**A historical narrative review of the international literature on the implementation of the Liverpool Care Pathway in countries outside the United Kingdom (2001-2019)**

**David Clark, Hamilton Inbadas and Jane Seymour**

**October 2020**

Extended data based on a historical narrative review of 95 outputs from 20 countries outside the United Kingdom, to be read in conjunction with:

*International transfer and translation of an end of life care intervention: the case of the Liverpool Care Pathway for the dying patient* by David Clark, Hamilton Inbadas and Jane Seymour.

NB: A full set of references appears at the end of the document in alphabetical order. Each reference also appears as a footnote at the point when it is first introduced.

**Purpose**

Whilst it is estimated that 80% of those who die could benefit from palliative care to relieve physical, mental, spiritual and social problems, there have been difficulties in identifying effective, evidence based end of life interventions that are scalable across jurisdictions and settings. The Liverpool Care Pathway (LCP) showed great potential as such an intervention when first developed in the United Kingdom (UK) from the late 1990s, and led to further interest and implementation in over 20 other countries. Its focus was on the relief of suffering in the last few days of life. Our purpose in this document is to investigate the published research and commentary concerning LCP in those settings beyond the UK, which adopted it in some way. We examine the evidence for effectiveness that was accumulated in these research studies, taking account of the 12 Versions of the LCP that were iterated in its lifetime in the UK, as well as the discontinuation of LCP in the original host country from 2014.

It should be clearly noted that we do not synthesise the evidence of the studies reviewed in this document. We offer some overall conclusions, but focus in the main on presenting the findings of these studies and commentaries in summary form, chronologically and by geography, as a type of extended annotated bibliography and a resource for further understanding and study. As we explain below, this document is a documentary source for our own analysis of the international spread of LCP. It may also serve this purpose for others who are interested in its international dissemination, or who wish to better understand how it was used in specific jurisdictions.

In the main results paper from our study, to which this report forms extended data, we use the literature review to assess the methods of implementation of the LCP and the extent to which its effectiveness was determined. We also use interviews with key stakeholders to gain insights into the elements, processes and dynamics that shaped the transfer and translation of the LCP from one location to another, across national boundaries. We then bring together the literature review and the interviews, in order to form an assessment of the wider issues involved in the transfer and translation of the LCP to other countries, and as its implications for the transfer of end of life care interventions from one setting to another, in particular internationally.

Using our analysis of one of the most significant *cause celèbres* in the field of modern palliative care, and building on our earlier research scrutiny of the rise and demise of the LCP in the British context, we seek to stimulate critical reflection on the risks and benefits of end of life care policy transfer across international boundaries in contexts where there are weaknesses in the original evidence base, where key actors may not fully attend to a duty of foresight or ‘responsible innovation’, and where mainly localised and often *ad hoc* studies create conflicting pictures of risks and benefits.

**Methods of the review**

A historical narrative literature review focusses on examining research through a period of time, often starting with the first occasion on which an issue, concept, theory, or phenomenon emerges in the literature, then tracing its evolution within the scholarship of a discipline[[1]](#endnote-1). In this case our concern is with research and commentary about the LCP, generated outside the UK, and relating to LCP use in non-UK settings.

Our inclusion criteria were: studies (and wider commentaries) on the use of the LCP in countries outside of the UK, including published articles, conference abstracts and presentations, reports and ‘grey literature’ in the period 2001-2019.

Our exclusion criteria were: studies (and wider commentaries) on the use of the LCP within the UK, including published articles, conference abstracts and presentations, reports and ‘grey literature’.

Two search methods were used, yielding an almost equal number of outputs.

1. A baseline English language PubMed ‘all text’ search for ‘Liverpool Care Pathway’ was conducted in May 2019. It generated 39/211 outputs which met the inclusion criteria. Further searches were conducted in January 2020, with the following results: CINHAL 5/22; PsychInfo 3/53; SCOPUS 2/252; Proquest 0/47. These searches, combined, identified 49 outputs in total.

2. Hand searching of this material for further relevant references, along with Google searches relating to the use of the LCP outside the UK and personal communication with other researchers, along with examples given to us from those we interviewed, together yielded a further 46 outputs. This process involved judicious use of Google translate as well as assistance from colleagues with particular linguistic skills (Mandarin, Japanese, Norwegian, German, Spanish). Some non-English outputs contained abstracts and summaries in English.

The total number of outputs contained in this review is therefore 95, covering 19 jurisdictions; in addition to which is the LCP textbook chapter which contains material on Slovenia, which is otherwise missing from the other published outputs.We realise of course that this will not be comprehensive and we welcome suggestions for further outputs that might be included in revised versions of the review. We are much in agreement with Greenhalgh and Peacock when they state:

Systematic review of complex evidence cannot rely solely on predefined, protocol driven search strategies, no matter how many databases are searched. Strategies that might seem less efficient (such as browsing library shelves, asking colleagues, pursuing references that look interesting, and simply being alert to serendipitous discovery) may have a better yield per hour spent and are likely to identify important sources that would otherwise be missed.[[2]](#endnote-2)

The review focussed chiefly on published work, mainly in peer reviewed professional and scientific journals but also included web-based documentary materials containing short reports, plus publically available abstracts and presentations from conferences. The whole body of this material was analysed chronologically and by jurisdiction of origin. In some instances, clusters of countries with shared language, cultural or geographic aspects, were grouped and presented together. We have used author-date and footnote references in the text and included a complete set of numbered references in alphabetical order, towards the end of the document. The end notes contain sources referred to in the text which are not reports on LCP in countries outside the UK.

**Results**

The second edition of the LCP handbook, published in 2011, contained a new final chapter, on international development.[[3]](#endnote-3) It gives insight into the principles that underpinned this work and some of the settings where it was taking place. It is the only extended statement, from the proponents themselves, about the international spread of the LCP.

The chapter begins by rehearsing the received-wisdom history of the modern hospice movement, its role in fostering the specialty of palliative care and the struggles of that speciality to establish an evidence base to underpin its work. It draws attention to areas where development has been slow and highlights the value of determining best practice for a well-defined group of patients over a well-defined period of time. The LCP is a vehicle for this. Whilst it acknowledges the challenges of LCP adoption in relation to local cultural norms, policies and procedures, and clinical governance and risk frameworks, it highlights the over-arching unifying factor – ‘the shared dedication and need for change to provide all of us with a dignified death’ (p.190).

From the year 2000 this led the LCP Central Team in Liverpool to work with colleagues from several countries to implement the use of the LCP. The work led to the creation of an LCP International Programme focussed, as in the UK itself, on four phases of activity: 1) Induction 2) Implementation 3) Dissemination and 4) Sustainability. In each case there are clear requirements and prescriptions for how the work should proceed. The orientation is generally towards a specific local organisation in which LCP is to be introduced. There is almost no reference to system change, ‘roll out’ or strategic plans for more extensive settings.

Induction requires ‘top down and bottom up’ approaches and a ‘major cultural shift in the relevant organisation. Registration with LCP Central is important, with attention to branding, intellectual property and copyright. A local steering group is essential to taking the project forward and establishing the aims of the programme – to empower ‘generic workers’, improve care with demonstrable outcomes, for the dying patient and relatives and to see care of the dying as part of the core business of the organisation, with its own quality markers. This in turn requires the endorsement of local translations by LCP Central and in accordance with established procedures. A successful programme will need a robust approach to education and training, which must be locally driven, but supported with materials from the Central team. Success will be more than mere numbers of usage, but must lead to changes in knowledge, skills, attitudes and confidence, as well as the physical environment and associated facilities. Research should be part of assessing this. There should be attention to governance and risk, and rigorous use of the core LCP document, with its goals of care unchanged. Careful documentation of ‘variance’ in achieving the goals is required, including examples where the goals were not deemed to be part of local practice.

Implementation into pilot sites should ideally follow an algorithm of ‘plan’, ‘do’. ‘study’, ‘act’ to foster continuous learning and some measure of whether improvement has occurred. Eighty percent of local staff should take part in an education programme about LCP before it is first introduced. Periodic status reports should be supplied to LCP Central.

Dissemination is key to successful implementation. Data from the first 20 uses of the LCP must be carefully stored, reviewed with the help of the Central team, and then shared. Dissemination should also involve attention to future research, learning and teaching plans, and possible management strategies for extending LCP beyond the pilot site.

Sustainability, in keeping with the local emphasis, is seen to occur when the LCP Continuous Quality Improvement Programme, duly agreed with LCP Central, is embedded across the local institution or organization, or perhaps the different setting of the ‘local health economy’. But the value of establishing a state, country, or national office for LCP, fully endorsed by LCP Central is also described- perhaps as the pinnacle of sustainability.

The chapter contains short text box descriptions of LCP experience in eight settings: Argentina, Slovenia, India, Norway, Italy, Switzerland-Germany-Austria, Sweden, the Netherlands and New Zealand – making 11 countries in total. Of these, no publications were identified in our review from Slovenia, though it is possible that some conference abstracts do exist.

In Slovenia, LCP was first introduced in 2007, in two teaching hospitals. In 2009 LCP was incorporated into a pilot programme in three regions, with encouraging initial results, but where the main challenges related to the very low levels of palliative care awareness among professionals and public alike, creating a major barrier to implementation.

The chapter notes that an international meeting of LCP enthusiasts was first established in 2004, with attendances from 20 countries.

Beyond the 11 countries described in the chapter we identified publications on LCP that met our inclusion criteria, from a further nine countries: Belgium, Ireland, Spain, Denmark (conference abstract only), Australia, Hong Kong, China, Japan and Singapore.

***Netherlands, Belgium***

The LCP first appeared beyond British shores in 2001, in a Dutch translation based on LCP Version 4 (Swart *et al*.,2003[[4]](#footnote-1); van Veluw et al 2004[[5]](#footnote-2)). It was an early initiative involving a ‘translated and slightly adapted’ LCP (Veerbeek *et al*.,2006[[6]](#footnote-3)) that was piloted in three Dutch palliative care settings. These comprised the palliative care unit of the department of medical oncology at the Erasmus MC-Daniel den Hoed Centre (November 2001) and the terminal care unit of nursing home Antonius IJsselmonde (January 2002), both in Rotterdam, plus Hospice Calando in Dirksland (April 2002). In total, 11 publications about the LCP appeared from Dutch researchers, mainly working in the same mixed group of care settings. Relevant studies relating to the LCP in Belgium did not appear until late in the cycle, and until after the Neuberger report and the decision to withdraw LCP in the UK, and led to four published papers.

In a paper on the Dutch pilot process (Swart *et al*.,2006)[[7]](#footnote-4) adaptation and translation processes are well described, now based on Version 6 of the LCP, using principles established by the European Organisation for Research and Treatment of Cancer (EORTC). Within these principles, the ‘forward translation’ (English to Dutch) was undertaken independently by two native Dutch speakers (a doctor and a nurse) and then a third person (a doctor) compared and reconciled the two versions. All three translators worked in palliative care. This version was then subjected to a process of ‘back translation’ when two native English speakers (a palliative care nurse and a professional translator) independently translated the provisional Dutch version back into English. These versions were then reconciled by a third person who had been involved with the original development of the LCP, and who verified that the goals of care had not been changed in the translation process. The Dutch version was then named ‘Zorgpad voor de Stervenfase-RotterdamZS-r(lcp)’, with the acronym added as a confirmation of its authenticity.

A similar level of rigour accompanied the pilot implementation in the university hospital, though the authors do not report on the implementation approach in the other two centres. At the hospital there were interviews with staff to evaluate their perceptions of the pathway. Regular meetings were held to review how the document was working and staff were surveyed on their views, one year after the pilot was completed. If the linguistic translation had been relatively straightforward, the conceptual one was not. There were issues around the meaning of ‘spiritual’ (now prompted by the phrase ‘important values’). ‘Secretion’ was understood in Dutch only as a verb and not as a noun. Adjustments were also required to align the document with procedural practices specific to the Dutch healthcare context, for example concerning information-giving after death. There was an over-riding concern to ensure that achievement of any specific goal of the pathway was correctly understood and recorded.

The follow up hospital questionnaire was administered to a total of 20 nurses and 15 doctors. Twenty-two people responded in total (63%). The authors reported the item responses in percentage terms and found 72% considered the LCP helpful in structuring patient care and 55% felt the same was true for family and proxy carers. A large majority considered the LCP was helpful in anticipating problems (82%), facilitating multi-disciplinary communication (73%) and contributing to better care in the last days and hours of life. In reporting on this foray into a non-British context, the three Dutch and two English authors could end on an optimistic note: ‘In this way, the potential for promoting optimal care of the dying and comparing outcomes across geographical borders is promoted, and the opportunity for continuous quality improvement for care of the dying in an international sense is a tangible prospect’ (p.159).

A further study, from the palliative care unit of the department of medical oncology at the Erasmus MC-Daniel den Hoed Centre drilled down into how the LCP was working in the Dutch context, using an anonymous retrospective audit methodology[[8]](#footnote-5) (Veerbeek *et al*.,2006). Now the aim was to assess experience in the new setting and compare it with a matched group of patients in Liverpool, cared for using the LCP in a free-standing hospice environment. The choice of contrasting settings (hospital, non-hospital) is not explained, but there were similar results across a number of important dimensions, with most care goals being met for the large majority of patients. LCP was activated however in only 50% of those who died in Rotterdam, compared to 85% in Liverpool.

The Dutch group of LCP researchers expanded in number and in 2008 two further papers appeared, based on data from a multi-centre study that included hospital, nursing home and home care services – albeit where all the services had a commitment to high quality palliative care provision. Both studies had an interventional orientation. One study (Veerbeek 2008a)[[9]](#footnote-6) compared the level of documentation, symptom burden and aspects of communication before and after the introduction of LCP in 220 patients. It found ‘modest but evident’ improvement in the amount of documentation of the patient’s dying phase post-implementation, a ‘small but significant’ reduction in symptom burden, but no difference in relatives’ reported views about communication. Nevertheless, the authors found this to be ‘a remarkable result of using a care pathway that mainly introduces a structured registration method, rather than a new intervention or therapy’.

The other study (Veerbeek *et al*.,2008b)[[10]](#footnote-7) contrasted bereaved relatives’ retrospective evaluation of communication and their experience of bereavement. Here the settings included hospitals, nursing homes, residential and home care. A group of 220 relatives furnished the baseline perspective, prior to the introduction of LCP. A group of 255 relatives provided data in a period of one year, post-implementation. The research instrument was a self-completed questionnaire and the two groups of respondents were broadly comparable demographically and in relation to the patients on whom they reported. The relatives evaluated the aspects of communication similarly in both groups, with an overall positive profile of scores. On the Leiden Detachment Scale, bereavement item scores were significantly lower, post-implementation. The authors again reached an overall positive conclusion: ‘The evaluation of the relatives did not reveal substantial changes in communication after the introduction of the LCP, but this does not rule out the possibility that decreased bereavement [sic] is related to improved communication in more subtle ways’ (Veerbeek *et al*.,2008a: 209).

A 2008 paper made reference to the Dutch version of the LCP in an analysis of the concerns of relatives relating to the use of continuous palliative sedation (van Dooren et al 2009)[[11]](#footnote-8) that was conducted at the palliative care unit of the Erasmus MC-Daniel den Hoed Centre, where LCP had been first introduced in 2001. The retrospective study made use of the first two parts of the LCP documentation (current situation and 4 and 12 hour monitoring of the patient’s problems and the concerns of the relatives). The first part allowed an assessment of with whom sedation had been discussed and the second part allowed the spontaneous concerns of relatives about sedation to be discussed. In this way the records of 45 patients who had died under continuous palliative sedation between October 2001 and October 2004, were analysed. The expressed concerns were about: the aim of palliative sedation, the wellbeing of the patient, and the wellbeing of family members. Continuous palliative sedation requires constant monitoring and assessment of the patient and also the concerns and needs of the relatives. The authors considered that LCP provided an excellent platform for this to occur, especially so when the period of sedation is long – albeit, contradicting the stated LCP focus on the last 48 hours of life.

Using the same locations and datasets as the Veerbeek research, a further Rotterdam study focussed specifically on end of life decision making relating to cancer patients (Van der Heide *et al*.,2010)[[12]](#footnote-9). This time physicians and relatives of 311 deceased patients completed questionnaires, with the LCP introduced half way through the data collection period (November 2003 to February 2006). The intensity of treatment in the last three months of life was greater among those who died in hospital and nursing home, compared to those who died at home. The authors present a detailed analysis of the forms of and variations in treatment given in the last three months and last three days of life, but much of this appears independent of the presence or absence of the LCP. The study did reveal a decrease post LCP implementation (from 40% to 28%) in the use of ‘potentially life-shortening drugs’ (mainly opioids) to relieve symptoms and increased the level of involvement of family members in the decision to use these drugs. The authors concluded this was a significant impact of the LCP.

A study by Lokker *et al*.,(2012)[[13]](#footnote-10) made explicit secondary use of these Dutch studies. Now the focus shifted to awareness of dying in 475 patients, and one dimension of this concerned the use of the LCP, which had occurred in one third of the patients. Using perspectives from medical records, nurses and relatives, up to 60% of patients were aware of their dying in the last three days of life. There were some variations by setting, with patients at home most aware. Relatives reported no differences in patients’ awareness post LCP introduction. But nurses reported an increase of 54% to 62% in awareness and the medical records reported awareness levels as 38% before LCP and 62% afterwards. Unfortunately, ‘agreement between the three groups did not increase accordingly’ and alignment was ‘not optimal’ (Lokker *et al*.,2012:1232).

By 2012, 119 institutions, including 35 nursing homes were working with the LCP in the Netherlands. Geijteman, Dekkers and Zuylen (2013)[[14]](#footnote-11) observe:

The Liverpool Care Pathway for the dying patient (LCP) is a quality instrument that contributes to the quality of care of dying patients. The pathway provides care goals for structuring the multidisciplinary care of patients who are in the last hours or days of life and their families. The LCP should be used as soon as the multidisciplinary team recognises that the patient's death within hours or days is imminent. Research has shown that using the pathway contributes to better symptom control in the patient and improved coping with grief by relatives, among other things. At this time, the Dutch version of the LCP ('Zorgpad Stervensfase') has been implemented in over 100 healthcare institutions in the Netherlands. A digital version of the LCP is under construction, which makes it possible to integrate it in electronic patient files. This digital version will also stimulate quality assurance and scientific research.

A paper by Raijmakers *et al*. (2015)[[15]](#footnote-12) acknowledges the withdrawal of the LCP in England and the rest of the UK. It also gives a detailed account of the wider ‘roll out’ of LCP in the Netherlands. This was built on the perceived positive research results in the pre and post implementation Dutch studies. Critical to the scaling up was endorsement of the LCP by the Comprehensive Cancer Centre of the Netherlands (CCCN). This led to ‘roll out’ in 66 regional palliative care networks – groups covering specific geographical areas and committed to ‘intensive collaboration and synchronisation’ (Raijmakers *et al*.,2015:260). This had involved advocacy for the LCP, training programmes of two days’ duration for project leaders, and support on implementation through a helpdesk. At the time of writing of the Raijmakers paper, (probably 2014) the Dutch version of the LCP was in use in over 100 healthcare organisations in the Netherlands.

Raijmakers *et al.* note that implementation research to bridge the gap between evidence and practice in palliative care is not widespread. They decided to address this through a study of LCP implementation by interviewing CCCN consultants involved in LCP training in each of its eight regions. These people were asked to nominate organisational examples of successful implementation, 10 of these led to follow on interviews with project leaders from 25 examples given. Perspectives from one palliative care networks from each of the CCCN regions were also obtained. All interviewees in the study were invited to take part in a summative focus group by way of conclusion.

The final identified paper in the Dutch series appeared in 2018, at the end of the inclusion period. Its focus was on the use of the LCP for people with dementia in nursing homes (Dekker, Gysels and van der Steen, 2018)[[16]](#footnote-13). Based on data collected in 2015, it was the first LCP study to appear from the Netherlands subsequent to the publication of the Neuberger report. It also benefitted from an incorporation of some of the debates which ensued after the publication of the Neuberger report. For the first time in the Dutch context, the value of the LCP was called into question, albeit not recommending its discontinuation.

The starting point of the study was the lack of evidence for the effectiveness of end of life pathways in relieving symptoms, and the absence of studies involving people with dementia. The authors note that in 2017, and in response to the criticisms of Neuberger, the two main institutions involved in the promotion of the LCP in the Netherlands (the Integral Cancer Centre of the Netherlands and the Erasmus Medical Centre in Rotterdam) issued a statement declaring that the criticisms of Neuberger, were not recognisable in the Dutch use of the LCP. But they note the lack of evidence to support this claim, observing ‘a considerable gap in our knowledge about the ways in which the LCP has been functioning and how it has been experienced by caregivers and family members’ (p480). The study used an ethnographic design involving four months of fieldwork in 11 dementia units of a rural nursing home in the south of the Netherlands, where each unit had eight residents, almost all with dementia. It also included 25 interviews with members of the medical and nursing staff. It identified four key themes: communication at the end of life, providing structure, complexity of documentation, and limitations in practical use. The idea of holding all information about a resident in a single document was considered valuable, but at the same time caused duplication of work. The LCP was generally agreed to be too complex and ill-fitted to the nursing home context. Nursing staff were more likely to respond to the care needs of the moment than to the checklist. Nevertheless, the LCP did give staff a sense of satisfaction that everything had been done to provide comfort to dying residents. The LCP as a key marker of the dying phase and a tool for shared recognition of this appeared to be valued as something ‘that offers a sense of certainty amid the uncertain trajectory of dying with dementia’ (p484). But this uncertain trajectory also makes it hard to know when to begin the LCP in such contexts, something which can be exacerbated when the LCP is stopped because a resident improves. The authors concluded that the complexity of end of life care for people with dementia is not reducible to a care pathway: ‘If nursing staff wish to use the LCP, then its usability in everyday caregiving should be enhanced’ (p484).

Verhofstede and colleagues (2015a)[[17]](#footnote-14) broke new ground by addressing the effects of the LCP in older patients and at the same time sought to develop a new programme of care for older patients dying in acute geriatric wards in the Belgian context. Their work began before the publication of the Neuberger review of the LCP, but in some ways foreshadowed its outcomes. They began by conducting an overview of LCP programmes in the UK, Netherlands and Italy. This led to the identification of three common elements: the LCP document (and here the authors identify the substantive changes made in the translation process from the relevant English language version into Dutch); the supporting documentation; and the implementation guide. Then a literature review of successful LCP implementation strategies revealed five key factors: the importance of a dedicated training facilitator; the provision of initial and ongoing training; the organization of an audit and feedback opportunities; a central co-ordinating office to support local LCP facilitators; funding and available staff time. This led to an analysis of the concerns raised about the use of the LCP in the UK, specifically 1) improper or poor implementation leading to inadequate care 2) unacceptable communication with patients and carers 3) the ‘tick box’ orientation 4) the use of the term ‘pathway’. The understanding developed from these actions was then used to model a care programme for the last days of life among older hospital patients. This comprised a care guide, supporting documentation, and an implementation guide. The care guide involved translating LCP Version 12 into Flemish and then comparing it with the Dutch translation. ‘Liverpool Care Pathway’ became ‘Care Guide for the Last Days of Life’, thereby dropping the protocol orientation of ‘pathway’. Adaptations were made to the care goals, with older hospital patients as the focus. In addition, the Care Guide was made shorter than the LCP. Colour highlights were also introduced to improve readability of the care goals.

The authors located these elements of activity in stages 0-1 of the MRC Framework for the design and implementation of a complex intervention[[18]](#endnote-4). The paper concluded with the intention to proceed to phase 2 – to evaluate the feasibility of the implementation.

The next step was to develop and publish the protocol for the intervention study (Verhofstede *et al*.,2015b)[[19]](#footnote-15). The design was that of a cluster randomised control trial, to be conducted in 10 hospitals in the Flanders region of Belgium, each with one or more acute geriatric units. In year one a baseline assessment would take place of usual care, based on completion of a questionnaire by the relevant physicians, nurse and family member concerning each patient who died on the unit. Thereafter the hospitals would be randomised to receive the intervention, or not. This cluster randomisation, operationalised at the ward level, was thought likely to reduce the potential for contamination, since the comparisons would be between hospitals with and without the intervention. Subsequently in the intervention hospitals, the new Care Programme for the Last Days of Life would be implemented over a period of six months. A post-intervention assessment would be performed immediately after the baseline assessment in the control hospitals and after the implementation period in the intervention hospitals. The primary outcomes to be measured were: symptom burden and frequency among patients in the last 48 hours of life.

A process evaluation was also proposed to assess the quality of the implementation of the new programme, to which the Belgian researchers then turned their attention (Verhofstede *et al*., 2016)[[20]](#footnote-16). Their aim was (1) to determine the feasibility of implementing the Care Programme for the Last Days of Life in the acute geriatric hospital setting and (2) to explore health care professionals’ perceptions of the effects of the Care Programme on end-of-life care. They undertook a phase 2 mixed methods study, according with the MRC framework, in the acute geriatric ward of Ghent University Hospital between 1 April and 30 September 2013. The approach included observation, interviews and the use of a quantitative tool, which measured the success of implementation using several indicators, such as whether a steering group was formed, whether and how many of the health care staff were informed and trained, and how many patients were cared for according to the Care Guide for the Last Days of Life. The process evaluation tool showed that implementing the Care Programme for the Last Days of Life in the geriatric ward was successful and thus feasible; a steering group was formed consisting of two facilitators, health care staff of the geriatric ward were trained in using the Care Guide for the Last Days of Life which was subsequently introduced onto the ward and approximately 57 % of all dying patients were cared for in accordance with it. Nurses and physicians experienced the Guide as improving the overall documentation of care, improving communication among health care staff and between health care staff and patient/family, and improving the quality of end-of-life care. Barriers to successful implementation of the Care Programme included difficulties with the content of the documents used within the Programme and the low participation rate of physicians in the training sessions and audits. The results were encouraging and suggested feasibility and favourable effects. Based on the identified barriers during the implementation process, the authors were able to make recommendations for future implementation and to further refine the Programme before its implementation in a phase 3 cluster randomized controlled trial for the evaluation of its effectiveness.

The results of the trial were published in *The Lancet* in 2017 (Beernhaert *et al*.,2017)[[21]](#footnote-17). The authors included online a 22 page supplementary appendix to the published paper. The Care Programme for the Last Days of Life now had an acronym – CAREFul. The study results appeared three years after a similar trial in Italy (see below) led by Costantini, who was also a collaborator and co-author on the Belgian project. On publication of their results, the Belgian authors would note that in a Cochrane review of end of life pathways, updated in 2015, the Italian study had been judged to be statistically under-powered and at high risk of bias, mainly because patients were not masked to treatment allocation and there were high levels of attrition. The Belgian study avoided some of these weaknesses, though again the nurses knew about and took part in the CAREFul intervention with the patients for whom they gave ratings. Nevertheless, the results still seemed equivocal. There were 118 patients in the control group and 164 in the CAREFul group who were eligible for assessment. Of these 92% and 80% respectively were assessed by nurses; but only 19% and 29% respectively were assessed by family members.

Nurse assessed scores were significantly increased by CAREFul, but there were no significant differences between the intervention and control group in family members’ ratings. They also found a negative effect on satisfaction with care among family members, described as an ‘a serious concern that needs to be investigated further’. The authors concluded that their results ‘suggest’ implementation of CAREFul - an intervention based on the LCP - ‘might’ improve care during the last days of life for patients in acute geriatric wards. In an accompanying editorial however, Aslakson and Lorenz (2017)[[22]](#endnote-5) in a commentary on the paper, praise the ambition of the study but home in on the involvement of nurses as both the unmasked study interventionists and the study assessors, creating a high risk of unconscious bias leading to more favourable reported outcomes. They conclude that the results of the CAREFul study are welcome ‘but critical questions remain unanswered about the study itself and the contextual and implementation issues that the experience with LCP revealed’ (p98).

***Ireland***

Use of the LCP in Ireland was explored by the Hospice Friendly Hospitals programme, which got underway in 2007 and adopted an all-systems approach to improving end of life care in acute and community hospital settings. The programme saw LCP and other related pathways as useful resources for hospital end of life care improvement, but was generally sceptical of LCP as something that might raise an educational need that could not be met, only as effective as those completing it, as something that could lead to misconceptions, was too basic and was predicated on largely poor evidence of effectiveness.[[23]](#endnote-6)

Accordingly, no studies of LCP or similar pathway implementation were identified for Ireland, but one case note review, given ethics approval by the Beaumont Hospital, Dublin, focussed on dementia patients during acute hospital admission, and used LCP as a standards benchmark for quality palliative care in a comparison with patients who did not have dementia (Afzal *et al.,*2009)[[24]](#footnote-18). Data were collected between January and June 2008 on a total of 50 patients, a condensed version of the LCP was used to focus on nine aspects of good quality care – rationalization of medicine, discontinuation of unnecessary invasive interventions, prescription of palliative drugs, referral to specialist palliative care, documentation of resuscitation decisions, communication with primary care, supporting caregivers in bereavement, and assessment of religious and spiritual needs. The researchers found that whilst both groups of patients had similar levels of invasive treatment, those with dementia were less likely to be referred to palliative care, were prescribed fewer palliative medications, and had less involvement of relatives in dialogue about treatment. The authors drew no conclusion about the value of LCP implementation, in a study where it was used simply as part of the research design.

***Switzerland, Germany, Austria***

LCP enthusiasts from these three countries formed a group called DACH (Deutschland, Austria, Confoederatio Helvetica) to foster their shared interests. In these countries, which are described together in the LCP handbook chapter of 2011, LCP was regarded as a tool for fundamental change of culture, and especially for inter-professional collaboration in hospital and other health care settings as well as a platform for demonstrating that palliative care has more to offer than empathy and listening alone, and is relevant in the context of difficult clinical situations. We identified 12 relevant outputs from this group of countries, one of which was a journalistic commentary.

The first members of DACH to translate the LCP into German was a team at the Cantonal Hospital in St Gallen, Switzerland, in 2005 (Grossenbacher-Gschwend and Eychmüller 2007)[[25]](#footnote-19). Their starting point was that the dying phase challenges professional care-givers in ways that often exceed their skill sets. In this context, the hospital management decided to prioritize competencies in care at the end of life. The approach linked the introduction of a regular series of ‘round table’ discussions (for individual patients, their relatives and the treating team) to the adoption of the LCP in an experimental pilot phase. The five months of the pilot began in January 2006 across five wards (internal medicine, nephrology, surgery, palliative oncology and geriatrics). Prior to the launch, structured, one-hour information events were held for a multi-professional target audience (mainly ward teams). During the pilot phase, feedback sessions and a permanently available support service were also offered. The project also made available a number of information leaflets that were considered to meet the ‘gold standard’ of LCP in England: general project information, a brochure on the detailed project objectives for professionals, information about the dying process for the relatives, and a booklet on forms of support and aspects of bereavement and the mourning phase.

A pre- and post- pilot intervention questionnaire was administered to hospital staff on their perceptions of the introduction of the LCP at the Cantonal Hospital. General improvements were found on a number of dimensions of care: cases of severely ill patients where the decision is made to work together in a team (52%/80%); cases where the patient is usually involved in the decision-making process (63%/86%); cases where reserve remedies (eg for pain, respiratory distress) are adequately prescribed (74%/93%); cases where patients are assessed for or asked about their awareness of impending death (54%/59%); cases where those who treated the patient previously (general practitioner, hospital or nursing home staff) are informed of the critical condition (34%/59%). Just 16 patients were entered onto the LCP during the pilot phase. In comparison to the situation before the pilot, 11 LCP goals were achieved more frequently, with the most significant improvement in the prescription of reserve medication for the four most important symptoms: pain, breathlessness/rattling breathing, nausea and confusion.

The LCP pilot uncovered some wider questions about the value of the round table as a forum for dealing with conflicting views about care goals. These meetings required experienced professionals to lead them. There were also questions about recognising when a person is dying. It was an issue that led to discussion and disagreements, but the ability to engage with it was seen as the marker of a quality project, through joint exchange around contentious issues. Although the pilot revealed the need for considerable support in completing the LCP documentation, the authors reported tangible benefits across the pilot stations: faster switching to comfort therapy; greater recognition of the dying process with a more shared language between staff; fewer oversights, due to a more structured procedure; patients and their relatives receiving more comprehensive care; and despite doctors’ scepticism about the value of time spent in the round table meetings, the meetings themselves were calmer. It was enough to encourage experimentation with LCP elsewhere in the German speaking world, but as late as 2012, a reflective piece by a Swiss internist on experiences of palliative care concluded that, among a list of shortcomings, there was still a lack of standardization across settings of care in the final phase of terminal care, according to the guidelines contained in the LCP (Gössi 2012)[[26]](#footnote-20).

In Germany, the Ev Hospital in Oldenburg was the first to use the LCP. The setting was a specialist palliative care unit. From May 2007, the LCP was deployed over a period of five months, using the version that had been prepared for use in St Gallen under the leadership of Dr Steffen Eychmüller. In a paper which includes Eychmüller as a co-author, Simon *et al.* (2009)[[27]](#footnote-21) describe the results of a focus group with 10 members of staff on the ward, conducted after 24 patients had been cared for using the LCP. During this period, a total of 36 patients died in the palliative care unit; the 12 who were not placed on the pathway all died suddenly. All members of the palliative care team were invited to participate in the focus group (10 nurses, 3 doctors, a caregiver, a social worker, a physiotherapist, an art therapist) but just 7 nurses and the 3 doctors took part. All the participants had experience (the average was 7) of looking after patients on the LCP.

The results of the discussion are described at length in the paper. Overall, the participants were extremely positive about LCP. Echoing the discussions in St Gallen, the timing of when to start LCP (‘diagnosing dying’) was described by the focus group participants as an intense and important process:

"... this moment when we decide to start with the LCP, now that is somehow a very special one and reconsidering it consciously, is something I experience as very positive." (Nurse 5)

After this decision is made, and based on open exchange in the team, all further measures could then be coordinated together, for example the discontinuation of investigations or therapies that are stressful and unnecessary for a dying person; the use of on-demand medication for common symptoms; or the support of relatives.

Participants reported unanimously that the LCP enhanced communication between nurses and physicians, which in turn encouraged patient interaction and family caregiving. The structure of the LCP provided reassurance (especially around shift hand-over) that everything was being thought through and essential questions clarified. The flowcharts for drug-related symptom control attached to the LCP were found especially helpful for younger doctors with less experience in the field of dying. Likewise, the schematic structure of the LCP was a positive attribute, as the objectives to be achieved were well explained. Practical hints, such as informing the family doctor about the patient's situation were also described as helpful and as something that could often be forgotten in daily practice.

At the same time, there were some concerns that ‘dying people would be ticked off’ (Doctor 3) and that individualised care would be threatened. Working with the LCP was initially considered more time-consuming but despite that, the staff felt better, because ‘because everything had been thought of and you were not just drifting’ (Nurse 4). Importantly, the participants also felt that the LCP was well-suited for staff on wards that are less likely to care for dying patients, as it provides a checklist to think about everything in this situation, particularly if back-up was also available from a specialist team: ‘The LCP provides an opportunity to ensure a certain basic care for the dying’ (Physician 1).

The authors of the Oldenburg study concluded that the LCP is a helpful and pragmatic tool for implementing palliative care in everyday clinical practice, but must always be supplemented and accompanied by qualitative guidance and palliative care training. There were however some limitations to the study, noted by the authors. First, only one focus group was conducted, with just 10 professionals, which could limit the scope of the results, albeit most of the team took part. Second, the LCP was implemented in a palliative care unit, though the target was the general ward of a hospital. Third, the study provided only the impressions of the health professionals involved in the pilot, and did not provide evidence of the measured effects of implementation.

In the same year a paper appeared on the use of LCP in German nursing homes (Müller, Pfisterer and Oster, 2009)[[28]](#footnote-22) The authors agreed with Simon and colleagues on the need to improve the accompanying care of patients at the end of life and highlighted some of the nursing home challenges here, such as last minute transfer to hospital shortly before death, and the difficulties in the wider interface with primary care. The main goal of their project, which originated with the Bethanien Hospital Heidelberg, Geriatric Center, and involved two nursing homes (in the Heidelberg area and Southern Hesse area) was to evaluate LCP as an option for nursing homes. This included training nurses (in the homes) and GPs (in the community) in the handling of the guidelines and structures of LCP, along with its protocols for symptom control. This work also drew on the support of local palliative care teams and had a strong focus on interdisciplinary procedural rules that operate across institutions (reliable agreements on medication and on application forms, the question of who communicates with whom, unified rules for informing primary care physicians outside the practice times, and so on). But whilst the authors report that the preliminary work on the intervention was largely completed (translation of LCP and adaptation to nursing home context, information events, and facility-related discussion of the statistical evaluation of the basic data on the documented care of the dying), without external financial support there was some doubt about whether the work would be taken forward. No subsequent reports of this particular initiative were identified in our review.

Of note, around the time of publication of the Oldenburg study, in 2009, the German journalist Florian Rötzer (2009) [[29]](#footnote-23), wrote a critical article for *Heise Online* about the LCP, entitled ‘Sentenced to death by palliative care? Physicians warn of a guideline for the care of dying patients’. Rötzer could see the value of clinical guidelines for end of life care. These would avoid acting arbitrarily or criminally*,* provide security to medical staff and advice on what to look for while helping the dying to leave life in a dignified and pain-free way’*.* But taking his cue from controversies emerging in the UK, he argued that the LCP also has the potential to be dangerous in a context where the matter of diagnosing dying can be imprecise. This could mean nothing short of the potential for a ‘national crisis’ in which relatives witness the discontinuation of treatment, apparently driven by economic expediency.

It was then six years before further work was published on the use of the LCP in Germany, but in the interim a textbook chapter by Voltz, Nübling and Lorenzl (2013)[[30]](#footnote-24) appeared on care of the dying for neurologic patients, which set out the rationale, development and perceived benefits of LCP and asserted that whilst LCP had been withdrawn that year in the UK, it remained a good model for structured end of life care. The chapter also referred to 20 countries where LCP was in use, and noted the existence of a national implementation office in New Zealand.

Studies published in 2015 and 2017 again reported on LCP implementation in hospital palliative care units in Germany. By now however, the LCP had been placed under the scrutiny of the Neuberger review and was subsequently withdrawn in the UK, and so the papers took this into account in their framing and focus.

Schultz and colleagues (2015)[[31]](#footnote-25) addressed the contention that the LCP might be a self-fulfilling intervention, which by the act of diagnosing dying, could serve to hasten death. The study was again conducted with patients in the specialist palliative care unit of the University Hospital, Düsseldorf. The authors argued that researching in a specialist setting integrated care pathways that are intended for use by generalists has merit, since it can demonstrate their value even when ‘gold standard’ care is already being provided. Between January 2013 and December 2014 159 patients were cared for on the LCP; of these 15 (9.4%) were discontinued from it and 9 re-entered it at a later stage. Median survival time among the 15 was 318 hours, compared to 22 hours among those who remained on the pathway. The authors claimed this to be the first study of its kind and that its outcome had a wider relevance – demonstrating that some 10% of patients diagnosed as imminently dying will improve in condition and go on living. It highlighted the still inexact science of such prognostication. They argued that diagnosing dying and using an integrated pathway like the LCP does not irrevocably ‘result in a one-way route to death’. They concluded that ‘informed and correct application of the LCP is a useful means of good care for the dying’. The assertion that there was ‘no evidence of harm’ resulting from the use of the LCP was a late arrival in the criteria for its evaluation.

The same Düsseldorf cohort of 159 patients was the focus of a paper by Schlieper *et al*.,(2017)[[32]](#footnote-26) which begins by acknowledging that weak infrastructure and poor implementation under-pinned the withdrawal of the LCP in the UK. It implies that the paper-based system used in the UK may have been a factor in inhibiting implementation and certainly in restricting sample size in evaluation studies, where manual data entry onto computer systems was required. The paper therefore focuses on the feasibility of an electronic, rather than paper-based, system for the LCP and describes the technical procedures involved in computerising LCP version 12, which had already been translated into German in a booklet of 16 pages. The software was then integrated into the hospital computerised record system and assessed by four palliative care specialists.

The authors emphasise that great attention was paid to ensuring the electronic version was an exact replica of the paper-based document, and was therefore consistent with the international use of LCP. Data collection for the study commenced two months after the introduction of the electronic record, to ensure all staff were familiar with it and data were analysed concerning 159 patients who had been placed on the LCP between January 2013 and December 2014. In the same period 382 patients were cared for in the specialist palliative care unit, making the uptake of LCP 67%. This figure was considered high by the authors, as was the quality of documentary completion. Information on ‘care after death’ was less complete than other sections and the authors recommended that by using an electronic system it would be possible to pull in some relevant data from elsewhere on the hospital system – suggesting an improvement to the LCP document. Overall, the electronic version of LCP was considered a distinct improvement on the paper-based system. The electronic version proved feasible and efficient. It had a high uptake and a high level of recorded items. Integration with the existing hospital record system also made for better archiving and data retrieval for audit and research purposes.

Meanwhile, commentary on LCP emerged from Austria in 2013 in the form of a published undergraduate dissertation in advanced nursing practice, by Zinner (2013)[[33]](#footnote-27). Her focus was on how the LCP can be implemented in hospitals in the German-speaking area and how the quality of life of the dying can be preserved or improved by using the LCP. The method of study was systematic literature review. There were just two results from Austria – one an empirical study of nurses’ knowledge of pathways in the context of ethical aspects of treatment for life prolongation (Ruppert, Heindl, and Kozon 2010)[[34]](#footnote-28), and the other a project description from Graz (Bitsche *et* al., 2009/10)[[35]](#footnote-29) which described the implementation of an adapted form of the LCP. In addition, a nursing textbook chapter on the LCP was identified by Zinner in which Müller (2011)[[36]](#footnote-30) describes LCP version 11 as a well-functioning, multidisciplinary procedure and a very useful tool in caring for the dying. Addressing repeatedly voiced fears that guidelines for care at the end of life run the risk of ‘standardising’ dying, Müller asserts that any guideline or tool can only be as good as its users (Müller, 2011, p. 102, quoted in Zinner 2013).

***Spain, Argentina***

Colleagues in Spain and Argentina collaborated with each other on their interest in implementing the LCP into local services, resulting in four outputs. The entry on Argentina in the LCP handbook chapter of 2011 is the most explicit in emphasising the translation challenges of using LCP in the Latin American context, whilst keeping the intervention ‘pure; and true to its aims’. The challenges included: human resources, available drugs and routes of administration, and cultural perspectives in the care of the dying.

The first paper on LCP to emerge from Spain came from a study conducted in an independent hospice in Malaga, run by the Cudeca Foundation. Although not published until 2012, the article reported on work undertaken in 2007-8, when the objective had been to translate Version 11 (’hospice’) of the LCP for use in the Spanish palliative care centre, thereby making a ‘transcultural’ adaptation of the document. (Hodgson *et al*., 2013)[[37]](#footnote-31). Working with the Marie Curie Palliative Care Institute in Liverpool (MCPCIL) to achieve accreditation as an LCP user, a baseline review of 20 deceased patients at Cudeca was conducted using the English version of the LCP, prior to embarking on a translation of the document into Spanish, which was made using the established EORTC procedures. The translation was approved by MCPCIL in January 2009 and once in use, a prospective study was made of 20 patients who had been placed on the pathway, in the Foundation’s inpatient unit. The authors reported improvements in relation to 11 of the 18 LCP objectives and concluded optimistically that LCP resulted in greater effectiveness and more efficient use of resources. LCP meant that nothing is left to chance and at the same time it facilitated an agile and fast response to the needs of the moment.

Further information on the use of LCP in the Cudeca palliative care centre is contained in an undated poster presentation[[38]](#footnote-32), now based on Version 12. Here data were presented on 112 patients who were placed on the LCP at the centre during 2009 and 2010. The average length of time on the pathway was 41.13 hours, and for 105 (93.8%) of patients, records were maintained based on four hourly assessments. There was a doubling of information about the patient on the LCP documentation compared to that placed in the standard clinical record. The authors concluded there was a need to improve the documentation of patients from the point of admission to the centre, and to assess more formally whether and to what extent care objectives were being met. Use of the LCP also highlighted the need to improve the recording of interventions after death. At the same time methods to avoid duplication of record keeping needed to be established.

Although the Cudeca study made no claims for a more widespread adoption of the LCP and was confined to a single palliative care unit, colleagues in Argentina and Spain did work together on the use of LCP in other palliative care services in the two countries Tripodoro 2010)[[39]](#footnote-33). The goal here was to describe the LCP translation and implementation processes and the initial piloting with 60 consecutive patients in two hospitals and one palliative home care setting and then to explore the subjective perceptions of health professionals before and after the introduction of LCP ‘in a Latin American cultural context’ (Tripodoro 2013:2)[[40]](#footnote-34). Its focus was on the meanings assigned by professionals to the care of the dying, and on communication, teamwork, documentation, and particular attitudes. Here, LCP (Version 12) had been re-named, as in the Netherlands, but now with a much more culturally specific acronym: PAMPA (Program Asistencial Multidisciplinario Pallium). The study had two components. The first comprised a focussed ethnography within a hospital based palliative care team that had started training in PAMPA. The second comprised a questionnaire survey about professionals’ views on the implementation of PAMPA in Argentina (n=112) and Spain (n=23). The ethnography revealed favourable expectations about the of the value of LCP, doubts and fears concerning its applicability, and an acknowledgment of the role of intuition in end of life interventions. The survey respondents in both countries demonstrated high agreement on the choice of quality of care indicators (73.7% in Argentina, 91.4% in Spain), despite the fact that neither country had a national plan for palliative care.

***Australia, New Zealand***

Interest in LCP in Australia and New Zealand was evident early in the cycle, from 2007 onwards and led to 15 outputs.

The earliest published research on the use of LCP in Australia took place in a network of four hospitals, three hospices and one nursing home in the state of Queensland (Hardy *et al.,* 2007)[[41]](#footnote-35). No dates are reported for the period of data collection, but notes of 20 consecutive patients who had died in each of the institutions were reviewed against the 18 goals that made up the LCP gold standard of care. Each audit was carried out according to LCP protocols, using its standard baseline pro-forma. The work was registered with and supported by the LCP project team in Liverpool.

Data was obtained for 159 patients (88 men, 71 women) with a median age of 71. The majority of patients (76%) died from malignant disease. The results showed striking variation between institutions in the quality of end of life care delivered. Several areas for improvement were identified, including those goals relating to communication, resuscitation orders and care after death. Although the authors did not report any subsequent adoption of the LCP, they did recommend that use of end of life pathways be considered as a method for improving institutional care of the dying in Australia. At the same time, they noted that the British-designed audit had not been altered in any way to fit with the Australian context and indicated that aspects of it might not translate to other places. The paper concluded that, with suitable local modification, care pathways for the dying represented a way forward to improved care and proposed a network approach to implementation across institutions, but no follow on implementation studies were identified in the literature.

Two years later Jackson, Mooney and Campbell (2009)[[42]](#footnote-36) picked up on the point made by the earlier paper, describing the development and implementation of a Pathway for Improving Care of the Dying (PICD) in general medical wards. Here a multi-disciplinary team from Southern Health in the state of Victoria ‘elected to modify the LCP to reflect Australian and in particular local conditions, practices and medication availability’ (Jackson, Mooney and Campbell, 2009:696). The PCID protocol included five domains in support of a ‘good death’: patient comfort measures; communication with family carers and healthcare workers; support with pyscho-social, religious and cultural issues; written information; and care after death. For audit purposes the PCID was broken down into 20 indicators. A pilot study in October-November 2007 gauged acceptance of the PCID in four general medical wards of the Monash Medical Centre. The pilot included an educational package for staff followed by an audit of 20 patients (from 28 anticipated deaths), mainly with non-malignant conditions, who were placed on the PCID. Three main lessons were described. First, the PCID appeared helpful to early career doctors and nurses, evidenced by high acceptance, positive feedback and 80% compliance with the PCID nursing plan. Second, significant resource was required for education to support implementation, and the involvement of a project officer was key.

Third, the pathway approach was recommended only for ‘non-complex dying patients’, with more challenging cases requiring referral to specialist palliative care. The authors reported that following the successful pilot, and with minor modifications, the PCID was being ‘rolled out’ across the local clinical network, with targeted in-service educational support for each included unit.

In a paper published in 2010, but based on data collected in 2007, Le and Watt (2010)[[43]](#footnote-37) reported a study designed to shed light on end of life care in the Royal Melbourne Hospital, said to be the busiest hospital in Australia. The study involved interviews with 27 clinicians form the hospital as well as a chart review using the LCP baseline audit methodology in an analysis of 171/190 records of patients who had died in a period of three months. The method only includes information recorded in the patients’ notes and assessed goals of care relating to: comfort measures, psychological and insight issues, religious needs, communication with the family and with the primary health-care team, ongoing assessments, and care after death. The audit found that the majority of patients (58%) who died in the hospital were not referred to specialist palliative care. It also uncovered deficiencies in the quality of end of life care delivered to patients – for example in mouth care, communication with the primary care teams, and in assessing religious and spiritual needs. Referral to the palliative care service was shown to have a positive impact on a number of measures.

Two slightly later papers from Australia shifted the focus around pathway, use from the hospital to residential aged care facilities (RACFs).

Reymond, Israel and Charles (2011)[[44]](#footnote-38) report the first use of an end of life pathway in the Australian aged care context, which took place April 2007 to December 2008. Their objective was to develop, implement and evaluate an end-of-life (terminal) care pathway and associated infrastructure suitable for Australian residential aged care facilities (RACFs) to improve resident and health system outcomes. The pathway was developed by a multidisciplinary collaboration of government and non-government professionals and incorporated best clinical management for dying residents to guide care and increase palliative care capacity of generalist staff. It was tailored from existing pathways, including LCP and the New South Wales Central Coast Collaborative Pathway. Implementation included identifying and up-skilling link nurses to champion the pathway in a series of 53 sessions across the participating RACFs, networking facilities with specialist palliative care services, delivering education to generalists and commencing a palliative care medication system in each facility. The primary outcome measure for the evaluation was transfer to hospital; secondary measures included staff perceived changes in quality of palliative care provided and family satisfaction with care. Over the project timeframe, 299 deaths were audited, 46 pre-implementation, and 253 post-implementation. Results indicated that the pathway, delivered within a care framework that guides provision of palliative care, could improve resident outcomes and decrease inappropriate transfers to acute care settings, which decreased by a half following its introduction. But whereas the staff who were surveyed saw improvements following introduction of the pathway, this did not show up in the surveys of relatives pre- and post- implementation. Moreover, only 47% of dying residents were placed on the pathway in the implementation period.

Horey, Street and Sands (2012)[[45]](#footnote-39) acknowledged that effectiveness of such pathways is just one requirement of good practice. Acceptability to those giving and receiving care, as well as feasibility in specific clinical and social contexts are also critical. As part of a wider project to foster ‘good death’ in aged care facilities, a pathway modified and adapted from LCP was introduced in 14 RACFs in Victoria and South Australia. The project used a multi-stage, action research design that collected qualitative and quantitative data from a range of sources. This included pre- and post-implementation interviews with RACF staff and General Practitioners, manager surveys, baseline audits, and prospective audits of pathway use (from 1 November 2009 to 31 July 2010). The uptake of LCP varied across the settings, from low (10%), moderate (34%) and high (68%) of all deaths occurring. Acceptability of the approach and awareness of it among staff varied significantly, but sustained improvements in care were identified and there were fewer unnecessary admissions to hospital.

Another study originating in 2009 shed light on the use of the LCP in general hospital wards as well as specialist palliative care services in a total of 13 sites in a rural area of Western Australia (Wilkinson, 2015)[[46]](#footnote-40). Published after the withdrawal of LCP in the UK, the study was based on pre-implementation LCP data (January – November 2009, 223 eligible deaths) and post-implementation LCP data (December 2009 – June 2010, 192 eligible deaths). Of the latter, 116 (60%) were placed on the LCP and 76 (40%) received usual care. The work was based on a version of LCP Version 11, modified by agreement with LCP Central for the Western Australia context. Mean time spent on LCP was 4.2 days. Communication with family members and other clinicians, routine symptom assessment and pre-emptive prescribing of end of life medications improved overall after the implementation, some to a higher level in the LCP group. Venous access devices, blood investigations and radiological investigations or treatments were lower in the LCP group.

The study aimed to address some of the methodological issues encountered in previous LCP-related research. It evaluated the LCP as it was implemented in practice in a context where providers appeared well supported by continuing education, quality-improvement problem-solving techniques and monthly coaching calls to address problems in the field. It used a pre- and post-implementation design that also included those who died in the intervention period but did not receive care on the LCP, thus allowing for secular trends in clinical care that might have been occurring independently. Somewhat unusually, the study included non-cancer deaths and focussed on clinical care processes that would be meaningful to patients and families. At the same time, the authors recognised its limitations – a lack of randomisation, a reliance on data from patient records only and the absence of perspectives from carers or family members. The sparsely populated rural setting in which the study took place also meant that no single site had a sample size that was sufficient to assess localised implementation, and the overall number of deaths for all sites combined was lower than anticipated. Finally, despite efforts to support the clinicians involved, the researchers could not be certain that LCP was interpreted and applied uniformly, though the assumption was made that there was uniformity of delivery. Taking everything into account, the authors concluded that a structured, centralised and directed implementation of the LCP could be successful in improving important aspects of clinical and supportive care in the last days and hours of life.

After the withdrawal of LCP in England, senior clinicians from Australia commented on the implications for the continuing use of end of life pathways in their country (Chan *et al.,* 2014)[[47]](#footnote-41). They acknowledged that, across Australia, several end of life care pathways had been adapted from the LCP, though with no precise numbers of institutions involved. They cited the four research publications described above and noted the inclusion of these in the Cochrane review of end of life pathways[[48]](#endnote-7), along with two government reports and one report from the state of Victoria – seen as evidence of widespread uptake in acute care hospital and aged care facilities. In particular, they highlighted the recommendation for a national roll out of an integrated end of life care pathway through primary, acute and aged care sectors, in the Australian National Palliative Care Strategy of 2010.

Despite the widespread experimentation with and policy endorsement of the end of life pathway in Australia, the authors took the view that (as elsewhere) there had been insufficient evaluation of its net effect. The withdrawal of LCP in the UK had created a dilemma for Australia. They made a plea for more rigorous, randomised, studies of end of life pathway outcomes and implementation. They acknowledged that this would take time. Meanwhile they recommended that the shortfalls and adverse effects identified in the Neuberger review should be carefully assessed in the Australian context, and concluded that ‘if the LCP is to be replaced, there needs to be systematic measurement of the benefits and harms generated by such a process’ (p573).

The first reflections on the use of LCP in New Zealand appeared in 2007[[49]](#footnote-42) when Keane and colleagues described a pilot project to introduce the LCP in three aged care facilities, two hospital wards and the Arohanui Hospice in Palmerston North, which became a collaborating centre with Liverpool. This took place in a country with a national strategy for palliative care and a recognised place in its cancer control strategy. The aims of the project were to improve documentation of end of life care in specialist and generalist settings, to inform care of the dying with palliative care principles and approaches, to ensure these were disseminated and documented, and to enable the development of demonstrable and measureable outcomes for the care of the dying*.* Launching the LCP in the inpatient hospice first was perceived to be beneficial in its adaptation to for use in New Zealand. A baseline audit was conducted, the document was then modified to fit local practice, an educational programme to support implementation also took place. Keane and colleagues concluded that ‘experience with the LCP has demonstrated that the hospice model of caring for the dying can be transferred to other settings though the use of an integrated pathway. It is also clear that the LCP offers much to support the emerging collaborative model between generalists and specialist in palliative care … Clinicians and health planners … should ensure that LCP development happens in a way that ensures its sustainability for the future’ (p.14).

In 2008 Clark and colleagues[[50]](#footnote-43) in a conference abstract, sketched the results of a before and after study of staff perceptions of the LCP in the North Palmerston initiative, in the five non-hospice sites. Participants described dying as a natural process that also required a great deal of emotional labour. The authors identified potential benefits from the introduction of the LCP, but also highlighted the need to establish and maintain a collaborative interface between generalists and specialist palliative care services. They state: ‘Such an integral model is critical in realizing the potential of the LCP’ (p.200). Data from the before and after study in each of the settings was presented in separate publications (see below)

New Zealand was the first country outside the UK to formally establish a National Office with responsibility for promoting the sustainable implementation of LCP within its own borders. A paper by Mackenzie *et al* (2011)[[51]](#footnote-44) presents the results of a mixed methods study to evaluate the role and value of the New Zealand office, from the perspective of key stakeholders and also provides useful context on the local adoption of LCP. Dedicated Ministry of Health funding for LCP implementation was made available to all 20 New Zealand Health Boards from 2008, prior to which some Boards had already shown interest in LCP. By these means LCP was adopted to some degree across four settings in New Zealand – hospices, hospitals, aged residential care facilities and patients’ own homes. As early as 2007, staff at Arohanui Hospice, the recognised lead collaborating centre for LCP, had begun to recognise some inconsistencies in how LCP was being implemented across New Zealand. These included: a lack of consultation with specialist palliative care services, inappropriate and sometimes unsafe symptom management algorithms, the absence of general practice teams from LCP education and training, variability in LCP registrations, and the development and use in some places of modified, non-compliant LCP documents. Thus informed, the Arohanui Hospice made a successful bid to the Ministry of Health to establish a national co-ordinating office to oversee LCP implementation in New Zealand, with support from the Liverpool team. The goal was to develop a robust support infrastructure that would minimise the risk of the kind of *ad hoc* implementation and dissemination of LCP that would dilute and compromise it effectiveness and sustainability in New Zealand over time. The core approach to achieving this was the 10 step continuous quality improvement programme, developed by LCP Central in Liverpool.

Data collection for the evaluation took place in 2009, just six months after the New Zealand LCP office had been established. Committed to principles of dependability, credibility and trustworthiness, the evaluation was designed to provide useful information to inform development. It drew on the perspectives of a purposive sample of key stakeholders across New Zealand through interviews (n=28) and questionnaire surveys (n=36). The results were positive. The goals of the LCP office were deemed important, the service quality was rated good or very good, its ongoing links with LCP Central were considered important, it was leading to better quality use of LCP by linking closely with local facilitators in ways that connected theory to practice, and it was serving as a voice for palliative care in New Zealand. The authors concluded that the New Zealand office was proving successful in mitigating the risks of LCP implementation in a country ‘geographically isolated and culturally distinct from the UK’ (Mackenzie *et al* 2011) (p260).

As we have seen, studies were carried out in North Palmerstone to provide baseline assessments of staff perceptions of end of life care and to assess the need and potential for introducing the LCP. These were conducted both in the acute care setting (Sheward *et al* 2011)[[52]](#footnote-45) and in residential care Clark et al 2011)[[53]](#footnote-46). In each case, key areas of care delivery were identified that could potentially be improved by introduction of the LCP. In the acute setting 610 staff were surveyed for their views, with a response of only 29%; in aged care 195 staff were surveyed with a response rate of 32%. It was hard to see clear results from either study, in some instances the results form closed questions were contradicted by accompanying free text, but both reported that valuable information had been obtained on staff perceptions. A further paper on staff perceptions in residential care by Clark et al (2012a)[[54]](#footnote-47) used a mixed-methods approach in three aged care facilities, including surveys, focus groups and interviews and focussed on post-implementation views. The survey response rate from 194 staff was however only 13% (from 32% pre-implementation. Likewise, 15 staff members participated in the focus groups, but 10 of them had not responded to the survey. Only three GPs were interviewed, from seven approached. Nevertheless, those who did take part in the study reported multiple benefits for the LCP, which was seen to have supported and improved the overall framework of care.

Clark *et al.,*(2012b)[[55]](#footnote-48) then conducted a post-implementation study of the pilot use of the LCP on two acute hospital wards. This pre- and post- implementation work was the first of its kind in New Zealand, and only the second of its type internationally, according to the authors. All professional groups believed that LCP had improved end of life care in the hospital by clarifying the plan of care, providing guidelines, and improving continuity of care, assessment and symptom control. LCP appeared to improve confidence in diagnosing dying and promoting interdisciplinary working. A small scale study in New Zealand based on two focus groups (10 participants) and interviews (five interviewees) with nurse managers explored their experiences of a ‘top down’ change that involved the introduction of LCP. The nurse managers viewed their experience positively and highlighted an improvement in their own knowledge base. The authors concluded that the transition to LCP was a good example of where the investment of skilled manpower, time and resources was crucial to success.

Thurston and Waterworth (2012)[[56]](#footnote-49) give a good summative account of the work described above and report on a qualitative study involving two focus groups and five interviews to explore nurses’ experience of a ‘top down’ change to introduce the LCP in a large tertiary hospital. There was evidence of a positive impact in the short term, but the study participants did not see the LCP as capable of resolving the existing constraints which nurses perceived to be limiting their ability to provide adequate care for dying patients. For maximum benefit and to avoid ‘shifting back’ to former ways of doing thing, the authors conclude that significant investment needs to be made to support LCP implementation and to attend to the transitions in practice that it involves.

***Norway, Sweden, Denmark***

Among the Nordic countries, Sweden was most active in pursuing research work on LCP adoption. Norway was a significant adopter (in nursing homes) but produced almost no primary published work on LCP, though it did generate wider commentary and review. In Denmark, implementation was localised to one setting and dissemination restricted to conference presentation. Ten outputs emerged from these three countries.

Although LCP appears to have come into use in Norway in 2005/6, no baseline or implementation studies seem to have been published, though the 2011 chapter in the LCP handbook refers to a ‘flying start to implementation’ in Norway, where the Regional Centre of Excellence for Palliative Care in Western Norway took a co-ordinating and facilitating role. Nevertheless, just one paper, by Iversen and Haugen[[57]](#footnote-50), which did not appear until 2015 reported on staff experiences of LCP in two Norwegian hospitals, albeit based on data collected between December 2010 and October 2011. In Norway 30% of deaths occur in hospital and LCP was introduced in this setting in 2007. The main instrument of data collection was a survey among nursing staff and physicians (n=356), which obtained a 47% response rate (n=167). Symptom relief and discontinuation of inappropriate interventions were the practices that changed after implementation of the LCP. Ninety four per cent of respondents wanted to continue the use of the care pathway. The focus group interview showed an improved preparedness and awareness when facing dying patients and their loved ones. At the same time, the staff found it challenging to decide when the patient was entering the imminently dying phase, and consequently, when to introduce the LCP. The staff therefore evaluated the LCP as a useful tool and also noted that bedside teaching and closer cooperation with the hospital palliative care team may improve clinical skills in recognising the dying phase.

Norway’s part in the LCP narrative also relates to reactions to it which took place after its recommended withdrawal in 2013. It was not until 2016 that commentary emerged from Norway on the use of the LCP (Meneses-Echávez, Flodgren and Berg, 2016)[[58]](#footnote-51) in a rapid review produced by the Norwegian Institute of Public Health and requested by the Norwegian Directorate of Health. The authors explained the goals and background to the LCP and noted its ongoing use in Norway since 2005, though with no details of extent or setting. The aim of the review was to assess the effectiveness of the LCP and also its relevance to patients with dementia. Only two studies met the inclusion criteria (from Sweden, 2014 and Italy, 2015).

The results from the two studies showed small or no differences between LCP and standard palliative care at the end of life. The available evidence indicated that LCP possibly can improve breathlessness in dying patients however, there was no evidence that LCP was superior to standard palliative care with respect to quality of care, most of the dying patients’ physical symptoms, and prescription of palliative medications. The authors had very low confidence in the evidence they reviewed, mainly due to a high risk of bias in the studies, which also enrolled few participants and contained shortcomings with regard to the implementation of the intervention, for example, in the Italian study, only 34% of cancer patients in the intervention wards received LCP, and in the Swedish study, only 60% of patients in the intervention homes received LCP. The authors therefore noted that the various weaknesses of the available studies limit confidence in the current evidence and the potential to draw firm conclusions.

The following year a systematic review of the use of LCP in nursing homes was produced by a team in Norway (Husebø, Flo and Engedal 2017)[[59]](#footnote-52). It included the provocative subtitle ‘discarded in cancer patients but good enough for dying nursing home patients?’ it described the history and purposes of the LCP, emphasising that the approach was designed for use with cancer patients and ‘presumed an open and timely communication between the treating physician, nursing staff, patient and relatives’ (p1). It noted that LCP was in use in 17 countries outside the UK, including Norway. Describing the media and public concerns that had arisen about LCP and which led to the Neuberger review, the authors observed that in contrast to the UK, no open and critical debate had taken place about LCP in Norway or other Scandinavian countries. The aim of the 2017 review was therefore to assess the evidence for the use of LCP, but specifically in the nursing home context and in relation to people with dementia. It focussed on how LCP had been validated and tested in these contexts, with which study designs and methods, the implementation strategies in use, and how they had been described, along with the main outcomes.

Twelve papers, one purely methodological, were selected for inclusion in the Norwegian review, based on nine clinical studies; seven studies were from outside the UK and are discussed elsewhere in the present paper. None of the selected studies used randomized, blinded or prospective designs. Only one was controlled The reviewers concluded that evidence for the use of LCP in nursing homes was virtually absent and when present was weak and the results not definitive. Acknowledging the problems of randomised designs in these populations, the authors were nevertheless critical of the absence of alternatively designed studies that document the development and testing of the instrument by including elderly, multi-morbid patients and those with dementia. They concluded that the LCP had not been adapted to the individual needs of people in nursing homes and those with dementia. In Norway almost 50% of deaths take place in nursing homes, where 80% of patients have dementia. Husebø, Flo and Engedal close by stating: ‘After changing the name of the procedure, the LCP is still in use in many countries, as a low-cost camouflage of the real need for education and competence in nursing homes’ (Husebø, Flo and Engedal, 2017) p.12.

Meanwhile, in neighbouring Sweden, we see much more substantial engagement with the LCP initiative, albeit in a series of publications that did not begin to appear until after the withdrawal of the LCP in the UK. LCP implementation in Sweden was co-ordinated from the research and development unit of Stiftelsen Stockholms Sjukhem, in Stockhom and by the end of 2009, 80 units, according to the LCP handbook chapter of 2011, were registered for its use in *inter alia* care homes, hospices, hospital units and community settings.

Ekeström and colleagues (2014)[[60]](#footnote-53) sought to explore family members’ experiences in a palliative care unit and in a general geriatric ward in Sweden, before and after implementation of the LCP. They observe that LCP had by the time of publication been used in more than 20 countries and translated into six languages. It was introduced in Sweden in 2007 as part of a national project monitored by a palliative care competence centre. The documents were translated according to EORTC guidelines and implemented in collaboration with LCP Central, in Liverpool. The authors estimated that LCP was in use in over 200 units in Sweden, including specialist palliative care, home care, hospital wards and nursing homes and noted that experiences of LCP use were feeding into the development of a national plan for the care of the dying.

Their own study places a particular focus on the perceptions of family members relating to LCP, citing only a few examples of this from elsewhere in contrast to the large number of studies on the perceptions of staff. The design was a non-controlled before-after evaluation of the impact of LCP on family members’ experiences in a palliative care unit and in a general geriatric ward, with special attention to the goals of the intervention.

The settings for the study, each of which had introduced the LCP in 2009, were in the urban area of Stockholm and data was collected by means of self-complete postal questionnaire sent to a relative 3-6 months after the patient’s death. In total 108 family members agreed to participate (85%) and response rates and the before/after numbers were roughly equal across both clinical settings. Satisfaction with care was high in both settings pre-implementation, and family members were confident that staff had done everything possible to prevent suffering. Satisfaction on measures relating to existential issues and information on bereavement support was lower in the hospital ward, where relatives also considered that the patient had been more likely to experience breathlessness in the last three days of life. Post-implementation only one aspect of care showed better results and this was in the PCU, where physicians’ ability to listen to questions and requests had improved. But post-implementation family members were more likely to state that the patient was worried or anxious. The authors considered that more information may have made family members more observant of symptoms, hence the increase in reported anxiety.

The next study to appear from Sweden recognised the lack of controlled studies of LCP outside of cancer settings and focussed on its use in care homes and in residential care homes (Brännström *et al.,*2016)[[61]](#footnote-54). In Skellefteå municipality, it compared effects of the LCP on patients’ symptom distress and wellbeing, when compared to usual care. The design was an exploratory, controlled before and after study. During a 15 months baseline period (June 2009 – August 2010), usual care was assessed in two areas of the municipality, containing 10 and 9 care homes, respectively. In the following 14 months, staff introduced LCP in one area and usual care continued in the other. A translation of LCP Version 11 was used, in collaboration with the Swedish LCP co-ordination centre based at Stockholm Sjukhem, and the process included a structured education programme to support the implementation. In both areas in the pre- and post- intervention periods, care was assessed though the completion by relatives after the resident had died of two structured instruments (Edmonton Symptom Assessment System and Views of Informal Carers – Evaluation of Services, known as VOICES), sent by post. The study covered residents (referred to by the authors as ‘patients’) who died in all 19 residential care homes in one Swedish municipality.

A total of 837 patients died during the whole study period. The LCP was completed for 132 (60%) of those who died in the intervention area; two thirds of the remainder died suddenly in the care home or died in hospital. Cardiovascular disease and dementia were the main causes of death. The total response rate for completion of the questionnaire was 46.2%, there was a significantly higher response rate in the intervention area. The main result was a reduction in two symptoms among residents in the intervention group – shortness of breath and nausea. Reductions in both of these symptoms were reported by the symptom assessment measure and for shortness for breath only by the carer evaluation tool. On such a basis, and following a detailed reflection on the practical and technical limitations and potential biases of the study, the authors felt able to conclude that the LCP may be a useful tool for providing end of life care for elderly people in non-cancer settings. Interestingly they note that, based on the positive experience of conducting the study (as much as its outcome), the municipality involved made a policy decision to implement the use of LCP in all its residential care homes.

Also in 2016, Høgnes et al[[62]](#footnote-55) used the three phases of LCP implementation as a research tool to assess healthcare professionals’ documentation of end of life care for people with dementia in nursing homes. The study made use of the three phases (initial assessment, continuous assessment, and after death follow up) as a framework to sort the documentation. The study did not concern the implementation of LCP, but focussed on 50 sets of nursing records and 50 sets of medical records relating to deceased patients with dementia in two nursing homes. Through the lens of the LCP, it revealed that the great extent of the documentation focussed on physical symptoms, with almost nothing recorded on existential issues or follow up with relatives after death.

A descriptive qualitative study also emerged from the implementation of LCP in the Skellefteå municipality (Andersson *et al.,*2018)[[63]](#footnote-56). It complemented the main evaluation by examining care professionals’ experiences of using LCP in the residential care homes of the municipality. The work was conducted through five focus groups and two individual interviews, comprising a mixture of nurses and nursing assistants working in the care homes as well as local GPs. The line of questioning focussed on how the participants had experienced using LCP, its influence on their practice, as well as their perceptions of its strengths and weaknesses and their views on using it in the future.

The participants considered that using LCP had fostered a team approach that increased individual confidence, and this had been generated through the supporting educational programme and the new way of documenting care. Agreement about whether the resident was dying could prove difficult to establish, and this was exacerbated by the short amount of time spent in the homes each week by the GPs (who took the decision in each individual case about LCP use). But there was also an enhanced sense of individualised care when using LCP. The paper-based document kept in the patient’s room provided a focus for this, but was also seen as less practical than the usual computerised record keeping system. LCP was seen to have fostered earlier and greater involvement of family members in end of life discussions with relatives. Care staff were also more attentive to the care environment and gave more attention to creating a sense of comfort and welcome for family members when a resident was dying. Appearing late in the LCP ‘cycle’, the authors were able to contextualise their study in the findings of similar work from the UK and elsewhere. They concluded cautiously that the LCP might be a useful tool for use in residential care homes and could increase attention to the goals of care, the individual needs of residents, and the involvement of relatives.

Another study by Andersson *et al* (2018)[[64]](#footnote-57) attended to family members’ experiences of care of the dying in residential care homes where the LCP was in use. Fifteen family members of deceased residents took part, drawn from 10 different residential care homes. Interviews were conducted January-March 2014, and began with the question: ‘Please tell me about your experiences of your relative’s last hours/days of life’. Three themes emerged: 1) being confident in a familiar and warm atmosphere 2) being involved *versus* not being involved in end of life care 3) being consoled by witnessing the health professionals’ endeavour to relieve suffering. The results showed that family members (most of whom were daughters of the deceased) had an overall positive experience of the care provided, felt involved in the caring process and found that LCP clarified the decision about moving to end of life care, and gave structure to what was happening. Subsequent to the study the authors note (and in the post-Neuberger context), a new care pathway was developed and implemented ‘in the early and late phase of palliative care in Sweden, not only in EoL care’ (p200).

Also in Sweden, Olsson et al (2019)[[65]](#footnote-58) focussed on residential care homes and home care settings and examined the perceptions of nurses on the impact of quality of care resulting from use of the LCP. A total of 142 registered nurses and assistant nurses working in a single Municipality in mid-Sweden, where the LCP had been introduced in the period October 2011 – December 2013, completed a structured study-specific questionnaire containing 50 items. Implementation of the LCP was considered to ensure systematic assessment and alleviation of patients’ symptoms and needs, though assistant nurses were more positive in their views. Both groups considered that communication with patients and families and the information exchange between team members was facilitated. The areas for improvement concerned psychological and existential support, as well as patient and families’ participation in care. Publishing their results sometime after the widespread withdrawal of LCP, the authors note the creation of a new pathway in Sweden, highlight the importance of education of staff if pathways are to be more than a ‘tick box exercise’ (p.1596) and in particular draw attention to the complexities involved in diagnosing dying, the need for flexibility and the importance of continually assessing the status of the patient.

We identified just one conference poster on the use of the LCP in Denmark, presented in June 2016, in Australia[[66]](#footnote-59). Here the intervention was described as the ‘Danish modified edition’ (mLCP) and was presented as ‘a tool to provide relief of bothersome symptoms in imminently dying hospitalized cancer patients’. The primary endpoints of the study were relief of symptoms, and correlation between symptoms and use of medication. The chosen method was an audit of mLCP records from 45 cancer patients who died in the integrated Palliative Care Unit, of the Oncology Department of Roskilde University Hospital, Denmark in 2014. 77 % of the dying patients experienced good and immediately symptom relief, whereas 14 % presented partly refractory but manageable symptoms. The most common symptoms were pain (56 %) and anxiety (42 %). Time on the mLCP was on average 48 hours. There was no correlation between presented symptoms and time spent on mLCP, nor was there a correlation between presented symptoms during the first four hours and during the last four hours before death. There was a significant relief of pain using syringe drivers, and a significant correlation between the use of analgesics and symptom relief. The authors concluded that integrated care pathways for best care of the dying person could be a valuable tool for providing good symptom relief.

***Hong Kong, China, Singapore, Japan***

These varied jurisdictions showed interest in LCP from around 2007-8, when the first of 24 identified outputs began to appear.

Lo and colleagues (2009)[[67]](#footnote-60) provided an early commentary on the use of an end of life care pathway in a Chinese population. They describe how a group was established in the Tuen Mun Hospital in Hong Kong, to review the work of the LCP and develop a new pathway, modified according to the local situation. The number of goals on the pathway were reduced from 18 to seven. For example, communication with the general practitioner was removed as most patients in the local context do not have a regular primary care doctor. Likewise informing relatives of the impending death was not considered necessary, on the grounds that in the local context, relatives must be told immediately that death has occurred, in order to facilitate after death rituals. There were other differences.

Among the Chinese population at the hospital who were entered onto the pathway, hepatocellular carcinoma was the second most common diagnosis. In addition, due to workforce pressures, the review periods on the revised pathway were eight hourly, against four hourly in the LCP. The authors describe how this modified pathway was introduced between November 2007 and August 2008 into a designated palliative care ward of the hospital. An audit of the patient records for the period, drew on ‘success criteria’ identified in the Netherlands by Veerbeek *et al.,*2006, in a study described above. Indeed, the Hong Kong audit made direct comparisons with data from the Erasmus Medical Centre in Rotterdam (October 2001- January 2003) and the Marie Curie Hospice in Liverpool (April 2002 – July 2003). Patients were on the pathway for a similar average time in all three settings (24-29 hours). The proportion of patients in the palliative care unit in Hong Kong that was enrolled on the pathway was low at 10% in the pilot, reflecting clinicians’ uncertainties in the diagnosis of dying. But one year on this had risen to 40%. The authors concluded that good end of life care could be delivered to Chinese patients using a pathway approach that had been modified from the original LCP.

A letter to the journal (Siu et 2011)[[68]](#footnote-61) describes a pilot project (July-September 2009) introducing a care pathway into an oncology ward of the Queen Mary Hospital, Hong Kong. It made use of a version of LCP already adapted by a palliative care unit in the Hong Kong Special Administration Region and then adapted for the oncology setting. This new version was ‘kept as simple as possible with seven sections in only six pages to allow for better acceptance’ (p.664). it was seen as a ‘simple check list’ to be completed daily by doctors and three times per day by nurses, thus fitting into existing routines. The authors note some important aspects of the ward context: visitors of patients recruited onto the pathway were allowed more flexible visiting hours than others, and it was considered unacceptable to withhold artificial hydration.

In the pilot the pathway did not replace the existing Kardex system. During the pilot period 24 patients died on the ward, but only 10 were placed on the pathway, perhaps due to staff being less likely to identify the end of life phase. Yet recruited patients seemed to be placed on the pathway earlier in the dying phase and were older on average. Compliance by doctors with the six pathway requirements for patient management was high 80-100%). In response to a questionnaire survey, nurses manly agreed that the pathway enabled them to provide efficient care for the dying, but all felt that extra resources were need for full adoption of the pathway in the long term. Opinions of bereaved relatives were collected by telephone contact. There was appreciation for: the more flexible visiting hours and the opportunities to stay with the dying person in the last days.; the attention to the patient given by doctors and other staff, and the information they received. The authors took the view that the introduction of the pathway had led to an improvement in the overall quality of end of life care – scores for all six key items in the period from 1 March – 30 June 2009 to 1 November 2009 – 28 February 2010. From October 2010 the team re-implemented the pathway on the ward, using a modified version of LCP Version 12.

One paper (Hongyan, Pexi, Xinming 2011)[[69]](#footnote-62) looks at the potential of LCP in relation to the development of hospice nursing in mainland China. The article explains how LCP was developed, reviews the research on its implementation and benefits, but also acknowledges the critical commentary on LCP that had occurred in the British press and from some clinical commentators. With reference to the experiences of the LCP in other countries, the authors argue for strategies to improve Chinese nurses’ knowledge of palliative care and also for consideration of how the advantages of the LCP and other models of care, could be used to develop a more appropriate model of palliative care for the Chinese context.

In 2007, clinicians and quality management staff in Singapore took the inspiration of the LCP to develop their own Care of the Dying Clinical Co-ordinated Pathway (CDP), with the aim of providing better symptom control and overall care for dying patients in the Singapore General Hospital (Neo *et al.,*2012)[[70]](#footnote-63). The project was funded by the Health Quality Improvement Fund of the Singapore Ministry of Health. Working with an unspecified English language version of the LCP, the team first made some minor changes to the documentation. As in Hong Kong, they removed the goals of care associated with GPs. Following the standard LCP baseline assessment, a retrospective audit of care in the last 48 hours of life was conducted on 30 consecutive deaths, between May-July 2007. Through two 60-minute educational sessions, a CDP nurse co-ordinator and a palliative care physician then introduced the modified LCP within the medical oncology unit, where 20% of the hospital’s deaths occurred. Between November 2007 and February 2008, the CDP was used with 30 patients, and a post-implementation audit was conducted for comparison with the baseline.

The characteristics of the baseline and implementation groups of patients were similar, making a good basis for comparison. The clinical effects appeared to be striking. For the baseline group, 24 uncontrolled symptoms were identified in the audit, compared to only one in the implementation group. There was a 42% increase in prescriptions for breakthrough medications in the implementation group. ‘Inappropriate’ monitoring was discontinued in 25/30 cases in the implementation group, compared to none in the baseline. But the picture was not only one of *reduced* treatments. For example, continued use of antibiotics was slightly more prevalent in the implementation group.

The audit results were compared with similar data from Rotterdam, Liverpool and Hong Kong (from the work by Lo et al 2009, described above), and symptom control was found to be more effective in the Singapore setting. Time on the pathway (median 24 hours) was similar to Hong Kong and also to results from the UK National Care of the Dying Audit in hospitals. Anticipatory prescribing was lower in Singapore than the Netherlands, but similar to results from Queensland, Australia. Improved symptom control in the Singapore implementation group, the authors concede, may have been due to the greater involvement of palliative care staff, resulting from the implementation itself. But the other effects could be attributed to the CDP. By the time of publication of these results, in 2012, the Singapore authors could note the controversies that were by then affecting the LCP in the UK. Nevertheless, the CDP continued in use in the oncology unit and moves were underway to extend its implementation to other patient groups in the hospital.

After the Neuberger report recommendations, an audit of the CDP in the Singapore General Hospital was carried out to determine if the use of such a pathway should be continued locally (Koon *et al.,*2015)[[71]](#footnote-64). The audit was conducted in early 2014 and included 740 patients who died on the oncology and renal wards of the hospital from July 2011-June2013. Ninety of the oncology patients had been placed on the CDP (12%), compared to 129 renal patients (22%). Most died on the CDP. The authors found no documented compromise in medication safety, clinical monitoring and provision of nutrition and hydration of those placed on the CDP. But documentation of important end of life decisions and conversations was poor and the proportion of patients placed on the pathway was considered low in relation to figures from the UK. The paper was silent on the direct question of whether the CDP should be withdrawn from use in the hospital, but concluded that an alternative tool, encouraging systematic discussion and documentation of individualized end of life care plans should be considered.

In a paper on the status of palliative care in Japan, a group of authors (Yamagishi *et al.,*2008)[[72]](#footnote-65) commented that standardised frameworks, guidelines and clinical pathways for end of life care, available in the English-speaking world, had not been developed or were inadequately disseminated in the Japanese context. They indicated that a validation study of several such interventions was underway to modify the originals and make them suitable for Japanese culture. The list included the Liverpool Care Pathway.

Two years later, in 2010, a special issue of the Japanese Journal of Clinical Nursing was published that focussed entirely on the use of LCP in Japan[[73]](#footnote-66). Edited by Mitsunori Miyashita a professor in palliative nursing at Tohoku University, the special issue aimed to provide a comprehensive picture of the introduction and implementation of the LCP in Japan by 2010. The editor introduced the issue with some background on end of life care in Japan, addressing the importance of promoting and adapting the LCP to the Japanese context, and pre-viewing the main articles in the special issue[[74]](#footnote-67).

An article by a palliative doctor in charge of developing the Japanese version of LCP (LCP-J), Chinone (2010) [[75]](#footnote-68) explains the development of the LCP in a discussion of: 1) the historical background 2) the contents of LCP 3) examples of implementation outside Japan 4) reasons for introducing the LCP to Japan 5) reasons for adapting LCP to the Japanese context and 6) changes and impacts of introducing LCP to Japan.

The editor and Dr Megumi Shimizu from the Tohoku University Hospital then explain the use of the LCP-J by showing actual assessment forms, describing the criteria for their use and articulating the three consecutive sections of the pathway (initial, continuing and death confirmation). A sheet of variance is also included to show what needs to be done when the LCP has not achieved expected outcomes. To maximise the understanding of LCP-J, the authors recommend a Q&A session with staff to help practitioners better manage the relevant techniques and procedures of LCP-J.[[76]](#footnote-69)

The special issue then presents three empirical feasibility studies of the LCP-J in clinical settings. Kaori Ichihara, a doctoral researcher at the Medical School of Osaka University, reports evidence of the use of LCP-J in two palliative care units[[77]](#footnote-70). Ichihara’s article illustrates a whole process of LCP-J implementation, including training for practitioners, collecting information from patients and operationalising the pathway. Forty nurses were involved in the experiment and more than half considered the LCP-J useful, believing that it could contribute to providing standardised criteria for multi-disciplinary healthcare teams, as well as developing consistent and continuing care and support for patients and their families. Educational outcomes for healthcare professionals were also highly praised.

Karoi Fukuta from the Seirei Mikatahara Hospice then offers an insight into the LCP-J by reporting an individual case of a terminally ill cancer patient[[78]](#footnote-71). The implementation is recorded in great detail by showing how the patient and her family were supported at different stages of the dying process. By referring to the criteria of the LCP, the author provides a clear picture of how the patient’s symptoms were assessed and how the techniques of the LCP-J were employed to support her various needs and those of family members. The author concludes that the LCP-J improved the quality of palliative care for the patient and her family.

In addition to palliative care units, some general wards in hospitals in Japan also adopted the LCP for their terminally ill patients. Nobuhisa Nakajima , a doctor in a palliative care unit in Sapporo Minamiseisyu Hospital introduces experience and knowledge of how to use the LCP in general wards[[79]](#footnote-72). Unlike the other empirical studies mentioned above, this used a direct Japanese translation of the LCP rather than the LCP-J version (a version adapted to the Japanese context), to provide care for dying patients. The care pathway was introduced to a general ward in two phases. Positive outcomes were gained to some extent in the first phase, although the variance rates were relatively high, this being attributed to practitioners’ limited knowledge of symptoms at the end of life and the lack of communication with patients’ families. To improve the practice, the team integrated the Support Team Assessment Schedule (STAS) to enhance knowledge exchange and communication between different parties involved in the care. As such, the results from the second phase were significantly better. Based on the comparison between the two phases, the author summarises some key points for the implementation of the LCP in general ward settings.

The last article in the special issue pays attention to an evidence-based booklet produced for family members of dying patients[[80]](#footnote-73). Hiroyuki Otani from the Kyushu Cancer Centre, argues that the booklet can help family members to better understand end of life care, reducing anxiety and empowering them to give improved support to their dying family member. The author also points out the benefits of using the booklet with the LCP.

Two years after publication of the special issue, a series of research papers emerged from a large over-lapping and multi-disciplinary group of authors that presented various facets of LCP adoption in Japan. Ichihara *et al*.,(2012)[[81]](#footnote-74) reported on a pilot study of a Japanese language version of LCP to assess the possibility of its local introduction. LCP was used with 40 inpatients in the palliative care ward of a hospital where palliative care was well established. The aim of the study was to establish the extent to which the end of life care being provided in the hospital, which had 200-300 deaths per year, was commensurate with the care goals of LCP. The study found that LCP standards were achieved in 80% of cases. In addition, a questionnaire survey assessing the usefulness of LCP from the perspective of 40 nursing staff was carried out. Over 65% endorsed the usefulness of LCP in confirming that the patient is in the dying phase, in reviewing end−of−life care, in continuous integrated care giving, and in education for nurses with limited experience with end of life care. While positively evaluating the LCP, the researchers also pointed out the further need to revise the LCP to adapt to Japanese medical settings. Taken together, these results were sufficient for the authors to be satisfied that the translated Japanese LCP could be implemented in the facility described.

A paper by Kanno *et al* (2014)[[82]](#footnote-75) reports on a project to develop the Japanese language version of the LCP for home care (known as LCP-H) and to examine its feasibility. LCP−H was administered to cancer patients who were predicted to be in their last few days of life and the care goals were evaluated. In addition, and echoing the 2012 paper, a cross−sectional anonymous questionnaire was administered to home nurses who used LCP−H to evaluate its usefulness from their perspective. LCP−H was used with 35 patients and the care goals were achieved in almost 80% of cases. The nurses considered LCP−H to be useful in promoting continuous end−of−life care by all staff, in enhancing communication between home nurses and co−medical home staff, and in education for home nurses with limited experience with end of life care. Again, the feasibility of LCP−H was confirmed as a useful approach to support dying patients and their families at home and to improve the quality of such care. However, the authors noted, that at a time when the LCP was being phased out in the UK, it might be necessary to develop an original tool to assist in the care for dying patients and their families in Japan.

From a retrospective review of medical records, a palliative care team from the New Life Hospital in Japan, in Kamitakai District, Nagano Prefecture (Murakami *et al*.,2014)[[83]](#footnote-76) investigated the conditions of people placed upon LCP (n=71) and not placed upon (n=60) and who died in the hospital palliative care unit between March and December 2013. The patients were not randomised. Those who did not receive the LCP had been deemed unsuitable for it mainly because of their propensity to sudden changes in condition or, to a much lesser extent, a risk of falling. In a somewhat circular fashion, the authors concluded that LCP should not be used with these patients. The patients’ groups had no significant differences in background characteristics, but those on the LCP had significantly less deep sedation, whereas the non-LCP patients experienced significantly more sudden changes in condition. In light of the critical views of the LCP in the UK, the authors urged further consideration of its applicability in the face of diverse conditions of inpatients in Japan, suggesting a potential approach to integrating both the LCP and conventional care practices.

The following year a paper appeared from Hasegawa et al (2015)[[84]](#footnote-77) reporting an evaluation of the use of the Japanese version of LCP-J in patients with cancer in the general ward of Gifu Municipal Hospital based in Gifu City, Gifu Prefecture. The primary aim of the study was to assess the experience of nurses before (n=21) and after the introduction of LCP (n=22). Significant practice improvements were found relating to care in the dying phase and in the relief of symptoms. The secondary aim was to assess the differences in treatment of patients who were and were not assigned to the LCP in the last 48 hours of life. Nine patients were placed on LCP-J, but there were no significant differences found in comparison with patients who were not on the pathway. The authors reported that LCP-J had the potential to improve aspects of nursing practice. Meanwhile, they also noted the termination of the LCP in the UK and the unique family and cultural values that prevail in Japan, and indicated a need to develop a checklist to recognise the cultural differences and to reduce the ‘burden of LCP-J’ for professionals.

Kanno et al (2015)[[85]](#footnote-78) continued on a related note. Their paper reports on a study to examine the burden of LCP-J when introduced onto two wards (oncology and respiratory medicine) in Tohoku University Hospital, Japan. Making use of audit evaluations and interviews with two doctors and eight nurses, the study found that in a series of 22 patients who were placed on the LCP (38% of the total study group), there were no significant differences in the medications used in the two groups, but benefits were seen in a more structured approach to preparation for and care in the dying phase. At the same time LCP-J was felt to increase the burden on professionals in relation to the task of diagnosing the dying phase and the need for associated training. The authors concluded that the requisite support and training should come from the hospital palliative care team.

A short paper by Yoshikazu (2016)[[86]](#footnote-79) gives an overview of the rise and fall of the LCP in the UK, in relation to end of life care in Japan. It acknowledges the usefulness of the LCP as a guideline for end of life care practices and for the education of medical professionals. It then reviews how the LCP was introduced and developed in Japan from 2003, leading to the production of LCP-J which began in the same year. LCP-J and its manual were completed in 2009, and the home-care version, LCP-H was introduced in 2012. While highlighting the increasing influence of the LCP in Japan, the paper also documents the wider debates in the UK on the effectiveness and appropriateness of the LCP. Given the criticisms and the withdrawal of the LCP in the UK, the author suggests that the promotion of the LCP in Japan should stop and an alternative pathway that fits Japanese contexts needs to be developed.

Tanaka and Satoshi (2017)[[87]](#footnote-80) provide an overview of end of life care in Japan, with a particular focus on developments in the UK, including the LCP, and their relevance in the Japanese context. Reviewing the debates surrounding LCP in the UK and its eventual withdrawal, the authors suggest that end of life care in Japan needs to 1) pay more attention to individualised care and communications, 2) develop education programmes plus institutional and home-based services, and also enhance the involvement of local authorities and communities for the benefit of patients and carers.

In a further paper from 2016 Chinone[[88]](#footnote-81), a palliative care doctor in charge of developing the Japanese version of LCP-J also sets out the wider historical background of the LCP, its contents and some examples of its implementation elsewhere, before describing the reasons for introducing the LCP to Japan, why it should be adapted to the Japanese context, and the continuing possibilities for its implementation.

***India***

The LCP initiative in India began in 2006, with the creation of a generic document for the Indian setting. The pathway was redesigned and piloted in four sites, leading to its endorsement by the Indian Association of Palliative Care and the search for further pilot sites. The deployment of palliative care in India is captured in conference posters which are reviewed here; there may be others that we did not identify.

During 2009-10 conference posters were presented at various events, describing the origins of the LCP in India and also the piloting of an Indian adaptation of LCP at the Bangalore Baptist Hospital, Bangalore, using both a hospital and a community version. The most complete version of the poster was presented at the Indian Association of Palliative Care Annual Congress in 2010[[89]](#footnote-82).

An undated poster describing a five day educational workshop on the use of LCP in India, which took place in April 2011[[90]](#footnote-83). The workshop involved participants from 15 hospitals across India, of which eight signed up for introduction of the Indian Integrated Care Pathway.

***Italy***

We take the work on LCP in Italy last in our sequence here. It is not only substantial in terms of its 12 outputs, but arguably most robust in terms of scientific rigour, and it includes the only example of a randomised controlled trial (RCT) of LCP itself. It is therefore very closely tied to the overall LCP narrative, since the results of the RCT appeared after, and not before, a decision was taken to withdraw the LCP in the UK. Eleven papers on LCP by Italian authors were published between 2011-2014, the final one a review of pathways and evidence. The work was mainly conducted by a team of researchers and clinicians associated with a regional palliative care network of the National Cancer Research Institute and located in Genoa, Italy. It was led by Dr Massimo Costantini in a three-year programme of research funded by the Italian Minister of Health from 2006 to determine whether the implementation of LCP in a hospital setting could be effective in improving end of life care for cancer patients. LCP version 11 was first translated into Italian for hospital use in 2007 and for hospice use in 2009.

An initial paper by Costantini, Beccaro and di Leo (2011)[[91]](#footnote-84) draws attention to the issue of improving end of life care for patients dying in hospital, and their families. It refers to continuous quality improvement programmes as a vehicle for achieving this, highlighting the development of care pathways in this context, and singling out LCP as ‘the most structured and proficient’ (p.229) example of its type. Noting its use in over 20 countries, the authors also acknowledge that evidence for its effectiveness remains weak. Crucially, and in contrast to all other efforts in this regard, they adopt the MRC Framework for the Evaluation of Complex Interventions[[92]](#endnote-8) as the organising principle for their endeavours, in a focus on cancer patients dying in the hospital.

The researchers recognised that the LCP is a typical complex intervention, involving multiple components interacting with each other and with the local implementation setting. Accordingly, they first conducted a literature review to inform the development of the Italian approach, ‘Un percoso integrato per le cure di fine vita in ospedale’. They named their intervention LCP-I Program, and it contained 10 constituent steps that followed the continuous quality improvement programme recommended by the LCP Central team in Liverpool. Leo *et al*.,(2011)[[93]](#footnote-85) describe the process. After obtaining consent from the institution, Steps 1-3 (‘Development’) involved evaluating the context, the development of the documentation and a retrospective evaluation of end of life care on the ward. As reported in other studies elsewhere, the translation followed EORTC guidelines. Steps 4-8 (‘Implementation’) involved a detailed programme of intensive training, the introduction of LCP with added support and coaching, evaluation of the education programme, and establishment of LCP as an indicator of quality for all dying patients. Through steps 9 and 10 (‘Sustainability’) the intervention was endorsed by the quality improvement programme and discussions were initiated about its wider use regionally and nationally.

LCP-I was led by an experienced palliative care team comprising two physicians, three nurses and two psychologists. This contrasts with the use of ‘facilitators’ in the UK. The Italian group placed a very strong emphasis on training, with a mandatory programme of 12 hours for ward staff prior to implementation. The setting was three medical wards (72 beds) and one respiratory disease ward (24 beds) of the Villa Scassi Hospital, in Genoa during 2007. In total over 400 deaths occurred on the four wards each year, about half from cancer. The implementation was assessed using a mixed methods approach. Pre- and post- implementation focus groups conducted with doctors and nurses showed perceived benefits, particularly in pain management and in communication with families. Process and outcome measures were tested using more quantitative approaches. The results were encouraging and had begun to demonstrate the possibility of undertaking studies aimed at assessing complex interventions in end of life care.

The carefully designed staff focus groups are described by Di Leo *et al* (2011), though they refer to a single medical ward, spread over three floors, as the setting in the Villa Scassi Hospital. Two focus groups with nurses and physicians were conducted both at step 4 and at step 8 and were moderated by a psychologist. A researcher took field notes at each session and audio recordings were made. Although the groups were less well attended than planned, the results indicated that the LCP-I Program may have improved the subjective perception of participants’ knowledge on the management of physical symptoms, awareness of emotional problems and information needs in end of life care, and matters of communication between medical and nursing staff. Nurses perceived some resistance to change on the part of medical staff as a barrier to the introduction of LCP-I. All participants became more aware of their own limitations in communicating with patients and families, in ways that heightened their own uncertainties – an outcome seen by the authors as potentially positive and as a first step towards improvement. Overall, there was significant agreement that the implementation of LCP-I had improved and intensified communication between the medical and nursing staff on the ward. The researchers were reassured that, although undertaken in a different culture to the one in which LCP was first developed, LCP-I appeared to be acceptable and valid in the Italian context.

An outlying paper from the Italian publications was by Lusiani et al (2012)[[94]](#footnote-86) for the Veneto region. It reported on an initiative in which the entire staff of the internal medicine ward at the Ospedaliero di Castelfranco took part in a specially designed training programme to introduce a modified version of LCP, in collaboration with Rome-based section of the Sue Ryder Foundation. The main objective of the approach was ‘to ensure the comfort of the dying patient through judicious discontinuation of all non-essential medications and interventions, frequent and systematic assessment of the key symptoms, and greater emphasis on communication with the patient and his/her caregivers’ (p.110). Eighty two unselected patients managed with conventional care were compared, representing 20% of deaths on the ward in 2007-8, to 27 consecutive patients cared for using the new protocol between May 2008 – February 2009. Patients in the pathway group obtained almost complete relief of symptoms but received fewer interventions: catheterization (0% vs 19.4%); invasive procedures (o% vs 8.5%); parenteral nutrition (0% vs 3.6%). Systematic checks revealed persistent pain in only 2.9% of the pathway group, compared to 59.7% of the comparison group. The authors concluded that end of life care can be improved, even in non-specialist settings, ‘through organizational rather than technological interventions’ (p.111). No further studies from this group were identified however.

Meanwhile, as part of the main LCP-I programme in Genoa, the team engaged in careful methodological testing of how the intervention could be evaluated[[95]](#footnote-87). This involved an uncontrolled before/after intervention trial within the four hospital wards at the Scassi Hospital that included all patients age 18 and over who died of cancer on the medical wards in the four months before and after the introduction of the intervention (two months before and after on the respiratory ward). The ‘intervention’ group included those patients who had been assigned to the LCP as well as those that had not (though none of the papers give details of the numbers in each category or distinguish between them in the analysis). This was described as an ‘intention to treat’ methodology, which means all patients who were enrolled and randomly allocated to treatment are included in the analysis and are analysed in the groups to which they were randomized. The researchers used an uncontrolled quasi-experimental before/after design characterised by two measurement points, one before and one after the intervention, and without any external control group and acknowledged that this design has the potential to exaggerate the effects of the intervention. The researchers contacted the informal care giver most closely involved with the patient, two months after the death, and invited them to take part in an interview. Quality of care was assessed using a Toolkit of items developed in the USA[[96]](#endnote-9) and translated into Italian and which measured the extent to which care at the end of life met the expectations and needs of the dying person and the family members; deriving a total score from 0 (poorest) to 100 (excellent). Some items from the Italian version of the post-bereavement survey, first developed in the UK and known as ‘VOICES’[[97]](#endnote-10), were also used.

A total of 115 patients was identified, 65 before and 50 after LCP implementation; four of these were excluded as they were related to staff members on the wards, leaving 111. There were differences in the under-lying characteristics and clinical dimensions of the eligible and the assessed samples, notably fewer cancer deaths in both the eligible and the assessed ‘after’ group, perhaps due to a temporal effect. There were also differences in carer compliance at assessment (interviews in the pre-intervention group took place longer after the death) and in the characteristics of the interviews (post-implementation interviews were significantly more like to be by telephone), suggesting a selection bias and interviewer variability. In addition, the researchers identified a cluster effect associated with patterns of scores on the toolkit scale that correlated strongly with particular wards in the four that were included in the study. They concluded that the design they adopted had substantial limitations, and noted how this was reflected in the 2010 Cochrane Review of end of life pathways, which indicated potential benefits, but could not ascertain measureable effects from the available studies. At the same time, they were encouraged that it had proved possible to implement LCP-I, that staff had responded positively to the programme, and that insights had been gained for a future, and more robust evaluation. Nevertheless, the question remained whether this intensive method of LCP implementation, focussed on a single hospital and just four inter-related wards, could be replicated at scale across multiple settings.

The results of the pre- and post- trial relating to the experiences of family members and the possible effects of LCP-I were reported separately (Costantini *et al*.,2014)[[98]](#footnote-88) in a paper using the term ‘cluster phase II trial’ in its title, denoting that each hospital ward in the study constituted a ‘cluster’. An interview with a family member was obtained for 46 (73%) of the pre-intervention patients and 33 (69%) of the post-intervention patients. The second group showed higher scores on four out of seven dimensions of the Toolkit, relating to: respect, kindness and dignity; family emotional support; family self-efficacy; and co-ordination of care. There was no improvement in scores relating to symptom control.

The group also explored the potential for LCP-I outside the hospital, in the context of the Italian in-patient hospice (Leo *et al*.,2013)[[99]](#footnote-89). Now an adapted version of the LCP-I, with approval from LCP Central, was introduced into seven hospices from three Italian regions, where the proportion of patients who died on it ranged from 36-89%. The interpretation by staff of its value varied widely across the seven settings – two hospices reported a positive impact: two took the opposite view; in three others, opinions were mixed. There was an overall concern about the lack of knowledge to underpin the use of LCP in the hospice and also about the methods of implementation that had been used.

There was also a comparative assessment of the feasibility of the pre- and post- implementation research design in the two settings of hospice and hospital, reported in a methodological article (West *et al*.,2014)[[100]](#footnote-90). Here the primary aim was to evaluate the feasibility of using a combination of assessment methods, directed at different respondents, to create a measure of the quality of end of life care. The two randomised cluster trials took place in 8 hospitals and five hospices. Only cancer patients were included in the analysis. Overall the method seemed to work effectively in both settings, with high levels of compliance and adherence to the study instruments. But the main reservation related to the use of proxies (rather than patients) as the main data source, ‘with all that this entails’ (West *et al*.,2014: 6).

Another study examined the views of staff involved in the hospital implementation of the LCP-I, and who had shown reservations about it (Leo *et al*.,2015)[[101]](#footnote-91). It was claimed as first of its type. Six nurses and five physicians form six out of eight hospital wards that had used the LCO-I were interviewed. The authors themselves confirmed that the eligibility criteria for inclusion in the study were subjective and not insufficiently detailed. They identified ‘real’ concerns with the pathway but were also said to have identified mistaken interpretations of LCP among the respondents. Conducted before the Neuberger review had reported, the authors took the view that their results were nevertheless similar to concerns raised by Neuberger.

The earlier work had provided enough evidence to justify the use of a randomised trial to evaluate LCP-I effectiveness. The team had then published a protocol for their new design (Costantini *et al*.,2011)[[102]](#footnote-92). They argued that the ‘only feasible method’ to adopt was a cluster trial, where hospital wards are randomised to receive (or not receive) the intervention. This constituted a Phase III trial within the MRC Framework. In a departure from their previously highly localised work, they proposed that the intervention and control wards should be made up of ‘pairs’ from participating hospitals, which would be drawn from regions across Italy. The chosen patient group would remain those with a diagnosis of cancer. Inclusion criteria were carefully defined, the primary end points and sample size were described, and a detailed account was given of the administrative and implementation arrangements. The study was approved by the National Cancer Research Institute of Genoa in September 2009.

The key paper, published in The Lancet on 18 January 2014, was that which presented the results of the RCT in the 16 hospital wards, involving 147 patients who had been cared for on the pathway and 161 from control wards, who had received ‘standard care’; all had died from cancer (Costantini *et al.,*2014)[[103]](#footnote-93). The results showed no differences between the intervention and control groups in relation to the overall quality of care (the primary endpoint). But two of nine secondary outcomes reported by family members showed better results in the intervention group – improvements in respect, dignity and kindness and in the control of breathlessness. The authors acknowledged that the study was under-powered – they had enrolled just 80% of the planned hospitals and slightly over-estimated the expected number of deaths. There were no differences in the medicines prescribed to the two groups, in the survival time after admission to hospital or in the management of symptoms like pain, nausea and vomiting. In general the beneficial effects were lower than in the phase 2 trials in the Netherlands and in Italy. But the dye was cast. Neuberger had reported the previous summer and the verdict was that LCP should be discontinued.

Costantini and di Leo (2014)[[104]](#footnote-94) went on to describe the debate that took place in Italy, following the recommendations of the Neuberger report. They used the term ‘malpractice’ to describe some of the cases that found their way into the mass media in the UK, described and summarised the Neuberger report process and findings and noted the subsequent creation of the Leadership Alliance for the Care of Dying People in England, its aim of developing policies and processes to ensure high quality, consistent care for people in their last days, and its production of five priorities for care at the end of life. They note that ‘The story of the LCP is also Italian’ (p266) and describe its development, as detailed here, in the Italian context. Early results in Genoa had been positive and supported the design of a cluster randomized Phase III study, to assess the effectiveness of the programme in improving the quality of care of end of life care for patients dying of cancer in Italian hospitals. Despite the standardized implementation process and carefully planned support from the palliative care teams, the findings of this study were less encouraging than the Phase II studies and did not reach significance for the primary outcome, but did demonstrate some secondary benefits. In light of all these factors, over 50 clinicians from six Italian regions came together to share opinions and experiences about LCP-I. A list of 12 strengths and 13 weaknesses of the LCP programme in Italy was generated. There was a strong emphasis on coping with the risks associated with the intrinsic limitations of LCP and its inappropriate dissemination. The group took the decision to ‘phase out the LCP in Italy’ (p266-67) and noted that the same approach would be taken in all countries where the LCP had been disseminated. But Costantini and Leo observed ‘... the problem remains. The quality of care for the dying patients in hospital is suboptimal’. The LCP studies had demonstrated the feasibility of conducting high quality research in this field and this strategy would continue.

In the following year, Costantini, Alquati and Leo (2014)[[105]](#footnote-95) published a review on the evidence for pathways in end of life care. They acknowledged that two separate Cochrane reviews, updated at June 2013, did not find any studies of end of life care pathways that met the inclusion criteria, though the unique Italian study, albeit with its negative results, post-dated this. In a somewhat ambiguous sentence in the abstract, they concluded that ‘the overall amount of evidence supporting the dissemination of end-of-life-care pathways is rather poor’ (p1741). Two major drawbacks could be seen in the analysis of the quantitative studies on end of life pathways. First, poor internal validity of design: uncontrolled before and after studies have intrinsic weaknesses and are vulnerable to changes in the external environment that might lead to improvement, they are at risk of the Hawthorne effect, regression to the mean and are likely to overestimate the effects of interventions. Second: the piecemeal character of the studies meant they lacked a comprehensive strategy for research, in line with the MRC framework for the evaluation of complex interventions. The pool of studies undertaken in Italy, and proceeding through the three phases of the MRC framework, seems to be the only example of such a comprehensive strategy, though the authors note developments in Belgium and Sweden (at the tie unpublished, but described above here) that might merit inclusion in a Cochrane review of end of life pathways. In noting the outcome of the Neuberger review, the Italian authors also observe that none of the published studies report any adverse effects, relating to patients, family members or involved professionals. They called for more appropriately designed studies of end of life pathways, as well as studies taking account of the LCP ‘debate’ and the outcomes of the Neuberger report.

**Conclusions**

We identified 95 outputs covering the period 2001-19 and referring to 20 countries in which LCP interest and implementation had been considered or tried.

Just over half (n=11) of the countries identified in the literature review produced three published outputs or less: Slovenia, Ireland, Switzerland, Spain, Singapore, India, Denmark, China, Argentina, Norway. These countries generated 18 outputs in total, making just 19% of the total reviewed. With Switzerland and Norway, publications from these countries arose mainly from small scale developments, only occasionally based on wider collaborations and which had little impact on wider transfer or diffusion (for example colleagues in Spain working with others in Argentina). This is not to undermine however the value of this work to the actors involved, who gained local experience of the translation of an intervention into a new context, who sometimes adapted it with imagination and flair to local cultures and healthcare systems, and who used it to audit and benchmark their own end of life services.

The remaining nine countries, just under a half of those identified in the review, produced 4-17 publications each: (Japan, Netherlands, Italy, New Zealand, Australia, Sweden, Belgium, Austria, Germany). This accounted for no less than 77 outputs, making 81% of the total. These were all countries in which LCP transfer gained significant momentum, sometimes operating at scale and in some instances being subjected to rigorous testing in robust research studies. This in turn produced impactful publications in international journals, greater visibility in professional conferences, and in the case of Japan, a journal special edition devoted to LCP.

The authors of the papers reviewed were overwhelmingly clinicians, some with a strong research orientation and holding senior academic positions. The leading authors were mainly medical. There were few papers that involved nurses or other health professionals, and almost none that included social scientists or implementation experts. This is reflected in the character of the published outputs.

The largest single group of outputs, making one third of the total and completed in 15 countries, comprised descriptive audit studies, drawn from clinical records. These had often been undertaken following the guidance received from LCP Central in Liverpool. Some were baseline, pre-implementation assessments, others compared outcomes pre- and post- implementation.

The nine countries with the most outputs, were also those that produced the most robust research results, albeit with only three of these conducting the sort of controlled studies that would stand up to critical review and be published in leading journals. The 95 outputs we reviewed were therefore long on commentary and the sharing of experience, or focussed mainly on descriptive audit methodologies, sometimes with added process measures to shed light on acceptability and feasibility.

Only a tiny minority used rigorous designs, albeit with some flaws, and equivocal results. In Sweden the key study had modest results - a reduction in two symptoms in the intervention group – shortness of breath and nausea. In Italy, in an under-powered RCT, there were no overall differences in quality of care between the intervention and control group, though the latter, as described by family members, showed better results in the intervention group on two counts: improvements in respect, dignity and kindness and in the control of breathlessness. In the key Belgian study there were generally no significant differences between the intervention and control group in family members’ ratings but a *negative* effect on satisfaction with care among family members was observed in the intervention group.

**Acknowledgements**

This work was funded by a Wellcome Trust Investigator Award, held by Professor Clark, Grant Number 103319. Our thanks go to Anthony Bell, Nicole Baur, David Clelland, Chao Fang, Sheri Mila Gerson, Hamilton Inbadas, Amy McCreadie, Miho Tanaka, and the University of Glasgow librarians – for assistance in identifying and collating the papers for this review and undertaking translation work, where required.

**Full references to non-UK LCP publications reviewed**

1. AFZAL, N., BUHAGIAR, K., FLOOD, J. AND COSGRAVE, M. (2010). Quality of end-of-life care for dementia patients during acute hospital admission: a retrospective study in Ireland. *General Hospital Psychiatry*, **32**(2), pp.141-146.
2. ANDERSSON, S., LINDQVIST, O., FÜRST, C.-J., BRÄNNSTRÖM, M., (2018a). Care professionals’ experiences about using Liverpool Care Pathway in end-of-life care in residential care homes. *Scandinavian Journal of Caring Sciences*, **32**(1), pp.299-308.
3. ANDERSSON, S., LINDQVIST, O., FURST, C. J., & BRANNSTROM, M. (2018b). Family members' experiences of care of the dying in residential care homes where the Liverpool Care Pathway was used. *Int J Palliat Nurs,* **24**(4), pp. 194-202.
4. BEERNAERT, K., SMETS, T., COHEN, J., VERHOFSTEDE, R., COSTANTINI, M., EECLOO, K., VAN DEN NOORTGATE, N. & DELIENS, L. (2017). Improving comfort around dying in elderly people: a cluster randomised controlled trial. *The Lancet,* **390**(10090)**,** pp. 125-134.
5. BITSCHE, S., BRUNNER, B., GRINSCHGL, A., HATZL, P., HÜTTNER, M. & PRIMAVESI, M. (2009/10). Leitfaden zur betreuung sterbenderpatienten im krankenhaus. *Projektarbeit im 3. interprofessionellen Basislehrgang Palliative Care in Graz*: Graz.
6. BRÄNNSTRÖM, M., FÜRST, C. J., TISHELMAN, C., PETZOLD, M., LINDQVIST, O., MEDICINSKA, F., UMEÅ, U. & INSTITUTIONEN FÖR, O. (2016). Effectiveness of the Liverpool care pathway for the dying in residential care homes: An exploratory, controlled before-and-after study. *Palliative Medicine,* **30**(1)**,** pp. 54-63.
7. CHAN, R. J., WEBSTER, J., PHILLIPS, J. & CURROW, D. C. (2014). The withdrawal of the Liverpool Care Pathway in the United Kingdom: what are the implications for Australia? *Medical Journal of Australia,* **200**(10)**,** pp. 573-573.
8. CHINONE, Y. (2010). LCP（リバプール・ケア・パスウェイ）とは何か [What is LCP (Liverpool Care Pathway)]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp. 1825-28.
9. CHINONE, Y. (2016). 看取りのケアのクリニカルパス: Liverpool Care Pathway 日本語版の現在とこれから [A clinical pathway of end of life care: the present and future of the Japanese version of the Liverpool Care Pathway]. *Shinorinsho* 死の臨床. 39, pp. 17-8.
10. CLARK, J., MARSHALL, B., SHEWARD, K., ALLAN, S., & KEANE, B. (2008). Before and after the Liverpool Care Pathway: staff perceptions...17th International Congress on Palliative Care, September 23-26, 2008/Palais Des Congres, Montreal, Canada. *Journal of Palliative Care*, **24**(3), 200-200.
11. CLARK, J. B., SHEWARD, K., MARSHALL, B. & ALLAN, S. G. (2012a). Staff perceptions of end-of-life care following implementation of the Liverpool Care Pathway for the dying patient in the acute care setting: A New Zealand perspective. *Journal of Palliative Medicine,* **15**(4)**,** pp. 468-473.
12. CLARK, J., MARSHALL, B., SHEWARD, K., & ALLAN, S. (2012b). Staff perceptions of the impact of the Liverpool Care Pathway in aged residential care in New Zealand. *International Journal of Palliative Nursing* , **18**(4), 171-178.
13. COSTANTINI, M., BECCARO, M. & DI LEO, S. (2011). Improving quality of end-of-life care. A possible and necessary change. *Epidemiologia e prevenzione,* **35**(3-4)**,** pp. 229-233.
14. COSTANTINI, M., OTTONELLI, S., CANAVACCI, L., PELLEGRINI, F. & BECCARO, M. (2011). The effectiveness of the Liverpool care pathway in improving end of life care for dying cancer patients in hospital. A cluster randomised trial. *BMC Health Services Research,* **11**(1)**,** pp. 13-13.
15. COSTANTINI, M., DI LEO, S., & BECCARO, M. (2011). Methodological issues in a before-after study design to evaluate the Liverpool Care Pathway for the Dying Patient in hospital. *Palliative Medicine*, **25**(8), 766-773.
16. COSTANTINI, M., ALQUATI, S. & DI LEO, S. (2014). End-of-life care: pathways and evidence. *Current Opinion in Supportive and Palliative Care*, **8**(4), pp.399-404.
17. COSTANTINI, M. & DI LEO, S. (2014). Comment to the article: Wise J. Five priorities of care for dying people replace Liverpool care pathway. *Italian Journal of Medicine,* **8**(4)**,** pp. 265-267.
18. COSTANTINI, M., PELLEGRINI, F., DI LEO, S., BECCARO, M., ROSSI, C., FLEGO, G., ROMOLI, V., GIANNOTTI, M., MORONE, P., IVALDI, G. P., CAVALLO, L., FUSCO, F. & HIGGINSON, I. J. (2014). The Liverpool Care Pathway for cancer patients dying in hospital medical wards: A before–after cluster phase II trial of outcomes reported by family members. *Palliative Medicine,* **28**(1)**,** pp.10-17.
19. COSTANTINI, M., ROMOLI, V., DI LEO, S., BECCARO, M., BONO, L., PILASTRI, P., MICCINESI, G., VALENTI, D., PERUSELLI, C., BULLI, F. & FRANCESCHINI, C. (2014b). Liverpool Care Pathway for patients with cancer in hospital: a cluster randomised trial. *The Lancet,* **383**(9913), pp. 226-237.
20. DEKKER, N. L., GYSELS, M. & VAN DER STEEN, J. T. (2018). Professional caregivers' experiences with the Liverpool Care Pathway in dementia: An ethnographic study in a Dutch nursing home. *Palliative & Supportive Care,* **16**(4)**,** pp. 479-486.
21. DI LEO, S., BECCARO, M., FINELLI, S., BORREANI, C. & COSTANTINI, M. (2011). Expectations about and impact of the Liverpool Care Pathway for the dying patient in an Italian hospital. *Palliative Medicine,* **25**(4)**,** pp. 293-303.
22. DI LEO, S., ROMOLI, V., HIGGINSON, I. J., BULLI, F., FANTINI, S., SGUAZZOTTI, E. & COSTANTINI, M. (2015). ‘Less ticking the boxes, more providing support’: A qualitative study on health professionals’ concerns towards the Liverpool Care of the Dying Pathway. *Palliative Medicine,* **29**(6)**,** pp. 529-537.

EKESTRÖM, M.-L., OLSSON, M., RUNESDOTTER, S. & FÜRST, C. J. (2014). Family members' experiences of the impact of the LCP in a palliative care unit and a geriatric ward in Sweden. *International Journal of Palliative Nursing,* **20**(8)**,** pp. 381- 386.

1. FUKUTA, K. (2010). 事例を用いたLCPの実際 [Examples of LCP in practice]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1849-61.
2. GEIJTEMAN, E., DEKKERS, A. G. W. M. & VAN ZUYLEN, L. (2013). 10 jaar Zorgpad Stervensfase: belangrijke verbeteringen in de zorg in de laatste levensdagen. *Nederlands Tijdschrift voor Geneeskunde,* **157**(37), pp.1-4.
3. GÖSSI, U. (2012). Palliative Care: "we have always done it like that!" Problems and experience in palliative care from the point of view of an internist. *Therapeutische Umschau. Revue therapeutique*, **69**(2), pp. 75-80.
4. GROSSENBACHER-GSCHWEND, B. & EYCHMÜLLER, S. (2007). Der Liverpool Care Pathway of the dying. [The Liverpool Care Pathway of the Dying] *Der Onkologe*, **13**(4), pp. 343-349.
5. HARDY, J. R., HABERECHT, J., MARESCO‐PENNISI, D., YATES, P. & AUSTRALIAN BEST CARE OF THE DYING NETWORK, Q. (2007). Audit of the care of the dying in a network of hospitals and institutions in Queensland. *Internal Medicine Journal,* **37**(5)**,** pp. 315-319.
6. HASEGAWA, T., TAGUCHI, M., NANORI, K. AND SUGIYAMA, Y. (2015).  Liverpool Care Pathway 日本語版による 一般病棟でのがん患者の看取りの ケアの質の向上に関する検討 [Outcome evaluation of introducing the Japanese version of the Liverpool Care Pathway for patients with cancer in a general ward]. *Palliative Care Research*, 10, pp. 315-20.
7. HODGSON, S. H., VIDAL-ESPAÑA, F., RODRÍGUEZ, M. R., GONZÁLEZ, R. M. C., DE LA TORRE, A. A. & ROSELLÓ, M. L. M. (2012). Procedimiento de adaptación transcultural al castellano e implementación del Liverpool Care Pathway for the dying patient (Versión 11) en un centro de cuidados paliativos. *Medicina Paliativa,* **19**(4)**,** pp. 129-132.
8. HØGNES, L., DANIELSON, E., NORBERGH, K. G., & MELIN-JOHANSSON, C. (2016). Healthcare professionals' documentation in nursing homes when caring for patients with dementia in end of life - a retrospective records review. *J Clin Nurs*, 25(11-12), 1663-1673.
9. HONGYAN, NIU., PEIXI, WANG. & XINMING, ZHOU. (2011). The development of hospice nursing in China and the Liverpool Care Pathway. *Chinese Nursing Journal*, **25**(2b), pp. 384-385.
10. HOREY, D. E., STREET, A. F. & SANDS, A. F. (2012). Acceptability and feasibility of end‐of‐life care pathways in Australian residential aged care facilities. *Medical Journal of Australia,* **197**(2)**,** pp. 106-109.
11. HUSEBØ, B. S., FLO, E. & ENGEDAL, K. (2017a). The Liverpool Care Pathway: a systematic review discarded in cancer patients but good enough for dying nursing home patients? *BMC Medical Ethics,* **18**(1), pp. 1-13.
12. HUSEBO, B. S., FLO, E., & ENGEDAL, K. (2017b). Erratum to: The Liverpool Care Pathway: discarded in cancer patients but good enough for dying nursing home patients? A systematic review. *BMC Med Ethics,* **18**(1), 52.
13. ICHIHARA, K., MIYASHITA, M., FUKUDA, K., CHINONE, Y., KIYOHARA, E., MORITA, T., TAMURA, K., HAYAMA, Y. AND OISHI, F. (2012). 看取りのケアにおけるLiverpool Care Pathway 日本語版の意義と導入可能性: 緩和ケア病棟2 施設におけるパイロットスタディ[The significance and possibility of introduction of a Japanese language version of the Liverpool Care Pathway for the Dying Patient: The pilot study in the two palliative care units]. *Palliative Care Research*, 7, pp.149-62.
14. ICHIHARA, K. (2010). LCPを臨床現場に適用する；緩和ケア病棟におけるLCP日本語版の導入[Applications of LCP in clinical settings: introducing LCP-J in palliative care units]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1838-48.
15. IVERSEN, G. S., & HAUGEN, D. F. (2015). Liverpool Care Pathway: Personalets erfaringer i to norske sykehus. *Norwegian Journal of Clinical Nursing* / Sykepleien Forskning, **10**(2), 144-151.
16. JACKSON, K., MOONEY, C. & CAMPBELL, D. (2009). The development and implementation of the pathway for improving the care of the dying in general medical wards. *Internal Medicine Journal,* **39**(10)**,** pp. 695-699.
17. KANNO, Y., HIRAHARA, Y., ARAKI, K., MATSUMURA, Y., YASUGI, M., KAWAMURA, Y., KOGA, T., CHINONE, Y. & MIYASHITA, M. (2014). Development and Feasibility of the Japanese language version Liverpool Care Pathway for the Dying Patient - Home. *Palliative Care Research,* 9**,** pp. 112-20.
18. KANNO, Y., SATO, K., HAYAKAWA, Y., TAKITA, Y., AGATSUMA, T., CHIBA, T., HONDA, K., SHIBATA, H., YAMAUCHI, K., TAKAHASHI, S.,  INOUE, A. AND MIYASHITA, M. (2015). 一般病棟で看取りのケアのクリニカル・パス Liverpool Care Pathway日本語版を導入するための課題―大学病院での使用経験から [The burden of introducing the Japanese language version of the Liverpool Care Pathway（LCP-J）for dying patients in general wards and their families: experience of health care professionals in a university hospital]. *Palliative Care Research*, 10, pp. 318-23.
19. KEANE, B., TAYLOR, A., & CLARK, J. (2007). Meeting the needs of patients in the last days of life. Kai Tiaki Nursing New Zealand, **13**(2), 12-14.
20. KOON, O. E., NEO HUI SHAN, S., SHIVANANDA, S., YING, T. Y., THANG, A., KYAWT, A. M., SANTOSO, U., YIN, G. P. S., CHUNG PHENG, A. Y. & NEO SOEK HUI, P. (2015). Use of a Modified Liverpool Care Pathway in a Tertiary Asian Hospital: Is There Still a Role for It? *Journal of Palliative Medicine,* **18**(6)**,** pp. 56-512.
21. LE, B. H. C. & WATT, J. N. (2010). Care of the dying in Australia's busiest hospital: benefits of palliative care consultation and methods to enhance access. *Journal of palliative medicine,* **13**(7)**,** pp. 855-860.
22. LEO, S. D., BONO, L., ROMOLI, V., WEST, E., AMBROSIO, R., GALLUCCI, M., PILASTRI, P., CIURA, P. L., MORINO, P., PIAZZA, M., VALENTI, D., FRANCESCHINI, C. & COSTANTINI, M. (2013). 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. *American Journal of Hospice and Palliative Medicine,* **31**(1)**,** pp. 61-68.
23. LEO, S., BECCARO, M., FINELLI, S., BORREANI, C. & COSTANTINI, M. (2011). Expectations about and impact of the Liverpool Care Pathway for the dying patient in an Italian hospital. *Palliative Medicine,* **25**(4)**,** pp. 293-303.
24. LO, S. H., CHAN, C. Y., CHAN, C. H., SZE, W. K., YUEN, K. K., WONG, C. S., NG, T. Y. & TUNG, Y. (2009). The implementation of an end-of-life integrated care pathway in a Chinese population. *International Journal of Palliative Nursing,* **15**(8)**,** pp.384-388.
25. LOKKER, M., ZUYLEN, L., VEERBEEK, L., RIJT, C. & HEIDE, A. (2012). Awareness of dying: it needs words. *Supportive Care in Cancer,* **20**(6)**,** pp. 1227-1233.
26. LUSIANI, L., BORDIN, G., MANTINEO, G., RONCATO, P., FAVARO, L., TESSARO, L., . . . BORDIN, F. (2012). End-of-life care for cancer patients in an Internal Medicine department. Italian Journal of Medicine, **6**(2), 110-115.
27. MACKENZIE, T., INNES, J., BOYD, M., KEANE, B., BOXALL, J. & ALLAN, S. (2011). Evaluating the role and value of a national office to coordinate Liverpool Care Pathway implementation in New Zealand. *International Journal of Evidence-Based Healthcare*, **9**(3), pp. 252-260.
28. MARSHALL, B., CLARK, J., SHEWARD, K. & ALLAN, S. (2011). Staff perceptions of end-of-life care in aged residential care: A New Zealand perspective. *Journal of Palliative Medicine,* **14**(6)**,** pp. 688-695.
29. MENESES, J., FLODGREN, G. & BERG, R. C. (2016). *Bruk av Liverpool Care Pathway ved livets slutt*. Norsk folkehelseinstitutt, Oslo. URL: https://www.fhi.no/en/publ/2016/ liverpool-care-pathway-end-of-life/.
30. MIYASHITA, M. (2010). 特集に当たって [About this special issue]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1812-14.
31. MIYASHITA, M. AND SHIMIZU, M. (2010). LCP日本語版の概要と使用方法 [Outlines and instructions of the Japanese version of LCP (LCP-J)]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1829-37.
32. MIYASHITA, M. (Ed.) (2010). リバプール・ケア・パスウェイを用いた看取りのケアの質向上 [Rethink palliative care: using the Liverpool Care Pathway to improve the quality of palliative care]. [Special issue]. 臨牀看護*Clinical Nursing*, 36.
33. MULLER, E. (2011). Der Liverpool care Pathway for the Dying Patient” als Navigationshilfe: Die Vorstellung eines Leitfadens zur Begleitung Sterbender. Nordensredt, Books on Demand.
34. MÜLLER, E., PFISTERER, M. H. D. & OSTER, P. (2009). [Use of the "Liverpool Care Pathway" in nursing homes.] Der Einsatz des “Liverpool Care Pathway” im Pflegeheim. *DWM - Deutsche Medizinische Wochenschrift*, **134**(37), pp. 1838-1838.
35. MURAKAMI, M., YAMAMOTO, N., KAKEUCHI, Y., KOBAYASHI, Y. AND SATO, H. (2014). 緩和ケア病棟におけるLiverpool Care Pathway 日本語版の使用と非使用に関する後ろ向き検討 [A retrospective study between use and not－use of the Japanese version of the Liverpool Care Pathway]. *Palliative Care Research*, 9, pp.301-5.
36. NAKAJIMA, N. (2010). 一般病棟におけるLCPの使用経験と利用のコツ [Experiences and tips of implementing LCP in general wards]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1862-68.
37. NEO, P. S. H., POON, M. C., PEH, T. Y., ONG, S. Y. K., KOO, W. H., SANTOSO, U., GOH, C. R. & YEE, A. C. P. (2012). Improvements in end-of-life care with a protocol-based pathway for cancer patients dying in a Singapore hospital. *Annals of the Academy of Medicine, Singapore,* **41**(11)**,** pp. 483-493.
38. OLSSON, C., KLING, E., GRUNDEL PERSSON, K., & LARSSON, M. (2019). Impact of the Liverpool Care Pathway on quality end-of- care in residential care homes and home care—Nurses’ perceptions. Nursing Open, **6**(4), 1589-1599.

OSSA SENDRA, J DE LA., ARRANZ DE LA TORRE, A., CAZORLA GONZÁLEZ, RM. (n.d) Valoración de una experiéncia de implementación del ‘Liverpool care pathway for the dying patient’ en un centro de cuidados paliativos [assessment of a case of implementing the Liverpool care pathway for the dying patient in a palliative care centre]*Enfermeras Fundación CUDECA.*Málaga: Spain.

1. RAIJMAKERS, N., DEKKERS, A., GALESLOOT, C., VAN ZUYLEN, L. & VAN DER HEIDE, A. (2015). Barriers and facilitators to implementation of the Liverpool Care Pathway in the Netherlands: a qualitative study. *BMJ Supportive & Palliative Care,* **5**(3)**,** pp. 259-265.

REYMOND, L., ISRAEL, F. J. & CHARLES, M. A. (2011). A residential aged care end-of-life care pathway (RAC EoLCP) for Australian aged care facilities. *Australian Health Review: a Publication of the Australian Hospital Association,* **35**(3)**,** pp. 350-356.

RÖTZER, F (2009) Durch Palliativmedzin zum Sterben verurteilt? Medziner warnen vor Untiefen einer Richtlinie zur Betreuungvon sterbende Patienten. Aberguen am 22, November 2012 – http://www.heise.de/tp/artikel/31/310631/1.html [link no longer available].

RUPPERT, S., HEINDL, P. & KOZON, V. (2012). Rolle der Pflege bei ethischen Entscheidungen. *Imago Hominis,* **19**(2)**,** pp. 97-105.

SCHLIEPER, D., ALTREUTHER, C., SCHALLENBURGER, M., NEUKIRCHEN, M., SCHMITZ, A. & SCHULZ-QUACH, C. (2017). Electronic Implementation of Integrated End-of-life Care: A Local Approach. *International Journal of Integrated Care,* **17**(2)**,** pp. 4.

1. SCHULTZ, C., SCHLIEPER, D., ALTREUTHER, C., SCHALLENBURGER, M., FETZ, K. & SCHMITZ, A. (2015). The characteristics of patients who discontinue their dying process - an observational study at a single university hospital centre. *BMC Palliative Care,* **14**(1)**,** pp. 72.
2. SHEWARD, K., CLARK, J., MARSHALL, B. & ALLAN, S. (2011). Staff perceptions of end-of-life care in the acute care setting: A New Zealand perspective. *Journal of Palliative Medicine,* **14**(5)**,** pp. 623-630.
3. SIMON, S. T., MARTENS, M., SACHSE, M., BAUSEWEIN, C., EYCHMÜLLER, S. & SCHWARZ-EYWILL, M. (2009). Sterbebegleitung im Krankenhaus–erste Erfahrungen mit dem “Liverpool Care Pathway” (LCP) in Deutschland. *DMW-Deutsche Medizinische Wochenschrift,* 134**,** pp. 1399-1404.
4. SIU, S. W. K., LIU, R. K. Y., CHEUNG, K. W., CHOY, T. S., LEUNG, T. W., & AU, G. K. H. (2011). End-of-life-care for Chinese patients in acute care ward setting: Experience in an oncology ward and report on a pilot project on the use of an integrated care pathway. Palliative Medicine, **25**(6), 664-665.
5. SWART, S., VAN VELUW, H., KONINGSWOUD, J., BAAR, F., VAN DER RIJT, C. & VAN ZUYLEN, L. V. (2003). 'Liverpool integrated Care Pathway' naar 'Zorgpad voor de Stervensfase-Rotterdam'. *Nederlands tijdschrift voor palliatieve zorg,* 1**,** pp. 12-161.
6. SWART, S., VELUW, H., ZUYLEN, L., GAMBLES, M. & ELLERSHAW, J. (2006). Dutch experiences with the Liverpool Care Pathway. *European Journal of Palliative Care,* **13**(4)**,** pp. 156-159.
7. TANAKA, M. AND KODAMA, M. 2017. 終の選択 : 終末期医療を考える [Choices of the end: thinking about end of life care]. Tokyo: 勁草書房Keisoshobo.
8. THURSTON, J., & WATERWORTH, S. (2012). 'Making sense': nurses' experiences of changing practice in caring for dying patients in New Zealand. *Int J Palliat Nurs,* **18**(10), 500-507.
9. TRIPODORO, V. A., VON PETERY, G., DE SIMONE, G., JUNIN, M., & BERENGUER, M. C. (2010). Traducción, adaptación cultural e implementación en Argentina del Liverpool care pathway para el cuidado integral de pacientes en últimos días de vida...*18th International Congress on Palliative Care, October 5-8, 2010 - Palais Des Congres, Montreal, Canada. Journal of Palliative Care,* 26.
10. TRIPODORO, V. A., LUXARDO, N., VELOSO, V., ET AL (2013). Implementación del Liverpool Care Pathway en español en Argentina y en España: exploración de las percepciones de los profesionales ante el final de la vida. *Medicina Paliativa,* **22**(3)**,** pp. 16.
11. VAN DER HEIDE, A. M. D. P., VEERBEEK, L. M., SWART, S. M. D., VAN DER RIJT, C. M. D. P., VAN DER MAAS, P. J. M. D. P. & VAN ZUYLEN, L. M. D. P. (2010). End-of-Life Decision Making for Cancer Patients in Different Clinical Settings and the Impact of the LCP. *Journal of Pain and Symptom Management,* **39**(1)**,** pp. 33-43.
12. VAN DOOREN, S., VAN VELUW, H. T. M., VAN ZUYLEN, L., RIETJENS, J. A. C., PASSCHIER, J., & VAN DER RIJT, C. C. D. (2009). Exploration of concerns of relatives during continuous palliative sedation of their family members with cancer. Journal of Pain and Symptom Management, **38**(3), 452-459.
13. VEERBEEK, L., VAN ZUYLEN, L., GAMBLES, M., SWART, S. J., VAN DER HEIDE, A., VAN DER RIJT, C. C. D. & ELLERSHAW, J. E. (2006). Audit of the Liverpool Care Pathway for the Dying Patient in a Dutch cancer hospital. Journal of Palliative Care, **22**(4), pp. 305-308.
14. VEERBEEK, L., VAN DER HEIDE, A., DE VOGEL-VOOGT, E., DE BAKKER, R., D. VAN DER RIJT, C. C., SWART, S. J., VAN DER MAAS, P. J. & VAN ZUYLEN, L. (2008a). Using the LCP: bereaved relatives' assessments of communication and bereavement. *American Journal of Hospice and Palliative Medicine,* **25**(3)**,** pp. 207-214.
15. VEERBEEK, L., VAN ZUYLEN, L., SWART, S. J., VAN DER MAAS, P. J., DE VOGEL-VOOGT, E., VAN DER RIJT, C. C. D. & VAN DER HEIDE, A. (2008b). The effect of the Liverpool Care Pathway for the dying: a multi-centre study. *Palliative Medicine,* **22**(2)**,** pp. 145-151.
16. VAN VELUW, Y., SHROFER, S.J., VAN ZUYLEN, L. (2004). Een zorgpad voor de stervenfase. *Tijdschrift voor Verpleegkundigen*, Nr 2, pp. 45-48.
17. VERHOFSTEDE, R., SMETS, T., COHEN, J., COSTANTINI, M., VAN DEN NOORTGATE, N. & DELIENS, L. (2016). Implementing the care programme for the last days of life in an acute geriatric hospital ward: a phase 2 mixed method study. *BMC Palliative Care,* **15**(1)**,** pp. 1-12.
18. VERHOFSTEDE, R., SMETS, T., COHEN, J., COSTANTINI, M., VAN DEN NOORTGATE, N. & DELIENS, L. (2015b). Improving end-of-life care in acute geriatric hospital wards using the Care Programme for the Last Days of Life: study protocol for a phase 3 cluster randomized controlled trial. *BMC Geriatrics,* **15**(1)**,** pp. 13-13.
19. VERHOFSTEDE, R., SMETS, T., COHEN, J., COSTANTINI, M., VAN DEN NOORTGATE, N., HEIDE, A. & DELIENS, L. (2015a). Development of the care programme for the last days of life for older patients in acute geriatric hospital wards: A phase 0-1 study according to the Medical Research Council Framework. *BMC Palliative Care,* **14**(1)**,** pp. 1-10.
20. VOLTZ, R., NUBLING, G. & LORENZL, S. (2013). ‘Care for the dying neurologic patient’ in: Bernat, J and Beresford, R. (ed.) *Ethical and Legal Issues in Neurology*. pp. 141-145. Amsterdam, Elsevier.
21. WEST, E., ROMOLI, V., DI LEO, S., HIGGINSON, I. J., MICCINESI, G. & COSTANTINI, M. (2014). Feasibility of assessing quality of care at the end of life in two cluster trials using an after-death approach with multiple assessments. *BMC Palliative Care,* **13**(1)**,** pp. 1-8.
22. WILKINSON, A. M., JOHNSON, C. E., WALKER, H., COLGAN, V., ARNET, H. & RAI, T. (2015). Evaluating the Liverpool Care Pathway for care of the terminally ill in rural Australia. *Supportive Care in Cancer,* **23**(11)**,** pp. 3173-3181.
23. YAMAGISHI, A., MORITA, T., MIYASHITA, M., AKIZUKI, N., KIZAWA, Y., SHIRAHIGE, Y., AKIYAMA, M., HIRAI, K., KUDO, T., YAMAGUCHI, T., FUKUSHIMA, A. & EGUCHI, K. (2008). Palliative Care in Japan: Current Status and a Nationwide Challenge to Improve Palliative Care by the Cancer Control Act and the Outreach Palliative Care Trial of Integrated Regional Model (OPTIM) Study. *American Journal of Hospice and Palliative Medicine,* **25**(5)**,** pp. 412-418.

YOSHIKAZU, C. (2016). A medical pathway of end of life care – current status and future of the Japanese version of the Liverpool Care Pathway. *The Japanese Journal of Clinical Research on Death and Dying,* **39** (1), pp. 17-18.

1. ZINNER, M. (2013). *Der "Liverpool Care Pathway": Ein Behandlungspfad zur Begleitung Sterbender,* Munich, GRIN Verlag.

Endnote section for literature not included within the review.

1. See: The literature review, at: <http://libguides.usc.edu/c.php?g=235034&p=1559822>, accessed 21 January 2020. [↑](#endnote-ref-1)
2. Greenhalgh, T and Peacock, R Effectiveness and efficiency of search methods in systematic reviews of complex evidence: audit of primary sources. BMJ. 2005 Nov 5; 331(7524): 1064–1065. doi: 10.1136/bmj.38636.593461. [↑](#endnote-ref-2)
3. Smeding, R Bolger, M Ellershaw, J (2011) ‘International development of the Liverpool Care Pathway for the Dying Patient (LCP)’, in J Ellershaw and S Wilkinson (eds) *Care of the Dying: A Pathway to Excellence*. pp. 189-205. 2nd Edition, New York: Oxford University Press. [↑](#endnote-ref-3)
4. SWART, S., VAN VELUW, H., KONINGSWOUD, J., BAAR, F., VAN DER RIJT, C. & VAN ZUYLEN, L. V. (2003). 'Liverpool integrated Care Pathway' naar 'Zorgpad voor de Stervensfase-Rotterdam'. *Nederlands tijdschrift voor palliatieve zorg,* **1,** pp. 12-161. [↑](#footnote-ref-1)
5. VAN VELUW, Y., SHROFER, S.J., VAN ZUYLEN, L. (2004). Een zorgpad voor de stervenfase. *Tijdschrift voor Verpleegkundigen, Nr 2, pp45-48.* [↑](#footnote-ref-2)
6. VEERBEEK, L., VAN ZUYLEN, L., GAMBLES, M., SWART, S. J., VAN DER HEIDE, A., VAN DER RIJT, C. C. D. & ELLERSHAW, J. E. (2006). Audit of the Liverpool Care Pathway for the Dying Patient in a Dutch cancer hospital. *Journal of Palliative Care,* **22**(4)**,** pp. 305-308. [↑](#footnote-ref-3)
7. SWART, S., VELUW, H., ZUYLEN, L., GAMBLES, M. & ELLERSHAW, J. (2006). Dutch experiences with the Liverpool Care Pathway. *European Journal of Palliative Care,* **13**(4)**,** pp. 156-159. [↑](#footnote-ref-4)
8. VEERBEEK, L., VAN ZUYLEN, L., GAMBLES, M., SWART, S. J., VAN DER HEIDE, A., VAN DER RIJT, C. C. D. & ELLERSHAW, J. E. (2006). Audit of the Liverpool Care Pathway for the Dying Patient in a Dutch cancer hospital. *Journal of Palliative Care,* **22**(4)**,** pp. 305-308. [↑](#footnote-ref-5)
9. VEERBEEK, L., VAN DER HEIDE, A., DE VOGEL-VOOGT, E., DE BAKKER, R., D. VAN DER RIJT, C. C., SWART, S. J., VAN DER MAAS, P. J. & VAN ZUYLEN, L. (2008a). Using the LCP: bereaved relatives' assessments of communication and bereavement. *American Journal of Hospice and Palliative Medicine,* **25**(3)**,** pp. 207-214. [↑](#footnote-ref-6)
10. VEERBEEK, L., VAN ZUYLEN, L., SWART, S. J., VAN DER MAAS, P. J., DE VOGEL-VOOGT, E., VAN DER RIJT, C. C. D. & VAN DER HEIDE, A. (2008b). The effect of the Liverpool Care Pathway for the dying: a multi-centre study. *Palliative Medicine,* **22**(2)**,** pp. 145-151. [↑](#footnote-ref-7)
11. VAN DOOREN, S., VAN VELUW, H. T. M., VAN ZUYLEN, L., RIETJENS, J. A. C., PASSCHIER, J., & VAN DER RIJT, C. C. D. (2009). Exploration of concerns of relatives during continuous palliative sedation of their family members with cancer. *Journal of Pain and Symptom Management*, **38**(3), pp. 452-459. [↑](#footnote-ref-8)
12. VAN DER HEIDE, A. M. D. P., VEERBEEK, L. M., SWART, S. M. D., VAN DER RIJT, C. M. D. P., VAN DER MAAS, P. J. M. D. P. & VAN ZUYLEN, L. M. D. P. (2010). End-of-Life Decision Making for Cancer Patients in Different Clinical Settings and the Impact of the LCP. *Journal of Pain and Symptom Management,* **39**(1)**,** pp. 33-43. [↑](#footnote-ref-9)
13. LOKKER, M., ZUYLEN, L., VEERBEEK, L., RIJT, C. & HEIDE, A. (2012). Awareness of dying: it needs words. *Supportive Care in Cancer,* **20**(6)**,** pp. 1227-1233. [↑](#footnote-ref-10)
14. GEIJTEMAN, E., DEKKERS, A. G. W. M. & VAN ZUYLEN, L. (2013). 10 jaar Zorgpad Stervensfase: belangrijke verbeteringen in de zorg in de laatste levensdagen. *Nederlands Tijdschrift voor Geneeskunde,* **157**(37), pp.1-4. [↑](#footnote-ref-11)
15. RAIJMAKERS, N., DEKKERS, A., GALESLOOT, C., VAN ZUYLEN, L. & VAN DER HEIDE, A. (2015). Barriers and facilitators to implementation of the Liverpool Care Pathway in the Netherlands: a qualitative study. *BMJ Supportive & Palliative Care,* **5**(3)**,** pp. 259-265. [↑](#footnote-ref-12)
16. DEKKER, N. L., GYSELS, M. & VAN DER STEEN, J. T. (2018). Professional caregivers' experiences with the Liverpool Care Pathway in dementia: An ethnographic study in a Dutch nursing home. *Palliative & Supportive Care,* **16**(4)**,** pp. 479-486. [↑](#footnote-ref-13)
17. VERHOFSTEDE, R., SMETS, T., COHEN, J., COSTANTINI, M., VAN DEN NOORTGATE, N., HEIDE, A. & DELIENS, L. (2015a). Development of the care programme for the last days of life for older patients in acute geriatric hospital wards: A phase 0-1 study according to the Medical Research Council Framework. *BMC Palliative Care,* **14**(1)**,** pp. 1-10. [↑](#footnote-ref-14)
18. Craig, P Dieppe, P Macintyre, S Michie, S Nazareth, I Petticrew, M

    Developing and evaluating complex interventions: the new medical research council guidance. Brit Med J 2008,337(0959–535):a1655. [↑](#endnote-ref-4)
19. VERHOFSTEDE, R., SMETS, T., COHEN, J., COSTANTINI, M., VAN DEN NOORTGATE, N. & DELIENS, L. (2015b). Improving end-of-life care in acute geriatric hospital wards using the Care Programme for the Last Days of Life: study protocol for a phase 3 cluster randomized controlled trial. *BMC Geriatrics,* **15**(1)**,** pp. 13-13. [↑](#footnote-ref-15)
20. VERHOFSTEDE, R., SMETS, T., COHEN, J., COSTANTINI, M., VAN DEN NOORTGATE, N. & DELIENS, L. (2016). Implementing the care programme for the last days of life in an acute geriatric hospital ward: a phase 2 mixed method study. *BMC Palliative Care,* **15**(1)**,** pp. 1-12. [↑](#footnote-ref-16)
21. BEERNAERT, K., SMETS, T., COHEN, J., VERHOFSTEDE, R., COSTANTINI, M., EECLOO, K., VAN DEN NOORTGATE, N. & DELIENS, L. (2017). Improving comfort around dying in elderly people: a cluster randomised controlled trial. *The Lancet,* **390**(10090)**,** pp. 125-134. [↑](#footnote-ref-17)
22. Aslakson, RA Lorenz K (2017). Being CAREFuL about improving end-of-life care in hospitals. *The Lancet*, 390 (10090), 97-98. doi: 10.1016/S0140-6736(17)31325-9 [↑](#endnote-ref-5)
23. Clark, D Graham, F (2013) The Hospice Friendly Hospitals Programme in Ireland: A Narrative History. Dublin: Irish Hospice Foundation, available at <http://hospicefoundation.ie/wp-content/uploads/2014/09/The-Hospice-Friendly-hospitals-programme-in-Ireland-a-narrative-history.pdf> , accessed 2 January 2020. [↑](#endnote-ref-6)
24. AFZAL, N., BUHAGIAR, K., FLOOD, J. AND COSGRAVE, M. (2010). Quality of end-of-life care for dementia patients during acute hospital admission: a retrospective study in Ireland. *General Hospital Psychiatry*, **32**(2), pp.141-146. [↑](#footnote-ref-18)
25. GROSSENBACHER-GSCHWEND, B & EYCHMÜLLER, S (2007). Der Liverpool Care Pathway of the dying. [The Liverpool Care Pathway of the Dying] *Der Onkologe*, **13**(4), pp.343-349. [↑](#footnote-ref-19)
26. GÖSSI, U. (2012). Palliative Care: "we have always done it like that!" Problems and experience in palliative care from the point of view of an internist. *Therapeutische Umschau. Revue therapeutique*, **69**(2), pp. 75. [↑](#footnote-ref-20)
27. SIMON, S. T., MARTENS, M., SACHSE, M., BAUSEWEIN, C., EYCHMÜLLER, S. & SCHWARZ-EYWILL, M. (2009). Sterbebegleitung im Krankenhaus–erste Erfahrungen mit dem “Liverpool Care Pathway” (LCP) in Deutschland. *DMW-Deutsche Medizinische Wochenschrift,* 134**,** pp. 1399-1404. [↑](#footnote-ref-21)
28. MÜLLER, E., PFISTERER, M. H. D. & OSTER, P. (2009). [Use of the "Liverpool Care Pathway" in nursing homes.] Der Einsatz des “Liverpool Care Pathway” im Pflegeheim. *DWM - Deutsche Medizinische Wochenschrift*, **134**(37), pp. 1838-1838. [↑](#footnote-ref-22)
29. RÖTZER, F (2009) Durch Palliativmedzin zum Sterben verurteilt? Medziner warnen vor Untiefen einer Richtlinie zur Betreuungvon sterbende Patienten. Aberguen am 22, November 2012 – http://www.heise.de/tp/artikel/31/310631/1.html [link no longer available}. [↑](#footnote-ref-23)
30. VOLTZ, R., NUBLING, G. & LORENZL, S. (2013). ‘Care for the dying neurologic patient’ in: Bernat, J and Beresford, R. (ed.) *Ethical and Legal Issues in Neurology*. Amsterdam, Elsevier. pp. 141-145. [↑](#footnote-ref-24)
31. SCHULTZ, C., SCHLIEPER, D., ALTREUTHER, C., SCHALLENBURGER, M., FETZ, K. & SCHMITZ, A. (2015). The characteristics of patients who discontinue their dying process - an observational study at a single university hospital centre. *BMC Palliative Care,* **14**(1)**,** pp. 72 [↑](#footnote-ref-25)
32. SCHLIEPER, D., ALTREUTHER, C., SCHALLENBURGER, M., NEUKIRCHEN, M., SCHMITZ, A. & SCHULZ-QUACH, C. (2017). Electronic Implementation of Integrated End-of-life Care: A Local Approach. *International Journal of Integrated Care,* **17**(2)**,** pp. 4. [↑](#footnote-ref-26)
33. ZINNER, M. (2013). *Der "Liverpool Care Pathway": Ein Behandlungspfad zur Begleitung Sterbender,* Munich, GRIN Verlag. [↑](#footnote-ref-27)
34. RUPPERT, S., HEINDL, P. & KOZON, V. (2012). Rolle der Pflege bei ethischen Entscheidungen. *Imago Hominis,* **19**(2)**,** pp. 97-105. [↑](#footnote-ref-28)
35. BITSCHE, S., BRUNNER, B., GRINSCHGL, A., HATZL, P., HÜTTNER, M. & PRIMAVESI, M. (2009/10). Leitfaden zur betreuung sterbenderpatienten im krankenhaus. *Projektarbeit im 3. interprofessionellen Basislehrgang Palliative Care in Graz*: Graz. [↑](#footnote-ref-29)
36. MULLER, E. (2011). *Der Liverpool care Pathway for the Dying Patient” als Navigationshilfe: Die Vorstellung eines Leitfadens zur Begleitung Sterbender.* Nordensredt, Books on Demand. [↑](#footnote-ref-30)
37. HODGSON, S. H., VIDAL-ESPAÑA, F., RODRÍGUEZ, M. R., GONZÁLEZ, R. M. C., DE LA TORRE, A. A. & ROSELLÓ, M. L. M. (2012). Procedimiento de adaptación transcultural al castellano e implementación del Liverpool Care Pathway for the dying patient (Versión 11) en un centro de cuidados paliativos. *Medicina Paliativa,* **19**(4)**,** pp. 129-132. [↑](#footnote-ref-31)
38. OSSA SENDRA, MJS DE LA TORRE, AA CAZORLA GONZALEZ, RM (nd) Valoracion de una experiencia de implementation de “Liverpool Care Pathway for the dying patient” en un centro Cuidados Paliativos. See: http://congresoenfermeria.es/libros/2012/salas/sala3/p\_956.pdf , accessed 30 January 2019. [↑](#footnote-ref-32)
39. TRIPODORO, V. A., VON PETERY, G., DE SIMONE, G., JUNIN, M., & BERENGUER, M. C. (2010). Traducción, adaptación cultural e implementación en Argentina del Liverpool care pathway para el cuidado integral de pacientes en últimos días de vida...18th International Congress on Palliative Care, October 5-8, 2010 - Palais Des Congres, Montreal, Canada. *Journal of Palliative Care,* **26**(3), pp. 214-214. [↑](#footnote-ref-33)
40. TRIPODORO, V. A., LUXARDO, N., VELOSO, V., ET AL (2013). Implementación del Liverpool Care Pathway en español en Argentina y en España: exploración de las percepciones de los profesionales ante el final de la vida. *Medicina Paliativa,* **22**(3)**,** pp. 16. [↑](#footnote-ref-34)
41. HARDY, J. R., HABERECHT, J., MARESCO‐PENNISI, D., YATES, P. & AUSTRALIAN BEST CARE OF THE DYING NETWORK, Q. (2007). Audit of the care of the dying in a network of hospitals and institutions in Queensland. *Internal Medicine Journal,* **37**(5)**,** pp. 315-319. [↑](#footnote-ref-35)
42. JACKSON, K., MOONEY, C. & CAMPBELL, D. (2009). The development and implementation of the pathway for improving the care of the dying in general medical wards. *Internal Medicine Journal,* **39**(10)**,** pp. 695-699. [↑](#footnote-ref-36)
43. LE, B. H. C. & WATT, J. N. (2010). Care of the dying in Australia's busiest hospital: benefits of palliative care consultation and methods to enhance access. *Journal of palliative medicine,* **13**(7)**,** pp. 855-860. [↑](#footnote-ref-37)
44. REYMOND, L., ISRAEL, F. J. & CHARLES, M. A. (2011). A residential aged care end-of-life care pathway (RAC EoLCP) for Australian aged care facilities. *Australian Health Review: a Publication of the Australian Hospital Association,* **35**(3)**,** pp. 350-356. [↑](#footnote-ref-38)
45. HOREY, D. E., STREET, A. F. & SANDS, A. F. (2012). Acceptability and feasibility of end‐of‐life care pathways in Australian residential aged care facilities. *Medical Journal of Australia,* **197**(2)**,** pp. 106-109. [↑](#footnote-ref-39)
46. WILKINSON, A. M., JOHNSON, C. E., WALKER, H., COLGAN, V., ARNET, H. & RAI, T. (2015). Evaluating the Liverpool Care Pathway for care of the terminally ill in rural Australia. *Supportive Care in Cancer,* **23**(11)**,** pp. 3173-3181. [↑](#footnote-ref-40)
47. CHAN, R. J., WEBSTER, J., PHILLIPS, J. & CURROW, D. C. (2014). The withdrawal of the Liverpool Care Pathway in the United Kingdom: what are the implications for Australia? *Medical Journal of Australia,* **200**(10)**,** pp. 573-573. [↑](#footnote-ref-41)
48. Chan, R Webster, J (2013). End‐of‐life care pathways for improving outcomes in caring for the dying. Cochrane Database of Systematic Reviews, 2013(11), CD008006 10.1002/14651858  [↑](#endnote-ref-7)
49. KEANE, B., TAYLOR, A., & CLARK, J. (2007). Meeting the needs of patients in the last days of life. *Kai Tiaki Nursing New Zealand*, **13**(2), pp. 12-14. [↑](#footnote-ref-42)
50. CLARK, J., MARSHALL, B., SHEWARD, K., ALLAN, S., & KEANE, B. (2008). Before and after the Liverpool Care Pathway: staff perceptions...17th International Congress on Palliative Care, September 23-26, 2008/Palais Des Congres, Montreal, Canada. *Journal of Palliative Care*, **24**(3), pp. 200. [↑](#footnote-ref-43)
51. MACKENZIE, T., INNES, J., BOYD, M., KEANE, B., BOXALL, J. & ALLAN, S. (2011). Evaluating the role and value of a national office to coordinate Liverpool Care Pathway implementation in New Zealand. *International Journal of Evidence-Based Healthcare*, **9**(3), pp. 252-260. [↑](#footnote-ref-44)
52. SHEWARD, K., CLARK, J., MARSHALL, B. & ALLAN, S. (2011). Staff perceptions of end-of-life care in the acute care setting: A New Zealand perspective. *Journal of Palliative Medicine,* **14**(5)**,** pp. 623-630. [↑](#footnote-ref-45)
53. CLARK, J., MARSHALL, B., SHEWARD, K. & ALLAN, S. (2011). Staff perceptions of end-of-life care in aged residential care: A New Zealand perspective. *Journal of Palliative Medicine,* **14**(6)**,** pp. 688-695. [↑](#footnote-ref-46)
54. CLARK, J., MARSHALL, B., SHEWARD, K., & ALLAN, S. (2012a). Staff perceptions of the impact of the Liverpool Care Pathway in aged residential care in New Zealand. International Journal of Palliative Nursing , 18(4), 171-178. [↑](#footnote-ref-47)
55. CLARK, J. B., SHEWARD, K., MARSHALL, B. & ALLAN, S. G. (2012b). Staff perceptions of end-of-life care following implementation of the Liverpool Care Pathway for the dying patient in the acute care setting: A New Zealand perspective. *Journal of Palliative Medicine,* **15**(4)**,** pp. 468-473. [↑](#footnote-ref-48)
56. THURSTON, J., & WATERWORTH, S. (2012). 'Making sense': nurses' experiences of changing practice in caring for dying patients in New Zealand. *Int J Palliat Nurs,* **18**(10), pp. 500-507. [↑](#footnote-ref-49)
57. IVERSEN, G. S., & HAUGEN, D. F. (2015). Liverpool Care Pathway: Personalets erfaringer i to norske sykehus. *Norwegian Journal of Clinical Nursing* / Sykepleien Forskning, **10**(2), pp. 144-151. [↑](#footnote-ref-50)
58. MENESES, J., FLODGREN, G. & BERG, R. C. (2016). *Bruk av Liverpool Care Pathway ved livets slutt*. Norsk folkehelseinstitutt, Oslo. URL: <https://www.fhi.no/en/publ/2016/liverpool-care-pathway-end-of-life/>. [↑](#footnote-ref-51)
59. HUSEBØ, B. S., FLO, E. & ENGEDAL, K. (2017). The Liverpool Care Pathway: a systematic review discarded in cancer patients but good enough for dying nursing home patients? *BMC Medical Ethics,* **18**(1), pp. 1-13. An Erratum followed the original article: Erratum to: The Liverpool Care Pathway: discarded in cancer patients but good enough for dying nursing home patients? A systematic review BS Husebo, E Flo, K Engedal *BMC Medical Ethics*, 2017 - bmcmedethics.biomedcentral.com After publication of the article, it has been brought to our attention that the wrong title was used on initial publication. The correct title of this article is “The Liverpool Care Pathway: discarded in cancer patients but good enough for dying nursing home patients? A systematic review”. The original version of the article has been updated to reflect this. See: Husebo, B. S., Flo, E., Engedal, K. (2017b). Erratum to: The Liverpool Care Pathway: discarded in cancer patients but good enough for dying nursing home patients? A systematic review. *BMC Med Ethics, 18*(1), 52. [↑](#footnote-ref-52)
60. EKESTRÖM, M.-L., OLSSON, M., RUNESDOTTER, S. & FÜRST, C. J. (2014). Family members' experiences of the impact of the LCP in a palliative care unit and a geriatric ward in Sweden. *International Journal of Palliative Nursing,* **20**(8)**,** pp. 381- 386. [↑](#footnote-ref-53)
61. BRÄNNSTRÖM, M., FÜRST, C. J., TISHELMAN, C., PETZOLD, M., LINDQVIST, O., MEDICINSKA, F., UMEÅ, U. & INSTITUTIONEN FÖR, O. (2016). Effectiveness of the Liverpool care pathway for the dying in residential care homes: An exploratory, controlled before-and-after study. *Palliative Medicine,* **30**(1)**,** pp 54-63. [↑](#footnote-ref-54)
62. HØGSNES, L., DANIELSON, E., NORBERGH, K. G., & MELIN-JOHANSSON, C. (2016). Healthcare professionals' documentation in nursing homes when caring for patients with dementia in end of life - a retrospective records review. *Journal Clinical Nursing*, **25**(11-12), pp. 1663-1673. [↑](#footnote-ref-55)
63. ANDERSSON, S., LINDQVIST, O., FÜRST, C.-J., BRÄNNSTRÖM, M (2018). Care professional's experiences about using Liverpool Care Pathway in end-of-life care in residential care homes. *Scandinavian Journal of Caring Sciences*, **32**(1), pp.299-308. [↑](#footnote-ref-56)
64. ANDERSSON, S., LINDQVIST, O., FURST, C. J., & BRANNSTROM, M. (2018b). Family members' experiences of care of the dying in residential care homes where the Liverpool Care Pathway was used*. International Journal of Palliative Nursing*, **24**(4), pp. 194-202. [↑](#footnote-ref-57)
65. OLSSON, C., KLING, E., GRUNDEL PERSSON, K., & LARSSON, M. (2019). Impact of the Liverpool Care Pathway on quality end-of- care in residential care homes and home care—Nurses’ perceptions. *Nursing Open*, **6**(4), pp. 1589-1599. [↑](#footnote-ref-58)
66. FAROOQ, F SVENDSEN, C OTTESEN, DS (2016) Symptom relief in dying patients – how good are we? Support Care Cancer 24 (Suppl 1):S1–S249 S159. https://link.springer.com/content/pdf/10.1007%2Fs00520-016-3209-z.pdf [↑](#footnote-ref-59)
67. LO, S. H., CHAN, C. Y., CHAN, C. H., SZE, W. K., YUEN, K. K., WONG, C. S., NG, T. Y. & TUNG, Y. (2009). The implementation of an end-of-life integrated care pathway in a Chinese population. *International Journal of Palliative Nursing,* **15**(8)**,** pp.384-388. [↑](#footnote-ref-60)
68. SIU, S. W. K., LIU, R. K. Y., CHEUNG, K. W., CHOY, T. S., LEUNG, T. W., & AU, G. K. H. (2011). End-of-life-care for Chinese patients in acute care ward setting: Experience in an oncology ward and report on a pilot project on the use of an integrated care pathway. *Palliative Medicine*, **25**(6), pp. 664-665. [↑](#footnote-ref-61)
69. HONGYAN, NIU., PEIXI, WANG. & XINMING, ZHOU. (2011). The development of hospice nursing in China and the Liverpool Care Pathway. *Chinese Nursing Journal*, **25**(2b): 384-385. [↑](#footnote-ref-62)
70. NEO, P. S. H., POON, M. C., PEH, T. Y., ONG, S. Y. K., KOO, W. H., SANTOSO, U., GOH, C. R. & YEE, A. C. P. (2012). Improvements in end-of-life care with a protocol-based pathway for cancer patients dying in a Singapore hospital. *Annals of the Academy of Medicine, Singapore,* **41**(11)**,** pp. 483-493. [↑](#footnote-ref-63)
71. KOON, O. E., NEO HUI SHAN, S., SHIVANANDA, S., YING, T. Y., THANG, A., KYAWT, A. M., SANTOSO, U., YIN, G. P. S., CHUNG PHENG, A. Y. & NEO SOEK HUI, P. (2015). Use of a Modified Liverpool Care Pathway in a Tertiary Asian Hospital: Is There Still a Role for It? *Journal of Palliative Medicine,* **18**(6)**,** pp. 56-512. [↑](#footnote-ref-64)
72. YAMAGISHI, A., MORITA, T., MIYASHITA, M., AKIZUKI, N., KIZAWA, Y., SHIRAHIGE, Y., AKIYAMA, M., HIRAI, K., KUDO, T., YAMAGUCHI, T., FUKUSHIMA, A. & EGUCHI, K. (2008). Palliative Care in Japan: Current Status and a Nationwide Challenge to Improve Palliative Care by the Cancer Control Act and the Outreach Palliative Care Trial of Integrated Regional Model (OPTIM) Study. *American Journal of Hospice and Palliative Medicine,* **25**(5)**,** pp. 412-418. [↑](#footnote-ref-65)
73. MIYASHITA, M. (Ed.) (2010). リバプール・ケア・パスウェイを用いた看取りのケアの質向上 [Rethink palliative care: using the Liverpool Care Pathway to improve the quality of palliative care]. [Special issue]. 臨牀看護*Clinical Nursing*, 36. [↑](#footnote-ref-66)
74. MIYASHITA, M. (2010). 特集に当たって [About this special issue]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1812-14. [↑](#footnote-ref-67)
75. CHINONE, Y. (2010). LCP（リバプール・ケア・パスウェイ）とは何か [What is LCP (Liverpool Care Pathway)]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1825-28. [↑](#footnote-ref-68)
76. MIYASHITA, M. AND SHIMIZU, M. (2010). LCP日本語版の概要と使用方法 [Outlines and instructions of the Japanese version of LCP (LCP-J)]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1829-37. [↑](#footnote-ref-69)
77. ICHIHARA, K. (2010). LCPを臨床現場に適用する；緩和ケア病棟におけるLCP日本語版の導入[Applications of LCP in clinical settings: introducing LCP-J in palliative care units]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1838-48. [↑](#footnote-ref-70)
78. FUKUTA, K. (2010). 事例を用いたLCPの実際 [Examples of LCP in practice]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1849-61. [↑](#footnote-ref-71)
79. NAKAJIMA, N. (2010). 一般病棟におけるLCPの使用経験と利用のコツ [Experiences and tips of implementing LCP in general wards]. [Special issue]. 臨牀看護*Japanese Journal* *Clinical Nursing*. 36, pp.1862-68. [↑](#footnote-ref-72)
80. Otani, H (2010). エビデンスに基づいた看取りのケア；看取りの支援小冊子の紹介 [Evidence-based end of life care: introduction to a support booklet of end of life care]. [Special issue]. 臨牀看護Japanese Journal Clinical Nursing. 36, pp.1869-80. [↑](#footnote-ref-73)
81. ICHIHARA, K., MIYASHITA, M., FUKUDA, K., CHINONE, Y., KIYOHARA, E., MORITA, T., TAMURA, K., HAYAMA, Y. AND OISHI, F. (2012). 看取りのケアにおけるLiverpool Care Pathway 日本語版の意義と導入可能性: 緩和ケア病棟2 施設におけるパイロットスタディ[The significance and possibility of introduction of a Japanese language version of the Liverpool Care Pathway for the Dying Patient: The pilot study in the two palliative care units]. *Palliative Care Research*, 7, pp.149-62. [↑](#footnote-ref-74)
82. KANNO, Y., HIRAHARA, Y., ARAKI, K., MATSUMURA, Y., YASUGI, M., KAWAMURA, Y., KOGA, T., CHINONE, Y. & MIYASHITA, M. (2014). Development and Feasibility of the Japanese language version Liverpool Care Pathway for the Dying Patient - Home. *Palliative Care Research,* 9**,** pp. 112-20. [↑](#footnote-ref-75)
83. MURAKAMI, M., YAMAMOTO, N., KAKEUCHI, Y., KOBAYASHI, Y. AND SATO, H. (2014). 緩和ケア病棟におけるLiverpool Care Pathway 日本語版の使用と非使用に関する後ろ向き検討 [A retrospective study between use and not－use of the Japanese version of the Liverpool Care Pathway]. *Palliative Care Research*, 9, pp.301-5. [↑](#footnote-ref-76)
84. HASEGAWA, T., TAGUCHI, M., NANORI, K. AND SUGIYAMA, Y. (2015).  Liverpool Care Pathway 日本語版による 一般病棟でのがん患者の看取りの ケアの質の向上に関する検討 [Outcome evaluation of introducing the Japanese version of the Liverpool Care Pathway for patients with cancer in a general ward]. *Palliative Care Research*, 10, pp.315-20. [↑](#footnote-ref-77)
85. KANNO, Y., SATO, K., HAYAKAWA, Y., TAKITA, Y., AGATSUMA, T., CHIBA, T., HONDA, K., SHIBATA, H., YAMAUCHI, K., TAKAHASHI, S.,  INOUE, A. AND MIYASHITA, M. (2015). 一般病棟で看取りのケアのクリニカル・パス Liverpool Care Pathway日本語版を導入するための課題―大学病院での使用経験から [The burden of introducing the Japanese language version of the Liverpool Care Pathway（LCP-J）for dying patients in general wards and their families: experience of health care professionals in a university hospital]. *Palliative Care Research*, 10, pp. 318-23. [↑](#footnote-ref-78)
86. YOSHIKAZU, C. (2016). A medical pathway of end of life care – current status and future of the Japanese version of the Liverpool Care Pathway. *The Japanese Journal of Clinical Research on Death and Dying,* **39** (1), pp. 17-18. [↑](#footnote-ref-79)
87. TANAKA, M AND KODAMA, S. (2017). End of Life Care. In: M. Tanaka & S Kodama. *Choice of the ending: to think about the end of life care* (*終の選択：終末期医療を考える*). Tokyo: Keiso Shobo. [↑](#footnote-ref-80)
88. CHINONE, Y. (2016). 看取りのケアのクリニカルパス: Liverpool Care Pathway 日本語版の現在とこれから [A clinical pathway of end of life care: the present and future of the Japanese version of the Liverpool Care Pathway]. *Shinorinsho* 死の臨床. 39, pp.17-8. [↑](#footnote-ref-81)
89. MACADEN, S SALLNOW, L LIVINGSTONE, DINAKARAN, R L EVANGELINE, V PALEKAR, R R (2011) Piloting an Indian Adaptation of the Liverpool Care Pathway at the Bangalore Baptist Hospital, Bangalore, India (Hospital Version) and in its Hospice and Home Care Programme (Community Version). Indian Association of Palliative Care Annual Congress, Trichy, India. [↑](#footnote-ref-82)
90. MACADEN, S SALLNOW, L BURN, G LALTHANMAVIA, R ABRAHAM, G (nd) Enabling Death with Dignity

    A five day LCP workshop at Bangalore India, 11-15 April, 2011. Unknown conference poster. [↑](#footnote-ref-83)
91. COSTANTINI, M., BECCARO, M. & DI LEO, S. (2011). Improving quality of end-of-life care. A possible and necessary change. *Epidemiologia e prevenzione,* **35**(3-4)**,** pp. 229-233. [↑](#footnote-ref-84)
92. Campbell M Fitzpatrick R Haines A *et al* (2000) Framework for the design and evaluation of complex interventions to improve health. *British Medical Journal*. 321:694-6. Teno, JM Clarridge, B Casey, V et al (2001). Validation of toolkit after-death bereaved family member interview. Journal of Pain and Symptom Management. 22(3), pp. 752-758. [↑](#endnote-ref-8)
93. DI LEO, S., BECCARO, M., FINELLI, S., BORREANI, C. & COSTANTINI, M. (2011). Expectations about and impact of the Liverpool Care Pathway for the dying patient in an Italian hospital. *Palliative Medicine,* **25**(4)**,** pp. 293-303. [↑](#footnote-ref-85)
94. LUSIANI, L., BORDIN, G., MANTINEO, G., RONCATO, P., FAVARO, L., TESSARO, L., BORDIN, F. (2012). End-of-life care for cancer patients in an Internal Medicine department. *Italian Journal of Medicine*, **6**(2), pp. 110-115. [↑](#footnote-ref-86)
95. COSTANTINI, M., DI LEO, S., & BECCARO, M. (2011). Methodological issues in a before-after study design to evaluate the Liverpool Care Pathway for the Dying Patient in hospital. *Palliative Medicine*, 25(8), 766-773. [↑](#footnote-ref-87)
96. Teno, JM Clarridge, B Casey, V et al (2001). Validation of toolkit after-death bereaved family member interview. Journal of Pain and Symptom Management. 22(3), pp. 752-758. [↑](#endnote-ref-9)
97. Hunt KJ, Shlomo N, Richardson A, Addington–Hall JM. (2011) VOICES redesign and testing to inform a national end of life care survey. Southampton: University of Southampton. See <https://www.gov.uk/government/publications/voices-redesign-and-testing-to-inform-a-national-end-of-life-care-survey> accessed 6 April, 2020. [↑](#endnote-ref-10)
98. COSTANTINI, M., PELLEGRINI, F., DI LEO, S., BECCARO, M., ROSSI, C., FLEGO, G., ROMOLI, V., GIANNOTTI, M., MORONE, P., IVALDI, G. P., CAVALLO, L., FUSCO, F. & HIGGINSON, I. J. (2014). The Liverpool Care Pathway for cancer patients dying in hospital medical wards: A before–after cluster phase II trial of outcomes reported by family members. *Palliative Medicine,* **28**(1)**,** pp.10-17. [↑](#footnote-ref-88)
99. LEO, S. D., BONO, L., ROMOLI, V., WEST, E., AMBROSIO, R., GALLUCCI, M., PILASTRI, P., CIURA, P. L., MORINO, P., PIAZZA, M., VALENTI, D., FRANCESCHINI, C. & COSTANTINI, M. (2013). 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. *American Journal of Hospice and Palliative Medicine,* **31**(1)**,** pp. 61-68. [↑](#footnote-ref-89)
100. WEST, E., ROMOLI, V., DI LEO, S., HIGGINSON, I. J., MICCINESI, G. & COSTANTINI, M. (2014). Feasibility of assessing quality of care at the end of life in two cluster trials using an after-death approach with multiple assessments. *BMC Palliative Care,* **13**(1)**,** pp. 1-8. [↑](#footnote-ref-90)
101. DI LEO, S., ROMOLI, V., HIGGINSON, I. J., BULLI, F., FANTINI, S., SGUAZZOTTI, E. & COSTANTINI, M. (2015). ‘Less ticking the boxes, more providing support’: A qualitative study on health professionals’ concerns towards the Liverpool Care of the Dying Pathway. *Palliative Medicine,* **29**(6)**,** pp. 529-537. [↑](#footnote-ref-91)
102. COSTANTINI, M., OTTONELLI, S., CANAVACCI, L., PELLEGRINI, F. & BECCARO, M. (2011). The effectiveness of the Liverpool care pathway in improving end of life care for dying cancer patients in hospital. A cluster randomised trial. *BMC HealthServices Research,* **11**(1)**,** pp. 13-13. [↑](#footnote-ref-92)
103. COSTANTINI, M., ROMOLI, V., DI LEO, S., BECCARO, M., BONO, L., PILASTRI, P., MICCINESI, G., VALENTI, D., PERUSELLI, C., BULLI, F. & FRANCESCHINI, C. (2014b). Liverpool Care Pathway for  
     patients with cancer in hospital: a cluster randomised trial. *The Lancet,* **383**(9913), pp. 226-237. [↑](#footnote-ref-93)
104. COSTANTINI, M. & DI LEO, S. (2014). Comment to the article: Wise J. Five priorities of care for dying people replace Liverpool care pathway. *Italian Journal of Medicine,* **8**(4)**,** pp. 265-267. [↑](#footnote-ref-94)
105. COSTANTINI, M., ALQUATI, S. & DI LEO, S. (2014). End-of-life care: pathways and evidence. Current Opinion in Supportive and Palliative Care, **8**(4), pp.399-404. [↑](#footnote-ref-95)