treatments, ineffective communication with and between patients, relatives, and professionals, and failure to implement an appropriate end-of-life plan of care.<sup>4-6</sup>

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Care pathways for dying patients have been developed and piloted in several countries as a model to improve the quality of care at the end of life.<sup>7-9</sup> The Liverpool Care Pathway (LCP) for the dying patient is an integrated care pathway developed in the United Kingdom in the late 1990s to transfer the hospice model of care into hospitals and other settings.<sup>7,10</sup> It provides a template of appropriate multidisciplinary care for the dying patient and the family both before and after the patient's death, and is structured to facilitate auditing and outcome measurements.<sup>7,10-11</sup>

The LCP has been successfully disseminated to hospitals, care homes, communities, and inpatient hospices in over 20 countries.<sup>12</sup> The implementation of the program, after an intensive training phase, revolves around the introduction of the LCP-specific documentation for patients who have been assessed by a multidisciplinary team to be at the end of their life.

Although no evidence from controlled before-after or randomized trials comparing use versus nonuse of an end-of-life pathway exists,<sup>13</sup> the results from qualitative<sup>14-18</sup> and quasi-experimental studies<sup>19,20</sup> suggest that the LCP program might significantly improve the quality of end-of-life care both in hospitals and in nursing homes.

Current knowledge about the process of LCP implementation cannot be completely transferred to the hospice setting, where delivering high-quality end-of-life care should already be a standard practice. Although the LCP is used within inpatient hospices, the literature on the description and assessment of the implementation process is scarce.

The development of the hospice version of the LCP program is important due to the rapid increase in hospice numbers in the recent years.<sup>21</sup> In Italy, the number of adult inpatient hospices raised from 5 in 1999 to 165 by June 30, 2009.<sup>22</sup> No data are available on the quality of the care provided to dying patients and their relatives.

In 2007, the Italian hospital version of LCP program was developed by the Ligurian Palliative Care Network of Genoa, the referent center for the LCP program in Italy, in compliance with the original format. The Italian version of the pathway (LCP-I) was successfully piloted within 4 hospital wards<sup>18,20</sup> following the original 10-step Continuous Quality Improvement Program (CQIP). The hospital LCP-I is being tested for effectiveness in a randomized cluster trial within 5 Italian regions.<sup>23</sup>

In 2008, the Ligurian Palliative Care Network of Genoa developed a project aimed at assessing the LCP within the hospice setting. In this article we report the results from the first part of the project, aimed at:

- developing a version of the 10-step CQIP specific to the hospice setting;
- developing an evaluation system for assessing the quality of the LCP-I implementation;
- piloting and preliminarily assessing the LCP-I program within the hospice setting.

## Methods

### Study Design

According to the MRC Complex Interventions Framework,<sup>24,25</sup> this can be interpreted as a phase 0-I study. The study is divided into 3 phases, as described below.

### The Italian Version of the LCP Hospice Program

This phase aimed to develop an Italian inpatient hospice version of the LCP program (LCP-I hospice). Scientific literature on the LCP implementation process with a focus on the hospice setting was reviewed. The original LCP version 11 for hospice and the Goal Data Dictionary were translated into Italian following the requirements suggested by the LCP Central Team of the Marie Curie Palliative Care Institute of Liverpool (MCPCIL). The original 10-step CQIP and leaflets were reviewed, translated, and adapted to the hospice setting.

### Assessing the Quality of the LCP-I Implementation

The aim of this phase was to develop a procedure for assessing the quality of the implementation of the LCP-I program in the hospice setting. A document was developed with the aim of collecting information on objectives achieved and not achieved for each step of LCP-I implementation.

The procedure included a self-assessment of hospice professional's views regarding the impact of the LCP-I on daily clinical practice, on their professional role, and on maintaining the LCP-I documentation in hospice at the end of the implementation process.

### Assessing Feasibility and Piloting Methods

This phase aimed to assess the feasibility of the implementation process within the hospice setting. The LCP-I hospice and the instruments for assessing the quality of the implementation were piloted in a convenience sample of 7 Italian inpatient hospices with high standard of care. All hospices are well-established inpatient units with dedicated beds. According to the European Association for Palliative Care definition "they admit patients in their last phase of life when treatment in the hospital is not necessary and care at home or in a nursing home is not possible."<sup>26</sup> All physicians and nurses have been formally trained in and are full-time dedicated to palliative care.

At the end of each pilot implementation, an external audit was performed with the aim of identifying weaknesses of the LCP-I implementation process. At the beginning of each audit, the facilitator (L.B.) asked each professional participating to identify and report the weaknesses of the LCP-I implementation process in a set way. Subsequently, the facilitator discussed the main topics reported in the form with the professionals.

**Table 1.** The Italian Versions of the 10 Step Continuous Quality Improvement Program in the Hospitals and in the Inpatient Hospices.<sup>a</sup>

Phases	The LCP-I Hospital Program (Costantini 2011)		The LCP-I Hospice Program	
Development of the implementation project	STEP 1	Establishing the project. Preparing the environment	STEP 1	Establishing the project. Preparing the environment
	STEP 2	Developing the documentation	STEPS 2-3	Developing the documentation
	STEP 3	Base review. Retrospective evaluation of variances		
Implementation of the LCP-I program	STEP 4	Induction of the program. Intensive education program	STEP 4	Induction of the program. Self-intensive education program
	STEP 5	Clinical implementation of the LCP-I documentation. Intensive support to the ward staff	STEPS 5-8	Self-implementation of the program
	STEP 6	Semi-intensive support to the ward staff		
	STEP 7	Evaluation and further training		
	STEP 8	Consolidation phase		
Sustainability of high standards of quality of end-of-life care	STEP 9	Initiation of a strategy for sustainability	STEP 9	Initiation of a strategy for sustainability
	STEP 10	Regional and national strategy	STEP 10	Regional and national strategy

<sup>a</sup> The implementation of the LCP-I program (steps 4-8) has a planned duration of 6 months in hospital and 2 months in hospice.

## Methodology of Analysis

A synthetic overview of the objectives achieved and not achieved for each step of the LCP-I implementation was obtained through the analysis of the process of implementation in the hospices.

The answers to the 3 open questions, aimed at exploring the impact of the LCP-I program on hospice professionals, were analyzed independently by 2 researchers (S.D.L and L.B.). For the purpose of this study, the researchers were asked to categorize each answer as positive or negative with reference to the topic explored. All disagreements were subsequently discussed and a final categorization was obtained.

All weaknesses related to the process of LCP-I implementation collected during the external audits were transcribed and analyzed through thematic analysis.<sup>27</sup> The weaknesses were repeatedly read and independently categorized by 2 researchers (S.D.L and V.R.) by employing both an inductive and deductive approach. The 2 categorizations were compared and discussed with the facilitator of the audits, until a final categorization was developed.

## Results

### Developing the LCP-I Hospice Program

**The Literature Review.** Only 1 study that specifically focused on the hospice setting was identified through literature review. This study was aimed at exploring doctors' and nurses' perceptions of the impact of the LCP through semistructured interviews.<sup>28</sup> The results suggested that, despite initial skepticism, the pathway had a valuable place in this context. Advantages identified by professionals include improving documentation, promoting continuity of care, and enhancing communication with and care of relatives. Maintaining ongoing education and feedback on the use of LCP documentation was highlighted as important for ensuring high quality end-of-life care by doctors and nurses.<sup>28</sup>

**The LCP-I Hospice Program.** The original English version of the LCP for inpatient hospice and the Goal Data Dictionary were translated into Italian in compliance with the original format. The final version (LCP-I hospice) was endorsed by the LCP Central Team of the MCPCIL.

Two specific leaflets addressed to relatives were developed by the LCP-I referent center, on the basis of those used within the original English version of the program.

- "Some useful information": to be delivered immediately after patient's death. This leaflet provides relatives with practical information on mortuary, funeral service, and how to get specific religious support.
- "Facing the loss": to be delivered during a meeting after the patient's death. The leaflet reports on emotional, cognitive, and behavioral responses of people facing the loss of a loved one and provides contacts of local bereavement services.

Both leaflets were adapted to the local context, including the availability of bereavement services.

A specific program for the hospice setting adapted from the original 10-Step CQIP was developed. For each step, both goals and procedures of LCP implementation were described. Compared to the hospital program,<sup>23</sup> the hospice program is shorter, and some steps have been merged (Table 1).

The first steps (1-3), coordinated and supported by the LCP-I referent center, were concerned with the development of the implementation project. A professional responsible for coordinating the LCP implementation in each center was identified and was provided with the LCP-I documentation (ie, chart, leaflets, Goal Data Dictionary). In the hospital setting the LCP-I implementation was coordinated by an external trained palliative care team (PCT). The hospice implementation was largely self-managed and did not include a base review with retrospective evaluation of the variances.

**Table 2.** Characteristics of the 7 Italian Inpatient Hospices where the LCP-I Program was piloted.

	Status <sup>a</sup>	Start of hospice year	Beds No.	Deaths per month mean	Physicians No.	Nurses <sup>b</sup> No.	Nursing assistants No.	Psychologists No.	Physiotherapists No.
Hospice 1	Nonprofit	2001	10	10.0	4	8	6	1	–
Hospice 2	Public	1999	11	10.4	2	7	7	1	1
Hospice 3	Public	2008	11	16.5	4	9	7	1	1
Hospice 4	Public	2008	10	11.4	5	8	7	1	1
Hospice 5	Nonprofit	2002	30	37.9	5	18	17	2	2
Hospice 6	Nonprofit	2007	13	19.4	2	7	7	1	1
Hospice 7	Public	2009	12	19.7	3	11	6	1	1

<sup>a</sup> Nonprofit hospice: The personnel is managed by a private foundation or association. The National Health System (NHS) can cover part of the cost. Public hospice: The personnel is managed by the NHS that covers all the costs of care.

<sup>b</sup> "Nurses" include the nurse coordinator.

Step 4 included an intensive 12 hours training program in hospital, based on teaching material developed by the LCP-I referent center and implemented by a specifically trained PCT.<sup>23</sup> The hospice program required that staff self-managed the intensive education phase. The person responsible for the implementation within the hospice tailored the training program according to the needs of the professionals, supported by teaching materials provided by the LCP-I referent center. At the end of the education program the staff started using the LCP-I documentation for all patients recognized as dying.

During steps 5 to 8 in hospitals, the ward staff were closely supported by the PCT overseeing the implementation process. These steps included coaching, telephone and direct guidance, and discussion of clinical cases and had a planned duration of 5 months. A number of clinical audits conducted by the PCT were part of the program. In the hospice setting, the program was self-implemented and steps 5 to 8 were collapsed. Professionals were asked to start using the LCP-I documentation in their routine clinical activity. This step had a planned duration of 1 month. Two to four self-managed clinical audits were requested from each hospice during the implementation process.

A strategy for sustainability (step 9), in collaboration with the LCP-I referent center, was planned for hospital wards and hospices and included support from the LCP-I referent center in maintaining the LCP-I documentation as the standard documentation for all dying patients.

### The Quality Assessment of LCP-I Implementation

The document developed for assessing the quality of LCP-I implementation included a number of close-ended questions covering the steps of the implementation program. Each section of the document reported the specific aims of the step and listed the tasks to be delivered.

The semi-structured questionnaire for assessing the hospice professionals' views included 3 open questions for the hospice staff members. The first 2 questions were aimed at evaluating the impact of the LCP-I program both on daily clinical practice and on professional role. The third question concerned

professionals' views on maintaining the LCP-I chart as a standard for the hospice.

### The Pilot Implementation of the LCP-I Hospice Program

The LCP-I hospice program was piloted in 7 inpatient hospices from 3 Italian regions (Table 2).

The analysis of the documents filled in by the responsible in each of the 7 hospices allowed us to identify a number of potentially useful indicators describing the quality of the process of implementation (Table 3).

Most tasks concerning step 1 (establishing the project and preparing the environment) were completed by all the hospices, although in 2 cases the responsible decided not to present the LCP-I program to the staff. The duration of the presentation ranged between 30 and 150 minutes and involved all (in 4 cases) or most (in 1 case) professionals. All hospices completed the tasks of steps 2-3 (developing the documentation).

The self-education program (step 4) was performed in all hospices (duration range: 2.15-8 hours) with a lower participation rate in 2 hospices (only 50%-60% physicians involved). The LCP-I clinical documentation was introduced in all of the hospices at the end of the education program.

The self-implementation of the LCP-I program (steps 5-8) was completed in all hospices to different levels. Three hospices did not perform the planned internal audits. The percentage of patients who died on the LCP-I ranged between 35.6 and 89.1. The percentage of goals not documented showed great differences across the hospices, between 0.1 and 5.7 for the initial assessment (LCP, section 1), between 0.2 and 4.5 for ongoing assessment (LCP, section 2), and between 2.4 and 21.1 for the care after death (LCP, section 3). The individual evaluation questionnaire was filled in by most professionals (physicians: 25%-100%; nurses: 71.4%-100%).

The analyses of the answers from the questionnaire are reported in Table 4. In 2 hospices (2 and 7) both physicians and nurses recognized a positive impact of the LCP-I on clinical practice and professional role. All of these professionals agreed to maintain the LCP-I in hospice. Conversely, in 2 hospices (5

**Table 3.** The Quality of LCP-I Implementation in the 7 Inpatient Hospices According to Selected Indicators.

	Hospice 1	Hospice 2	Hospice 3	Hospice 4	Hospice 5	Hospice 6	Hospice 7
<b>STEP 1</b>							
1. Approval from the LCP-I National Centre	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Agreement for implementation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Presentation of the LCP-I hospice program	Yes	Yes	Yes	Yes	No	No	Yes
a. Duration, minutes	60	150	30	60	-	-	120
b. Physicians and nurses involved (%)	100	100	100	84.6	-	-	100
<b>STEPS 2-3</b>							
1. Preparation of the self-education program	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Assembling the LCP-I hospice documentation	complete	complete	complete	complete	complete	complete	complete
a. Clinical chart	Yes	Yes	Yes	Yes	Yes	Yes	Yes
b. Leaflets	2	2	2	2	2	2	2
<b>STEP 4</b>							
1. Self-education performed (start date)	Yes (March 2009)	Yes (July 2009)	Yes (March 2009)	Yes (March 2009)	Yes (May 2009)	Yes (May 2009)	Yes (May 2009)
a. Duration, hours per edition	3	6	Unknown	6	2,15	2,30	8
b. Editions No.	2	2	1	2	2	1	1
c. Physicians involved (%)	100	100	100	60.0	100	50.0	100
d. Nurses involved (%)	100	100	100	100	94.4	100	100
2. LCP-I hospice introduced	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>STEPS 5-8 (1-month duration)</b>							
1. LCP-I for the whole phase (start date)	Yes (April 2009)	Yes (August 2009)	Yes (April 2009)	Yes (April 2009)	Yes (June 2009)	Yes (June 2009)	Yes (June 2009)
2. Internal audits, No.	4	4	2	5	-	-	-
3. Deaths in LCP (%)	47.3	84.2	35.6	80.4	89.1	56.3	68.6
Mean (range) time in LCP-I, hours	56.2(2-218)	50.2(2-227)	30.7(0-88)	35.2(1-216)	64.2(2-254)	96.9(4-424)	25.1(1-99)
4. Not documented goals (%)	-	0.3	5.7	0.8	1.3	0.1	4.0
a. Initial assessment (%)	0.2	-	3.1	4.5	3.2	1.3	2.5
b. Ongoing evaluation (%)	-	-	21.1	3.2	3.6	5.8	2.4
c. After death assistance (%)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Individual evaluation of the LCP-I program	100	100	25.0	80.0	80.0	100	66.6
a. Physicians involved (%)	87.5	85.7	77.8	87.5	72.2	71.4	100
b. Nurses involved (%)							
<b>STEP 9</b>							
The LCP still in use after 1 year	Yes	Yes	No	Yes	No	No	Yes

**Table 4.** Evaluation of the LCP-I Program by the Hospice Professionals.

	Positive impact of LCP-I on daily clinical practice				Positive impact of LCP-I on professional role				Agreement to maintain the LCP-I documentation in hospice			
	Physicians		Nurses		Physicians		Nurses		Physicians		Nurses	
	N	%	N	%	N	%	N	%	N	%	N	%
Hospice 1	-/4	–	5/7	71.4	2/4	50.0	5/7	71.4	3/4	75.0	6/7	85.7
Hospice 2	2/2	100	6/6	100	2/2	100	5/6	83.3	2/2	100	6/6	100
Hospice 3	1/1	100	7/7	100	1/1	100	7/7	100	-/1	–	4/7	57.1
Hospice 4	4/4	100	4/7	57.1	4/4	100	5/7	71.4	4/4	100	5/7	71.4
Hospice 5	1/4	25.0	5/13	38.5	1/4	25.0	4/13	30.8	-/4	–	4/13	30.8
Hospice 6	-/2	–	-/5	–	1/2	50.0	1/5	20.0	1/2	50.0	-/5	–
Hospice 7	2/2	100	11/11	100	2/2	100	10/11	90.9	2/2	100	11/11	100

**Table 5.** Categories of Weaknesses on the Process of LCP-I Implementation in the Inpatient Hospices.**SELF-INTENSIVE EDUCATION PROGRAM:**

- Professionals report the need of a more structured training on end-of-life issues
- Professionals question the validity of a self-managed education program

**SELF-IMPLEMENTATION OF THE PROGRAM:**

- Professionals report the need of an external support during the implementation phase
- Difficulties in understanding the LCP-I goals of care
- Difficulties in using the LCP-I clinical documentation
- Issues in translating the LCP-I theory into daily clinical practice (for the unsatisfied training needs of professionals on the care of the dying)
- Issues in getting homogenous professionals involvement in the implementation of the LCP-I program
- Difficulties in contacting and informing GPs on patient's condition, as requested by LCP-I goals 9 and 12

Abbreviation: GP, general practitioner.

and 6), most professionals did not recognize a positive impact of the program and did not agree to maintain the LCP-I in hospice. The professionals from the other 3 hospices (1, 3, and 4) reported differing evaluations, although the majority recognized a positive impact of the program.

The professionals from 3 hospices (3, 5, and 6) reported a low agreement in maintaining the LCP-I in their clinical practice and stopped to use the pathway. They considered the LCP-I useful in reinforcing the already existing skills, but these potential benefits did not justify the increased daily workload in compiling the pathways for all dying patients.

Two main categories of weaknesses in the process of LCP-I implementation were identified through the thematic analysis (Table 5). The first one was related to the education program. It included criticism of the self-education approach and a call for more structured training. The second was concerned with the process of LCP-I self-implementation. A number of difficulties in understanding and applying the LCP-I documentation in the daily clinical practice were reported. The need for an external support was underlined with reference to this phase.

## Discussion

This study was aimed at developing and preliminarily assessing the LCP program within inpatient hospices. The study is the first phase of a project designed with the objective of assessing

potential effectiveness of LCP and evaluating further evidence on its use.

We adopted the MRC framework for the evaluation of complex interventions as our methodological guidance. The framework considers the process of development and evaluation of a complex intervention in distinct phases.<sup>24</sup> Each phase suggests the use of appropriate quantitative and/or qualitative methodologies depending on the objectives of the phase and requires a study design taking into account the theoretical basis, any evidence on the issue, and the context's specificity. Progression from one phase to another may not be linear but often may form part of an iterative process.<sup>25</sup> This study can be interpreted as a phase 0-1, according to the MRC framework.

The study has a number of limitations. First, poor literature on the use of LCP in hospice resulted in a scarce background for the development of the LCP-I hospice program. Second, the study design could be affected by selection bias, as the hospices involved in the preliminary test of the LCP-I program were a convenience sample of hospices with high standard of care, and some of their features could have influenced both the course and the outcomes of the implementation process. Conversely, before testing the LCP-I in a larger, unselected sample of hospices, we wished to preliminary pilot the pathway under the most favorable conditions. Third, we could not collect information at baseline on both organizational and professionals' skills on end-of-life care.

We developed, piloted, and assessed a version of the LCP program specific to the hospice setting. The original aim of the LCP was to transfer the best end-of-life care practices from the hospice to the hospital setting. This first study was piloted in high-standard hospices, and we could not expect the pathway significantly improved the quality of delivered care. It is possible, in agreement with what was observed in the Gambles' study<sup>27</sup>, that the LCP-I improved the consistency of care delivered in the dying phase. The main challenge in LCP implementation was dealing with the skepticism of the professionals. Not surprisingly, 3 hospices stopped to use the pathway at the end of the study.

Complex interventions, such as the LCP program, comprise different components and are dependent on both professionals and characteristics of the structures where these are delivered. This may result in a variability of the process of implementation and influence whether the complex intervention works. For example, in psychotherapy trials, a large part of the difference in outcomes has been linked to variations in delivery of the intervention by different therapists.<sup>29</sup> To make our intervention more reproducible, we tried to standardize the process of LCP-I implementation. We did not perform a strict monitoring of the implementation process, but the quality of the process of implementation was assessed step by step with a specific procedure.

All involved hospices agreed to participate in the study, performed the self-education (steps 3 and 4), and introduced the LCP-I hospice documentation for the whole duration of the self-implementation phase (steps 5-8). Hospice professionals also gave feedback on the initiation of a strategy for sustainability (step 9). Nevertheless, some issues occurred within the implementation process. The suggested procedures for the education program in end-of-life care and in the use of the LCP documentation were applied in different ways in the 7 hospices. The proportion of professionals involved was high, but the duration of the education programs ranged between 2 and 8 hours. Internal audits were performed only in 4 hospices. The proportion of deaths on LCP-I during self-implementation ranged between 36% and 89%, and the mean time in LCP was between 25 and 97 hours.

The professional responsible for the implementation within each hospice tailored the training program according to the professionals needs, supported by the teaching materials provided by the LCP-I referent center. It is possible that the high degree of variability in the distribution of the indicators reflected different approaches used for introducing the LCP-I program.

This LCP-I hospice program was proposed and supported by the LCP-I referent center, but the 7 hospices where the program was piloted were autonomous in defining the content and duration of the education program and in designing the procedures of implementation of the LCP-I documentation in clinical practice. The rationale of a self-implementation of the LCP-I program was an expected high quality of already existing clinical and organizational procedures in the hospice settings. The LCP program was expected to support and sustain the multidisciplinary work of hospice staff and allow to evaluate and document the quality of care at the end of life.

The results of this study, although supporting the feasibility of the implementation of the LCP-I in hospice, strongly suggest the need for developing a revised version of the implementation program.

In the hospice as well as hospital setting, the LCP-I program should be at least partially driven and monitored by an external PCT with a specific training in the use of LCP-I. The limits of self-implementation were also highlighted during the external audits at the end of the implementation process, where hospice professionals reported on their difficulties in translating the LCP-I theory into clinical practice.

Changes aimed at improving both the professionals' skills and adherence to implementation procedures should be introduced. The self-managed approach to education and implementation should be partially reduced and a structured supervision of the process from an external trained PCT should be used.

In the revised program, the external PCT should participate in the analysis of staff educational needs and in the definition of the education phase. The PCT should also provide the professional responsible for implementation with specific training focused on the procedure of LCP-I implementation and on the practice of addressing the dying patients' needs through the LCP clinical documentation. We expect these changes to improve the quality of the education phase and make the hospice staff more skilled to deal with the specificity of the LCP approach.

The second change is related to the process of implementation. In the revised program, the self-implementation phase should be extended, and the 4 internal audits should be mandatory. An external monitoring of the implementation process with at least 1 external audit should be included as well as the possibility to provide hospice professionals with supplemental short training on end-of-life care issues and/or the use of LCP-I clinical documentation.

## Conclusions

Our findings stress the relevance of defining the LCP-I program and monitoring the implementation process in detail, with the objective of identifying problems as they occur. This allows us to plan changes and increasingly adjust the program to the hospice setting. This pilot study supports future research on the revised version of the LCP-I hospice program, aimed at improving strategies to implement the program in the hospice setting and test the feasibility of permanently introducing the clinical practice and the ongoing quality assessment proposed by the LCP-I program.

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