Use of a Modified Liverpool Care Pathway in a Tertiary Asian Hospital: Is There Still a Role for It?

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Abstract

Background: In 2007, the Care of the Dying clinical coordinated Pathway (CDP) was adapted from the United Kingdom Liverpool Care Pathway (LCP) and implemented in a tertiary hospital in Singapore to improve care in oncology and subsequently renal patients. With concerns about its use after the Neuberger review, an audit of patients on the CDP was performed to determine if the use of such a pathway should be continued locally.

Methods: A two-year retrospective audit of CDP use was conducted. Aspects of communication, initiation of CDP, patient monitoring, medications, nutrition, and hydration were assessed.

Results: In the 111 patient records reviewed, there were documented extent of care discussions with 94% of caregivers and 29% of patients before CDP initiation. Of the 88% of CDPs initiated within office hours, 90% fulfilled the inclusion criteria. All patients were monitored at least every eight hours. Seventy-three patients (66%) were prescribed opioids or sedatives and subsequently monitored appropriately, albeit 56% had no documented prior discussion with caregivers regarding medication use. Indications for opioid use were documented for all patients and only one patient had documentation of excessive sedation. Oral feeding and parenteral hydration were continued in 85% and 74% of patients, respectively.

Conclusion: There was no documented compromise in medication safety, clinical monitoring, and provision of nutrition and hydration for patients on the CDP. However, documentation of important end-of-life decisions and conversations remain poor. Development of an alternative care tool encouraging systematic discussion and documentation of individualized end-of-life care plans should be considered.

Introduction

THE UNITED KINGDOM LIVERPOOL CARE PATHWAY (LCP) was developed in the United Kingdom in the 1990s by the Royal Liverpool University Hospital and Liverpool's Marie Curie Hospice to replicate the standard of care for dying patients in hospices across different care settings. It was a model of care that enabled health care professionals to focus on care of the dying patient and was meant to tailor care to the individual, taking into consideration physical, social, spiritual, and psychological needs.¹

Prior to the Neuberger review, the LCP had been recognized and recommended as a model of good practice to

support end-of-life care by various organizations including the National End of Life Care Strategy, General Medical Council, and the National Institute for Health and Care Excellence (NICE) Quality Standard.^{2,3} In view of recent increasing public concerns with LCP use, an independent review of the LCP was undertaken. The results published in July 2013 showed major issues in areas of communication, documentation, initiation of the pathway, and clinical interpretation of the pathway.⁴ The Neuberger review found that while the LCP worked well when operated by well-trained, well-resourced, and sensitive clinical teams, other health care workers were treating the LCP as a set of instructions and prescriptions rather than a guideline for initiatives in end-of-

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life care. In some cases it was initiated by junior staff during out-of-office hours without supervision. The reviewers also elicited feedback from caregivers of patients who had been put on the LCP, where some caregivers felt that the pathway was a definite pathway to death, with patients being deprived of basic care and needs such as hydration and nutrition. In some cases there was a perception among caregivers that patients were being unnecessarily sedated with opioids and sedatives prescribed routinely for dying patients. While it seemed that the medical staff felt more comfortable in delivering effective symptom control with the LCP, this did not necessarily translate into good care as perceived by caregivers.

Several reports have been published by various institutions about their own experience with regards to use of the LCP or a coordinated pathway for end-of-life care. A retrospective case notes audit by the Bradford Teaching Hospitals NHS Foundation Trust (BTHFT) found that communication with caregivers of dying patients on the LCP were better with less uncertainty within caregivers.⁵ Philips et al. found that the doses of opioids and sedatives given to patients on the LCP in a large district general hospital in the United Kingdom were safe and not unduly increased.⁶ A survey of health care providers working in a U.K. hospital setting found that the majority of staff were able to recognize when to start LCP and decide on the appropriate monitoring and treatment.⁷ However, a cluster randomized trial done by Costantini et al. showed no improved benefit in overall quality of care when LCP was in use.⁸

The Care of the Dying clinical coordinated Pathway (CDP) was adapted largely unchanged from the LCP version 11, with only changes in layout and omission of the section on communication with the primary health care team. It was started in 2007 in a 1597-bedded tertiary hospital in Singapore with the aim of providing better symptom control and overall care for dying patients. The CDP was initially implemented in the oncology ward, where a subsequent audit found improved symptom control, more frequent prescription of preemptive breakthrough medications, and decrease in frequency of inappropriate monitoring with the use of such a protocol-based pathway.⁹ The CDP was subsequently extended to the renal wards.

In view of the controversies surrounding LCP, this audit was performed to assess if similar problems found in the Neuberger review had occurred and if there is still a role for the CDP in our care setting.

Methods

A retrospective audit was conducted in early 2014 looking at all patients started on the CDP in the oncology and renal wards during a two-year period from July 2011 to June 2013. The patients were identified from the hospital's Quality Management Department, which monitors the use of pathways in the hospital, and from records of CDP use in the wards, which is monitored by the Department of Palliative Medicine. These case records were reviewed, together with online medical records of medications prescribed and vital signs monitoring.

A data collection form was used to assess the documentation on various aspects of care while the patient was on the CDP. This included:

1. Decision for initiating the CDP, including the seniority of the physician, the time of initiation, and fulfilment of the inclusion criteria. The inclusion cri-

teria were similarly defined in the LCP, with at least two of the following patient clinical conditions present: being bedbound, comatose state, only able to take sips of fluids and no longer able to take tablets, AND with the multidisciplinary team agreeing that the patient is dying with little chance of recovery.

2. Discussions with both caregivers and patients on the extent of care, prognosis, CDP use, provision of artificial hydration, use of strong opioids and sedatives.
3. Monitoring and nursing reviews of patients on the CDP, with at least one review every eight hours defined as the basic standard of monitoring.
4. Frequency of oral intake and artificial hydration.
5. Decision for starting strong opioids and sedatives with subsequent subjective monitoring for side effects by the medical team.

Data collection was performed by two palliative care physicians from the Department of Palliative Medicine, National Cancer Centre Singapore. The information obtained from the data collection form was transferred and analyzed using Microsoft Excel. Institutional review board approval was obtained prior to initiation of the study.

Results

There were a total of 740 deaths in the oncology ward, with 90 (12.2%) started on the CDP (see Fig. 1). In the renal wards, a total of 129 patients died during the period of study, with 29 (22.5%) patients started on the CDP. The medical records of 82 oncology patients and all 29 renal patients were successfully traced and assessed. Seventy-eight (95%) oncology patients and 25 (86%) renal patients passed away while on the CDP.

Demographics

The patients on the oncology ward were younger than the renal patients, with a mean age of 62 versus 75 years old. There were more male than female patients in the oncology group. Most of the patients (>80%) were Chinese, followed by Malays and Indians. The hospital length of stay was similar in both groups, while the renal patients remained on the CDP for a longer period of time (see Table 1).

Communication

Overall, 89% of all family members were aware of the patients' poor prognosis as well as goal for comfort care (see Table 2). Extent of care in terms of resuscitation status was also discussed with 94% of family members. Excluding patients who were uncommunicative or confused, 15 out of 51 patients (29%) had documented conversations about having comfort care and discussion regarding extent of care, and 5 out of 40 (13%) had documented conversations about their poor prognosis.

Overall, 5% of cases had documented conversations with family members about the initiation of the CDP. In the 80 patients who received strong opioids or sedatives, the caregivers of 35 of them (44%) were informed before these drugs were started.

Initiation of CDP

More than half (68%) of all CDPs were initiated by registrar-grade staff and above. Eighty-eight percent of all CDPs

FIG. 1. Flowchart of obtaining patients' records.

TABLE 1. DEMOGRAPHICS OF ONCOLOGY AND RENAL PATIENTS

	<i>Oncology patients</i> N = 82	<i>Renal patients</i> N = 29
Age (years):		
Range	34–86	55–94
Mean	62.1	74.6
Median	62	75
Gender:		
Male	49 (60%)	12 (41%)
Female	33 (40%)	17 (59%)
Race:		
Chinese	69 (84%)	25 (86%)
Malay	9 (11%)	3 (10%)
Indian	4 (5%)	1 (4%)
Hospital length of stay (days):		
Range	1–52	2–54
Mean	12.4	13.6
CDP duration (days):		
Range	1–8	1–15
Mean	2.0	4.9
Median	2.0	4

were initiated during office hours, and 90% of them fulfilled required documentation of at least two of the CDP inclusion criteria, with the multidisciplinary team agreeing that the patient was dying with little chance of recovery.

Monitoring and nursing quality

All patients had vital signs consisting of blood pressure, pulse rate, pulse oximetry and respiratory rate taken at least once per eight-hour shift. Seventy-seven percent of patients were monitored at no less than four hourly intervals. The median frequency of vital signs monitoring was four hourly, with 54% of patients monitored at this interval.

Nutrition and hydration after commencement of CDP

There were more oncology patients (87%) on artificial hydration (AH) compared to renal patients (21%) (see Table 3). For the 78 patients who were on AH, 58 of them (74%) were continued on AH while on the CDP. Five out of the 78 patients (6%) had AH stopped based on clinical status or on family's request, while 15 patients (19%) had cessation of AH with no reason documented in the case notes. Notably, none of the caregivers of the 20 patients whose AH was stopped were documented to have been informed.

TABLE 2. DOCUMENTATION OF COMMUNICATION WITH PATIENTS AND CAREGIVERS REGARDING EXTENT OF CARE, PROGNOSIS, USE OF HYDRATION AND STRONG OPIOIDS AND SEDATIVES, AND CDP USE

<i>Question</i>	<i>Number of oncology patients (%) N = 82</i>	<i>Number of renal patients (%) N = 29</i>	<i>Number of oncology and renal patients (%) N = 111</i>
1. Conversation with family regarding comfort care and extent of care:			
• No	-	-	-
• Yes	76 (93)	28 (97)	104 (94)
• Not documented	6 (7)	1 (3)	7 (6)
2. Conversation with patient regarding comfort care and extent of care:			
• No	-	-	-
• Yes	14 (17)	1 (3)	15 (14)
• Confused/comatose	50 (61)	10 (35)	60 (54)
• Not documented	18 (22)	18 (62)	36 (32)
3. Conversation informing family about CDP use before its initiation:			
• No	-	-	-
• Yes	5 (6)	1 (3)	6 (5)
• Not documented	77 (94)	28 (97)	105 (95)
4. Communication held with patient about poor prognosis before starting CDP:			
• No	-	-	-
• Yes	4 (5)	1 (3)	5 (5)
• Confused/comatose	58 (71)	13 (45)	71 (64)
• Not documented	20 (24)	15 (52)	35 (31)
5. Communication held with family about poor prognosis before starting CDP:			
• No	-	-	-
• Yes	71 (87)	28 (97)	99 (89)
• Not documented	11 (13)	1 (3)	12 (11)
6. Conversation with family before starting opioid or sedative infusions:			
• No	-	-	-
• Yes	29 (35)	6 (21)	35 (32)
• Not documented	40 (49)	5 (17)	45 (40)
• Not started	13(16)	18 (62)	31 (28)

TABLE 3. DOCUMENTATION OF ORDERS FOR PARENTERAL HYDRATION, ORAL HYDRATION, AND NUTRITION FOR PATIENTS ON CDP

<i>Question</i>	<i>Number of oncology patients (%) N = 82</i>	<i>Number of renal patients (%) N = 29</i>	<i>Number of oncology and renal patients (%) N = 111</i>
1. Patient is on parenteral hydration:			
• No	10 (12)	23 (79)	33 (30)
• Yes	72 (88)	6 (21)	78 (70)
2. Was parenteral hydration stopped in consideration of clinical status or on family's request:			
• Yes	3 (4)	2 (7)	5 (4)
• Not documented	15 (18)	-	15 (14)
• Not stopped	54 (66)	4 (14)	58 (52)
• Not applicable	10 (12)	23 (79)	33 (30)
3. Family informed about stopping parenteral hydration:			
• No	-	-	-
• Yes	-	-	-
• Not documented	18 (22)	2 (7)	20 (18)
• Not applicable	64 (78)	27 (93)	91 (82)
4. Was there a nil-by-mouth order:			
• No	-	-	-
• Yes	16 (20)	1 (3)	17 (15)
• Not documented	66 (80)	28 (97)	94 (85)
5. Was oral feeding or hydration documented:			
• No	-	-	-
• Yes	31 (38)	24 (83)	55 (50)
• Not documented	51 (62)	5 (17)	56 (50)

The majority of patients were allowed food and drink with no nil-by-mouth order in 85% of the 111 patients. In the remaining patients, nil-by-mouth order was noted with no indication documented. Only half of all patients had documented precise amounts of oral intake of solids or fluids.

Medications after commencement of CDP

Almost half of the oncology patients were on an opioid infusion before the pathway was initiated (see Table 4). A further 24% of patients were subsequently started on such infusions after initiation of CDP. In contrast, only 14% of the renal patients had ongoing opioid infusions prior to CDP use, and a further 21% were started on an infusion after CDP use. Overall, only 5% of all patients were on sedatives before CDP

use and a further 6% were started on sedatives with CDP use. In total, 73 (66%) of patients were prescribed both opioids and/or sedative medications.

With regards to titration of opioids and sedatives in oncology patients, there was an increase in opioid dose in 38% of patients and increase in sedative dose in 40% of patients. In contrast, none of the renal patients required dose escalation subsequent to CDP use.

Indications for opioid or sedative use were documented in 96% of oncology patients and for all renal patients. Only one patient who was prescribed these medications had documented excessive sedation. The indication of opioid use was most commonly dyspnea (70%), while the use of sedatives was most commonly for restlessness and agitation (58%).

TABLE 4. DOCUMENTATION OF THE INDICATION, FREQUENCY, AND MONITORING OF THE USE OF STRONG OPIOIDS AND SEDATIVES

<i>Question</i>	<i>Number of oncology patients (%) N = 82</i>	<i>Number of renal patients (%) N = 29</i>	<i>Number of oncology and renal patients (%) N = 111</i>
1. Patient started on opioid infusion:			
• No	22 (27)	19 (65)	41 (37)
• Yes	20 (24)	6 (21)	26 (23)
• Ongoing	40 (49)	4 (14)	44 (40)
2. For patient with ongoing opioid infusion, the dose was:			
• Decreased	2 (5)	-	2 (5)
• No change	23 (58)	4 (100)	27 (61)
• Increased	15 (37)	-	15 (34)
3. Patient started on sedative infusion:			
• No	71 (87)	28 (97)	99 (89)
• Yes	6 (7)	1 (3)	7 (6)
• Ongoing	5 (6)	-	5 (5)
4. For patient with ongoing sedative infusion, the dose was:			
• Decreased	-	-	-
• No change	3 (60)	-	3 (60)
• Increased	2 (40)	-	2 (40)
5. Indication for opioid infusion stated:			
• No	3 (5)	-	3 (4)
• Yes	57 (95)	10 (100)	67 (96)
6. If yes, symptom of concern:			
• Pain	8 (14)	2 (20)	10 (15)
• Dyspnea	39 (68)	8 (80)	47 (70)
• Both pain and dyspnea	10 (18)	-	10 (15)
7. Indication for sedative infusion stated:			
• No	-	-	-
• Yes	11 (100)	1 (100)	12 (100)
8. If yes, symptom of concern:			
• Dyspnea	2 (18)	-	2 (17)
• Restlessness and agitation	6 (55)	1 (100)	7 (58)
• Insomnia	-	-	-
• Fits	2 (18)	-	2 (17)
• Both fits and restlessness, agitation	1 (9)	-	1 (8)
9. Patients reviewed after starting opioid and/or sedative infusion:			
• No	-	-	-
• Yes	62 (100)	11 (100)	73 (100)
11. Presence of excessive sedation after starting opioid/sedative:			
• No	6 (10)	8 (73)	14 (19)
• Yes	-	1 (9)	1 (1)
• Not documented	56 (90)	2 (18)	58 (80)

Discussion

Overall, the audit did not seem to demonstrate any significant compromise in medication safety, monitoring of the dying patient, and provision of nutrition and hydration.

With regards to communication, our audit noted that a high proportion of caregivers were informed of the poor prognosis of their loved one, including the plan for comfort care. However, communication with patients about their extent of care and their prognosis was still infrequent. One likely reason was that more than half of patients were already confused or unconscious by the time discussions on end-of-life care arose. This was also observed by Chong et al., where the authors noted that patient involvement in decision making decreased as their illness progressed.¹⁰ Cultural practices also play a part. In Singapore, where a family-centered model for decision making is still common, it is more likely that end-of-life discussions are held with the family, rather than the patient himself.^{11,12} In addition, it has been recognized that end-of-life discussions with patients are often deemed difficult and uncomfortable for health care workers.^{13,14}

Our results showed little documentation about discussion with family members regarding the use of the CDP before its initiation. In retrospect, this may not have been adequately stressed during the implementation of the pathway. There were also no health care pamphlets available in our local setting for explanation regarding the pathway, unlike in the U.K. LCP setting. Thus, improved communication and documentation about such discussions should be encouraged in future, together with appropriate education aids and reminders during implementation.

Although there was a lack of communication with the caregivers prior to the use of opioids or sedatives, all patients were subsequently duly reviewed after these medications were started to prevent possible oversedation or side effects from the medications started. This would also reassure caregivers that while their loved ones were prescribed opioids and sedatives, there was active monitoring for excessive sedation with the intention to treat symptoms rather than hasten death.

In our audit, a high proportion of patients continued to have artificial hydration while on the CDP. However, in patients whose intravenous drips were stopped, there was no documentation that their caregivers were informed. Although artificial hydration at the end of life has not been shown to improve symptoms, quality of life, or survival, the decision for institution of artificial hydration is a sensitive decision to caregivers.¹⁵ In the Asian culture where oral feeding and maintaining nutrition is an important act of caregiving, the fear of loved ones being dehydrated or 'starved to death' needs to be allayed and documented.

With regards to decision making, our audit found that the majority of CDPs were appropriately initiated by trained senior staff during office hours, with the inclusion criteria met.

In our audit, the utilization rate of the CDP was only 12% and 22% for the oncology and renal patients, respectively. This is relatively low compared to another U.K. audit done by the Royal College of Physicians, which found that 48% of the sampled patients were supported by a framework of care including advanced care planning, an electronic palliative care coordination system, or a "rapid discharge home to die" bundle. Notably, hospitals and other health care facilities in Singapore also do not receive any financial reimbursement

for patients being on the CDP. This is in contrast to the United Kingdom where LCP use was seen as a good clinical practice and its use was encouraged with financial incentives, although this was not universal.

This audit was limited in several aspects. The retrospective nature of this review resulted in difficulty distilling between actual discussions not taking place versus poor documentation by the team. Seeking the viewpoints of caregivers as well as health care workers involved would have also given us more insight on the perceived benefits and concerns in the use of the CDP.

In response to the Neuberger review, the Leadership Alliance for the Care of Dying People has stated that the approach to end-of-life care should focus on five priority areas rather than the delivery of protocols or pathways.¹⁷ Physicians are encouraged to focus on these five priority areas:

1. The recognition of the dying patient and decisions made in accordance with the patient's needs and wishes, which should be reviewed regularly.
2. Sensitive communication with the patient and caregivers.
3. Involving the patient and caregivers in decisions about treatment and extent of care.
4. Respecting and meeting the needs of the caregivers of the patient.
5. Compassionate delivery of an individualized care plan including food and drink, symptom control, psychological, social, and spiritual support for the patient and caregivers.

Noticeably, these five areas appear similar to the goals of the LCP. To date, the benefits and harms of having a pathway in end-of-life care continue to be debated. Proponents of such a pathway suggest that the inappropriate execution of the pathway should not warrant the absolute withdrawal of such a pathway in the future.^{18,19} A care pathway for the dying may still have the potential to close the gap between differing levels of care between the hospice and hospital.^{8,20} Thus, some physicians suggest that future plans should be made to optimize the use of such a pathway, rather than replace it with another set of guidelines, which has not been proven effective either.¹⁹

From our audit we found that despite adopting a coordinated pathway for dying patients, documentation of important end-of-life conversations remain poor. While this may not reflect poor communication from clinicians affecting caregivers' perception of end-of-life care, the importance of systematic discussion and documentation cannot be over-emphasized. While an increased focus on education and research can support and allow optimal adoption and continual execution of end-of-life care based on these five priority areas, there needs to be a better way of encouraging documentation of important end-of-life care decisions and communication. Our study, though in a non-U.K. setting, highlights similar issues surrounding the LCP as seen in the wider palliative care community.²¹⁻²⁵

Conclusion

There was no documented compromise in medication safety, clinical monitoring, and provision of nutrition and hydration for patients on the CDP. However, communications with patients and family members about initiation of

opioids, use of opioids or sedatives, and withdrawal of artificial hydration were poorly recorded. Development of an alternative care tool with emphasis on guidelines encouraging systematic discussion and documentation of individualized end-of-life care plans should be considered.

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Author Disclosure Statement

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