What Is the Evidence That Palliative Care Teams Improve Outcomes for Cancer Patients and Their Families?
Irene J. Higginson, PhD, FRCP, FFPHM and Catherine J. Evans, PhD

Abstract: Patients with advanced cancer experience a complex web of problems, all of which interact. Specialist palliative care services have developed to meet these needs, but their effectiveness should be considered. We sought to determine whether specialist palliative care teams achieve their aims and improve outcomes for patients with advanced cancer and their caregivers, in terms of improving symptoms and quality of life and/or reducing the emotional concerns of family caregivers. We conducted a systematic review, searching standard databases augmented by reference lists of earlier reviews. The review focused on specialist (ie, with trained and dedicated professionals) palliative care in the home, hospital, or designated inpatient settings for patients with cancer. Outcomes were pain, symptoms, quality of life, use of hospital services, and anxiety. Studies were excluded if they did not test specialist palliative care services. We identified 8 randomized controlled trials and 32 observational or quasi-experimental studies. Overall, the evidence demonstrated that home, hospital, and inpatient specialist palliative care significantly improved patient outcomes in the domains of pain and symptom control, anxiety, and reduced hospital admissions. The results suggest that specialist palliative care should be part of care for cancer patients. Although the appraisal of evidence found improvements across domains, there is a need to understand better the effects of different models of palliative care and to use standardized outcome measurement.

Key Words: Palliative care, hospice, oncology, effectiveness, systematic review, pain

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PALLIATIVE CARE: AN INCREASING NEED

Patients with advanced cancer experience a complex web of problems, all of which interact. These include profound symptoms, which, unless alleviated, result in great suffering for the person with cancer and his/her family, and emotional, social, and spiritual consequences associated with cancer, disability, and facing the end of life, for patients, their families, and those close to them. Palliative care—holistic multiprofessional care with skilled assessment and management of symptoms and problems—seeks to alleviate these problems and to enable patients to live well for as long as possible, to die with comfort and dignity, and to support the family.

There are many reasons why palliative care is and will continue to be increasingly important in cancer. First, unfortunately death from cancer continues to increase. By 2020, the World Health Organization estimates that globally more than 15 million people will experience cancer, and 10 million will die of it each year, a 60% increase in deaths. By 2020, in North America, the number of people who die annually of cancer will increase by 51% to just under 1 million. An 83% increase is predicted for South America, a 31% increase for Western Europe, and a 66% increase for sub-Saharan Africa (Table 1).

Second, despite extensive efforts to prevent and cure cancer, overall 5-year survival from cancer is only between 50% and 60% even in high-income countries. Optimal treatment combined with early detection leads to a high rate of cure or remission for some cancers (eg, of the cervix, breast, oral cavity, and colon and lymphomas). Yet, survival remains poor for other cancers (eg, of the esophagus, pancreas, and lung). Many of the new treatments bring lengthened survival—and although this is much desired for most patients, it brings with it a longer period of advanced cancer, where symptom relief and support are needed. Third, the general aging of the population means that people who have cancer increasingly are older. Other chronic and progressive diseases are more common at old ages, meaning that more and more cancer patients have comorbid conditions, which bring other symptoms and emotional, social, and spiritual problems. The effects on the family can continue long into bereavement, affecting their subsequent health and well-being.

In response to all these needs that numerous studies showed were not well met among cancer patients, and the increased demands of patients and families for effective and coordinated support at this phase of the illness, more than 100 countries of the world have developed specialist palliative care and hospice services. As Dame Cicely Saunders, the founder of the modern palliative care movement, explained: “Palliative care begins from the understanding that every patient has his/her own story, relationships, and culture and is worthy of respect as a unique individual. This respect includes giving the best available medical care and making the advances of recent decades fully available, so that all have the best chance of using their time well.” The World Health Organization defined palliative care in 2002 as “...an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial, and spiritual.”

WHAT IS PALLIATIVE CARE? DEFINING SPECIALIST PALLIATIVE CARE TEAMS

Frequently, palliative care is categorized as:

(1) Generalist palliative care (which is the requirement of all clinicians, as most meet patients and families at some stage who are reaching the end of life): Generalists comprise practitioners not exclusively concerned with specialist palliative care. For example, general practitioners, district nurses, care home staff, and oncologists, who look after a range of patients and so cannot be completely up to date in all the complex treatments.
This review focuses on the first 3 services, as these
* Deaths From Cancer in Europe and Selected
This review updates these previous reviews but
This reflects the difficulties in undertaking random-
Palliative care takes a problem- and goal-orientated
methods
effective
The
earlier reviews, to end of 2009. We
MEDLINE, EMBASE, CINAHL, CancerLit, and PsychInfo,
considered palliative and end-of-life care services.
There have been several other significant reviews that also
considered palliative and end-of-life care services.10,11 However,
many of the reviews included a range of services, some of which
were not specialist palliative care services, but were focused
on hospice, at home, or single specialty services. In addition, a
special issue of the Journal of Pain and Symptom Management
in 2009 was dedicated to health economic issues of palliative
care services and included appraisals of several country-specific
studies.20–25 This review updates these previous reviews but
focuses specifically on the effectiveness of SPCTs for cancer
patients.

Review Aims
In this review, we sought to address the following: Do
SPCTs achieve their aims and improve outcomes for patients
with advanced cancer and their caregivers, in terms of improving
symptoms and quality of life and/or reducing the emotional
corns of family caregivers? We also sought to comment on the
quality of the evidence and gaps and whether there was
support for some models more than others.

METHODS

Data Sources
The systematic review protocol26 drew on, and updates, our
previous effectiveness reviews on palliative care teams and end-
of-life care15 and palliative care for people with cancer.18 The
search protocol intended to identify randomized studies and
NRs evaluating SPCTs for people with cancer and searched
MEDLINE, EMBASE, CINAHL, CancerLit, and PsycInfo,
from 2000, the end of our earlier reviews, to end of 2009. We
used the following key words: palliative care or hospices, ter-
inal care, terminally ill, palliat*, hospice*, dying*, end of life;
and neoplasms or cancer*; and service or team, primary health
care, community health services, hospitals; and effective or
evaluate, random, methods, economics, statistics, trends. We
searched the reference lists of previous and new reviews.

Study Selection
Studies were included that compared a specialist palliative
care team (SPCT) with usual care (present or historical) and
incorporated either a randomized study or NRS design. A SPCT
comprised 2 or more health workers; at least one had specialist
training in palliative care, who provided specialist palliative care
through education and support to generalist health care workers.

Observational studies can provide valuable understanding on the
effectiveness of palliative care services, particularly in the
community.16,17 The purpose of this review was not to reiterate
these difficulties, but to cast the search net wide enough to
consider the evidence on the effectiveness of specialist palliative
care teams (SPCTs) for people with advanced cancer. This
encompasses both randomized and observational or nonran-
domized studies (NRs).

WHY IS IT IMPORTANT TO DO THIS REVIEW?
We have undertaken 2 previous reviews on the effectiveness
of palliative care in general for people with cancer18 and spe-
cifically SPCTs for cancer and noncancer populations.15 The
former review drew on the latter. The reviews demonstrated the
positive effect of palliative care teams on patient outcomes and
small benefit for patients in managing pain. Both reviews dem-
strated support for different inpatient palliative care and home
care teams, but identified the need for more work to compare
and identify which team model is most effective in achieving
patient outcomes and what are the active components in such
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comprised 2 or more health workers; at least one had specialist
training in palliative care, who provided specialist palliative care
through education and support to generalist health care workers.
and/or direct palliative care to patients with cancer. Trials of SPCTs were included when they aimed to provide specialist palliative care in a community, hospital (inpatient/outpatient), and/or hospice setting that aimed to help those with advanced cancer, and their caregivers, to live as well as possible until death. Caregivers were defined as family, friends, or significant others. Usual care comprised conventional community and general hospital/oncology services. Outcomes included pain and symptom management, quality of life and death, and patient and carer satisfaction/morbidity before and after bereavement. We included trials of palliative care teams that had recruited exclusively patients with cancer, or trials of mixed patient populations where randomization was stratified by diagnosis and data for the cancer patient subgroup could be obtained. We included only English-language articles.

Studies were rejected at full article review if they used an un-stratified population sample of noncancer and cancer groups defined as terminally ill or requiring palliative care. Although all included patients with cancer, the analyses compared control and intervention groups with no analysis by disease group. Other studies were excluded on full article review as they did not evaluate a SPCT, including hospice care, palliative day care, Macmillan Services, home-cancer-health-care programs, and palliative care services by region. Individuals working as nurse-led service that was not a SPCT, or a coordinating service.

Validity Assessment and Data Extraction

There is a lack of general guidance on quality appraisal applicable for differing research methods that include randomized and NRS. We limited the inclusion of nonrandom studies by study design or methodological quality and examined in the data analysis the degree of susceptibility of the included NRS designs to bias. Nonrandom studies were excluded when they did not assess effectiveness by comparing between the intervention and control, or at defined time points, or had no defined outcome measures. The validity assessment of the included studies used 2 hierarchy of evidence: study design and risk of bias. The methods of grading and data extraction procedures were piloted and cross-checked, before full data extraction. The assessment of study design used Cochrane Grade, which is applicable for randomized studies and NRSs and uses 4 quality levels: high, moderate, low, and very low (Table 2). Nonrandom studies are, however, generally assessed as low, but can be judged higher if indicated by a large magnitude of effect or lack of concern about confounding. A risk of bias was assessed for each included study and documentation for the judgment recorded (eg, study design).

In assessing design, we followed these main principles:
- In palliative care, the question of interest cannot be always answered by randomized trials, and review authors may be justified in including NRSs.
- Potential biases are likely to be greater for NRSs compared with randomized trials, so results should always be interpreted with caution when they are included in reviews. Particular concerns arise with respect to differences between people in different intervention groups (selection bias) and studies that do not explicitly report having had a protocol (reporting bias).
- Eligibility criteria, data collection, and critical assessment of included studies place an emphasis on specific features of study design (eg, which parts of the study were prospectively designed) rather than “labels” for study designs (such as case-control vs cohort).
- Risk of bias in NRSs can be assessed in a similar manner to that used for randomized trials, although more attention must be paid to the possibility of selection bias.

Analysis

In this review, we have focused on meta-synthesis, that is, combining the results in tabular format without attempting meta-analysis. We contrast the strength of the evidence on the effectiveness of SPCTs for cancer patients and specifically which team model, and its components, is most effective.

Details of the study designs were extracted into Review Manager software from the Cochrane Collaboration to examine their strengths and limitations. Data were also extracted into standardized tables to examine potential solutions, to contrast methods, study settings, types of intervention, and main outcomes.

RESULTS

From the searches, we identified 40 trials that considered different SPCTs (Table 3). These included 8 randomized controlled trials (RCTs)—the remainder of studies were observational, usually with a control group, although a few without. There were few very low-grade studies, but many of the designs graded very low were excluded by our methods.

One of the randomized trials failed to deliver results and so was graded low; the remainder were graded moderate to strong, depending on the ways they accounted for biases, sample size calculations, and other features of design. Five of the RCTs were from the United States; there was one each from the United Kingdom, Canada, and Norway. Two recent trials (2009 and 2010) suggested positive results, in terms of improved symptoms/mood and/or quality of life; the earlier trials were more equivocal, except for the early RCT of a home care team by Zimmer et al. All trials suffered from problems of sample size and were often underpowered or suffered from attrition. No trial reported negative effects of a palliative care service. The trials ranged across all types of service—patient, home care, and hospital support—and in some instances combinations of these.

The remaining 32 studies were generally graded moderate or low, except in a few instances where patients in the control group were matched to those in the intervention group (Table 3). The evidence (moderate and low) supports SPCTs working in home, hospitals, and inpatient units as a means to improve outcomes for cancer patients, such as pain, symptom control, and satisfaction, and in improving care more widely, including
Table 3. Studies Included in the Review—Authors, Grade, Setting, Type of Intervention, and Main Outcomes

<table>
<thead>
<tr>
<th>Author (Country, Design)</th>
<th>Grade</th>
<th>Setting</th>
<th>Intervention* and Description</th>
<th>Main Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomized controlled trials (in alphabetical order)</td>
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<tr>
<td>Bakitas et al*41,42 (U.S. randomized controlled trial)</td>
<td>High</td>
<td>New Hampshire rural and urban areas</td>
<td>4) Project Enable (Educate, Nurture, Advise, Before Life Ends)—2 specialist palliative care nurse educators, nurse practitioner, palliative care physician. Used a case management, educational approach with monthly shared medical appointments to encourage patient activation, empowerment, and self-management</td>
<td>Nonsignificant trend of higher quality of life (QoL) ($P \leq 0.02$), lower symptom intensity ($P \leq 0.06$), and depressed mood ($P \leq 0.02$) in Project Enable patients. No significant difference resource use or survival</td>
</tr>
<tr>
<td>Hanks et al*43 (U.K. randomized controlled trial [of full team vs part service])</td>
<td>Moderate</td>
<td>Bristol</td>
<td>4) Hospital palliative care team (PCT)—compared with telephone service</td>
<td>There were highly significant improvements in symptoms—health-related QoL (HRQoL); mood and “emotional bother”; in “telephone-PCT” at 1 wk, maintained over the 4-wk follow up. A smaller effect was seen in “telephone-PCT”; there were no significant differences between the groups. Satisfaction with care in both groups was high, and there was no significant difference between them</td>
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<tr>
<td>Cummings et al,<em>44 Hughes et al</em>45 (U.S. randomized controlled trial)</td>
<td>High</td>
<td>Veterans Administration unit</td>
<td>3) Hospital-based home palliative care</td>
<td>Hospital-based home palliative care was more comprehensive than control care (interdisciplinary team approach vs nursing services)—more continuous care, significantly higher levels of satisfaction at 1 mo; no difference in survival rates/functional status; no difference in morale at 1 mo. Increase in costs of home health care was more than offset by reduced VA hospital costs for hospital-based home palliative care patients</td>
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<tr>
<td>Jordhoy et al*46,47 (Norway cluster-randomized controlled trial)</td>
<td>High</td>
<td>Trondheim City, Malvik and Melhus rural areas</td>
<td>4) Intervention based on cooperation between a palliative medicine unit and the community service*; palliative medicine unit consultant team works across hospital and community—physician, 2 palliative care nurses, social worker, priest, nutritionist, physiotherapist; 12 inpatient beds and outpatient clinic. Family physician and community nurse main professional carers. Intervention by consult team assessment, follow up, palliative care guidelines to optimise interaction between services, and educational program for community staff (eg, bedside training, lectures on palliative care [6–12 h over 6 mo])</td>
<td>More interventions than controls died at home (54 [25%] vs 26 [15%]), time spent at home not significantly increased, and hospital use similar in both groups. Intervention patients spent a smaller proportion of time in nursing homes in the last month of life compared with controls (7.2% vs 14.6%, $P &lt; 0.05$). HRQoL no significant differences on any QoL scores found at 4 mo or last 3 mo before death</td>
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<tr>
<td>Kane et al*48 (1984) (U.S. randomized controlled trial [with contamination between groups])</td>
<td>Moderate</td>
<td>Veterans Administration unit</td>
<td>1) Hospice ward—doctors and nurses. Training of staff not clear. When hospice “ward” full patients received usual ward care</td>
<td>No significant difference between the 2 groups in the prevalence of any symptom a month after admission. Among patients who survived at least 3 mo, hospice patients were significantly less likely to report symptoms of nausea, diarrhea, and ringing in ears. No significant difference between the groups could be detected in the proportion of patients with pain at any given time or over time or reports of pain</td>
</tr>
<tr>
<td>Study Location</td>
<td>Study Type</td>
<td>Study Design</td>
<td>Intervention</td>
<td>Key Findings</td>
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<tr>
<td>McWhinney et al (1994) (Canada)</td>
<td>Low</td>
<td>Single teaching hospital</td>
<td>3) Home care support team</td>
<td>Significant difference in favor of hospice patients for interpersonal care and involvement in care</td>
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<tr>
<td>Temel et al (U.S. randomized controlled trial)</td>
<td>High</td>
<td>Boston</td>
<td>3) Early PCT from cancer center</td>
<td>Because of early deaths, problems with recruitment, and a low compliance rate for completion of questionnaires, the required sample size was not attained</td>
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<tr>
<td>Zimmer et al (U.S. randomized controlled trial)</td>
<td>High</td>
<td>Medical center</td>
<td>3) Physician (internist), nurse practitioner, social worker with experience in geriatric care</td>
<td>3) Patients assigned to early palliative care (PC) experienced better QoL, as measured by the Functional Assessment of Cancer Therapy-Lung (98.0 vs 91.5, P = 0.03) and Trial Outcome Index (59.0 vs 53.0, P = 0.01) and had lower rates of depression, as measured by both the Hospital Anxiety and Depression Scale (15.8 vs 38.3%, P = 0.01) and the PHQ-9 (3.5 vs 17%, P = 0.02) compared with specialist care (SC). Fewer patients randomized to early PC received aggressive care at the end of life (EOL) compared with SC patients (33.3 vs 53.6%, P = 0.05). Despite receiving less aggressive care at the EOL, patients receiving early PC had longer survival compared with SC (11.6 vs 8.0 mo; P = 0.02)</td>
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<tr>
<td>Ahlner-Elmqvist et al (Sweden observational longitudinal)</td>
<td>Moderate</td>
<td>Malmo, city</td>
<td>4) Hospital-based advanced home care (AHC)—9 experienced oncology nurses, oncologist, physiotherapist, social worker, secretary, 3 backup inpatient beds (2 hospice, 1 oncology ward)</td>
<td>Team patients had fewer hospitalizations, nursing home admissions, and outpatient visits. They were more able to die at home, if this was their wish. As expected, they used more in-home services, measured in weighted cost figures; their overall cost was lower than the controls (not statistically significant). Home care team patients and their carers expressed significantly higher satisfaction</td>
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<tr>
<td>Axelsson and Christensen (Sweden observational)</td>
<td>Moderate</td>
<td>Sweden</td>
<td>5) Hospital-based PCT—surgeon half day per wk; 1 full-time specialist nurse; and 6 interested colleagues made occasional home visits (with matched historical group and contemporary reference group)</td>
<td>More AHC patients died at home (45% vs 10%), spent less time in hospital (P &lt; 0.005); AHC patients had significantly poorer physical function at baseline (P &lt; 0.001)</td>
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<td>The median duration of terminal hospitalization for the study group was 3 d, which was significantly shorter than for the control group (10 d; P = 0.017). The patients in the study group spent 50 d at home from the date of enrolment with the palliative support service to death, which was significantly more than the control patients, who spent 23 d (median) at home during an identical period</td>
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<td>No significant differences in health care utilization when comparing the study group with the reference group (reduced institutional care at EOL); no significant differences in the utilization or resources at home outside the palliative support service (e.g., district nurse and domiciliary services)</td>
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<tr>
<td>Axelsson and Sjoden* (1998) (Sweden observational [no control])</td>
<td>Low</td>
<td>Sweden</td>
<td>3) Hospital-based home care team—palliative support team</td>
<td>Study confirms general downward trend of most patients QoL items when approaching death; 35% of patients were pain-free during their terminal month</td>
</tr>
<tr>
<td>Back et al* (U.S. retrospective)</td>
<td>Low</td>
<td>Seattle, VA Puget Sound Health Care System, tertiary-care facility</td>
<td>2) PCS—physician, nurse-manager, nurse practitioner, social worker, psychologist, chaplain. Case management by nurse practitioner mean length of time 79 d. Patients seen in hospital and telephone contact at home</td>
<td>Palliative care service (PCS) patients significantly more likely to die in nonacute facility than non-PCS patients (&lt; 0.05) (hospice, at home, skilled nursing facility). PCS patients greater number of hospital admissions, but for shorter length of time than non-PCS patients</td>
</tr>
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<td>Bennett and Corcoran* (1994) (U.K. observational [historical controls])</td>
<td>Low</td>
<td>North East of England</td>
<td>4) Hospital PCT—examined effect on hospice home care team</td>
<td>The number of new referrals rose during 4 y (significant from 1990–1992 P &lt; 0.01). No significant difference in place of death or numbers referred; the median interval from referral to death was significantly longer for those referred by PCT than general practitioners (89 and 54 d; P &lt; 0.004). Approximately 80% of patients still referred within 3 mo of their death</td>
</tr>
<tr>
<td>Bloom and Kissick* (1980) (U.S. observational)</td>
<td>Low</td>
<td>Philadelphia, 2 large medical school general hospitals</td>
<td>3) Home care—primarily medical supervision</td>
<td>There was a 10.5-fold difference between mean total 2-wk charges incurred by those who died at home and in the hospital. Mean charges for care of patients dying at home were $586 (range, $137–$1162); mean charges for care of those who died in hospital was $6180 (range, $3333–$11,645). The per diem home care charge was $442 compared with $441 for care in a hospital</td>
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<td>Cartoni et al* (Italy retrospective)</td>
<td>Low</td>
<td>Location not stated</td>
<td>3) Home care program multiprofessional team skilled in palliative care—hematologist, nurses, psychologist, social worker</td>
<td>All forms of palliative therapy for hospital patients accounted for 28.6% of total charges; for home care patients, the charge was $70 (11.9% of total charge)</td>
</tr>
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<td>Costantini et al* (Italy quasi-experimental with 2 matched control groups)</td>
<td>High</td>
<td>Genoa, urban</td>
<td>3) Palliative home care team (PHCT)—12 physicians, 7 nurses, 3 psychologists, and 25 volunteers</td>
<td>Percentage of days in hospital lower in PHCT patients compared with usual care (19% vs 30%)</td>
</tr>
<tr>
<td>Dunt et al* (1989) (Australia observational [with control group])</td>
<td>Moderate</td>
<td>Melbourne</td>
<td>3) Citymission Hospice Programme</td>
<td>At first assessment, nonhospice patients had significantly higher usual pain duration. There were no significant differences for all other symptoms. At the first assessment, there were no significant differences in levels of QoL; at the last assessment, the nonhospice patients had significantly higher dissatisfaction with care scores. The proportion of hospice and nonhospice patients dying at home was identical. Nonhospice caregivers had lower levels of difficulty in their roles as caregivers (at last assessment). The largest treatment cost is for place of care at first assessment and is statistically significant</td>
</tr>
<tr>
<td>Edmonds et al* (1998) (U.K. observational [before/after design])</td>
<td>Low</td>
<td>London</td>
<td>4) Hospital PCT—doctors and nurses</td>
<td>Significant improvements in pain, mouth discomfort, etc. Only score not to improve: depression, possibly due to short period of admission</td>
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</table>
Ellershaw et al. (U.K. observational [no control])
Low London 4) Hospital PCT
Statistically significant improvements (over day 4, 7) in symptoms—pain, nausea, insomnia, anorexia, constipation. Insight significantly changed (at final assessment) and placement appropriate

Follwell et al. (Canada observational)
Low Toronto, Ontario, city 5) Oncology Palliative Care Clinic—palliative care nurse, palliative care physician, social worker, and psychiatrist. Undertake assessment, plan care, referrals, follow-up, telephone 24-h on-call service
Significant improvements in pain, fatigue, nausea, depression, anxiety, drowsiness, appetite, dyspnea, insomnia, and constipation at 1 wk (all \( P = 0.005 \)) and 1 mo (all \( P = 0.05 \), and family satisfaction at 1 wk (\( P = 0.0001 \)) and at 1 mo (\( P = 0.0001 \))

Higginson et al. (U.K. observational [before/after design])
Low London and surrounding county 3) Hospital and home PCT—doctors, nurses, social workers.

Higginson and McCarthy (U.K. Observational [before/after design])
Low North London 3) Hospital and home PCT—doctors, nurses, social workers

Higginson and Heam (U.K. observational [multicenter, before/after design])
Low Multicenter, rural and urban, 2 countries—United Kingdom and Ireland 3) Home and hospital PCTs—doctors, nurses, and social workers
Reduction of severe and overwhelming pain for patients surviving ≥2 wk (from 14% to 4% after 2 wk in care)

Hinton (1979) (U.K. observational [with control])
Low South London 1) Inpatient hospice with an outpatient service
The hospice (both inpatient and outpatient) shows most effectiveness/least distress. In the ratings, the hospital came between the modern hospice and the Foundation Home. Patients gave more praise to the outpatient system of care, despite experiencing a little more anxiety or irritability at home

Jack et al. (U.K. observational [control group design])
Low University hospital, North West of England 1) SHPCT—4 Clinical nurse specialists in palliative care, palliative care consultant, a specialist registrar. Intervention focused on individualized assessment, psychological support, symptom control, and evaluation
Both groups improved after admission; at day 7 final assessment, specialist hospital palliative care team patients had greater improvement, 0.74; Palliative Care Assessment tool compared control receive traditional care, but nonsignificant difference

McCusker and Stoddard (1987) (U.S. Moderate observational follow on from RCT with comparison with nonhospice patients (see Zimmer et al.))
Moderate Rochester 3) Home palliative care service
The comparison of trends in costs during the last month suggests that cost containment is occurring among palliative home care users but not among non-home care users. Two mechanisms for cost containment: a reduction of hospital days and of daily hospital cost. The greatest benefit of home care in terms of cost savings is seen for those individuals who are admitted to home care closer to the time of death

(Continued on next page)
McIlmurray and Warren (1989) (U.K. observational [before/after design])

North West of England

3) A new multiprofessional palliative care service

Pain was present on first assessment for 53%, the majority describing it as mild to moderate (only 2% had bad pain). By the time of discharge or death, only 7.5% of patients were still in pain, and this was achieved by an increase in the prescription of opiates to 66%

Nausea, vomiting, or both were present in 30% on admission; the majority of those patients were taking opiates (45% of these not taking antiemetics). Despite increase in opioids, there was a decrease in nausea or vomiting to only 9% by discharge

McMillan and Mahon (1994) (U.S. observational)

Low Setting not stated

3) Hospice home care service

Individual QoL scores show increases for some patients and decreases for others. Caregivers reported significant increase in their perceptions of the patients QoL (statistically significant). Only 1 limited improvement in pain after 3 wk of hospice care. Hospice services are successful at improving the overall QoL of some but not all patients

Mercadante et al. (Italy observational [before/after design])

Low Setting not stated

3) Home care team—physicians, nurses, volunteers, and social workers experienced in palliative care

Significant improvement in pain at 10 d postintervention compared with baseline assessment ($P < 0.0005$). Significant improvement in nausea and vomiting ($P < 0.00056$), dry mouth ($P = 0.006$), dysphagia ($P = 0.001$), gastric discomfort ($P < 0.0005$), constipation (<0.0005). Opioid dosage and frequency increased with time; only significant at time to end point when 70% taking opioids

Miccinesi et al. (Italy retrospective comparative)

Low Tuscany, hospital wards

3) Palliative home care (not defined)

3423 Cancer patients died in the study area during 1997; 9.2% of them received palliative home care. Palliative home care reduced hospital inpatient care during the last 3 mo of life—25% reduction of the relative risk (confidence interval [CI], 34%-14%) to inpatient admission and a 49% reduction of relative risk (CI 52CI–47%) of spending days in the hospital during the last 3 mo of life.
Mor et al, Morris et al, Greer et al77-87
(U.S. observational [hospice home care, vs conventional care; selection bias as much higher refusals in conventional care group])

Moderate Multicenter study 3) Home hospice care, hospital-based hospice care—primarily nurse based with some medical input, variable

Few robust QoL advantages associated with hospice; whereas hospital-based hospice model reduces costs, the hospice home care model may not. Conventional care patients significantly more likely to receive intensive treatments (e.g., surgery) in last week before death. Hospice home care is more likely to have analgesics prescribed 2 wk before death ($P < 0.05$). No significant difference in proportion of pain-free patients by setting. Hospice home care significantly less likely to be in persistent pain at the last measure and likely to experience less symptoms. No significant difference was observed in patient-reported levels of satisfaction (high in all settings). Primary care person in both hospices was satisfied with place of death and more satisfied than conventional care group.

Parkes88 (1980) (U.K. observational [comparison/control group])

Moderate South London 3) Specialist advisory home palliative care service—with doctors, nurses, social workers

Palliative care patients spent a mean of 2.6 wk per patient in hospital, whereas the comparison group spent 5.6 wk in hospital. Caregivers reported a surprising amount of unrelieved physical and emotional distress. Reports included unsatisfactory relief of pain, breathlessness, sleeplessness, nausea, and/or vomiting (and others). Palliative care patient group was said to have been slightly more tense and accepted help reluctantly. In both settings, it was unusual for patients to talk about their illness, and this was not affected by visits from the home care nurse.

Parkes89,90 (U.K. observational [comparison/control group])

Moderate St Christopher’s Hospice, South London 1) Inpatient hospice/palliative care service—beds, doctors, nurses, social workers

Self-assessments of 34 spouses of patients who had died of cancer at St Christopher’s Hospice were compared with self-assessments of a matched group of spouses of patients who had died in other hospitals in the vicinity. Patients at St Christopher’s were less often thought to have suffered severe pain and other distress than at other hospitals, but pain relief was not bought at the cost of drug-induced confusion, and patients at St Christopher’s remained more mobile than at other hospitals. The spouses of St Christopher’s patients differed significantly from the comparison group in spending more time at the hospital, talking to more members of staff, other patients and visitors, reporting less anxiety and psychosomatic accompaniments of anxiety before (but not after) the patient’s death and being less worried about pain, others hurting or harming the patient, or about revealing their own fears to the patient. The institutional ideals of the Hospice were characterized as “The hospital is like a family,” “Nothing is too much trouble,” and “Don’t worry.”

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<table>
<thead>
<tr>
<th>Author (Country, Design)</th>
<th>Grade</th>
<th>Setting</th>
<th>Intervention* and Description</th>
<th>Main Outcomes</th>
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</thead>
<tbody>
<tr>
<td>Peruselli et al91 (Italy observational [1 group, no control, missing data])</td>
<td>Low</td>
<td>North Italy</td>
<td>3) Home PCT—physician</td>
<td>Teams were effective in mitigating pain (in part), stimulating appetite, curbing nausea, controlling psychological aspects</td>
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<tr>
<td>Cartwright and Seale92 and Seale93 (U.K. observational [control group])</td>
<td>Moderate</td>
<td>South London</td>
<td>1) and 3) Inpatient palliative care services and home care teams</td>
<td>Process of hospice care in both inpatient and home palliative care rather different from conventional care and palliative care, seen as valuable. Better pain control in inpatient palliative care and satisfaction with palliative care reported as high</td>
</tr>
<tr>
<td>Serra-Prat et al94 (Spain retrospective comparative)</td>
<td>Low</td>
<td>Mataro community and hospitals</td>
<td>3) PHCT (PADES team) health and social care support teams intend to improve home care services for terminally ill patients</td>
<td>A 71% increase in the cost per patient in standard care compared with home care. Home care teams allow for savings to the health care system</td>
</tr>
<tr>
<td>Stromgren et al95,96 (Denmark longitudinal)</td>
<td>Low</td>
<td>Bispebjerg Hospital, Copenhagen</td>
<td>5) Specialist PCT—physicians (oncology, anesthetist, internal medicine) nurses, social workers, chaplains, psychologists, physical therapists, dietitians. Palliative care provided in hospital inpatient, outpatients, and at patients’ home</td>
<td>Significant improvement in many symptoms after &gt;1 wk. Decrease in mean pain scores at 1 wk (European Organization for Research and Treatment of Cancer [EORTC] QLQ-C30 (P = 0.0001) and Edmonton Symptom Assessment System (P = 0.0013). No symptoms worsened significantly over time</td>
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<tr>
<td>Tamir et al97 (Israel retrospective comparison)</td>
<td>Low</td>
<td>Clalit Health Services, Beer-Sheva, and Kiryat-Gat</td>
<td>3) Home specialist palliative care (HSPC) that carries out routine visits and provide around-the-clock support</td>
<td>In the last year of life, the mean health care costs for HSPC patients are 30% lower compared with non-HSPC (P &lt; 0.005); differences increased nearer to death (last 3 mo—41%; P &lt; 0.005)</td>
</tr>
<tr>
<td>Ventafridda et al98 (Italy observational [with control group])</td>
<td>Moderate</td>
<td>Milan from a cancer center</td>
<td>3) PHCT organized from hospital</td>
<td>The integrated pain score on the whole decreased for both groups; however, by wk 2, a statistically significant difference was noted in favor of the home care group (P &lt; 0.05)</td>
</tr>
<tr>
<td>Viney et al99 (Australia observational)</td>
<td>Moderate</td>
<td>Wollongong, New South Wales</td>
<td>1) Two palliative care inpatient units—multiprofessional (hospices), compared with hospital care</td>
<td>Quality of life remained virtually unchanged for the home care group, whereas the control group deteriorated progressively; by the sixth week, the difference was statistically significant (P &lt; 0.02). Selection bias between groups, mood, feelings of weakness, and anxiety showed signs of improvement in the home care group, whereas the control group did not</td>
</tr>
</tbody>
</table>

* Primarily (1) inpatient; (2) home care+ inpatient; (3) home care; (4) home plus hospital; or (5) hospital care.
Reducing hospital admissions. The benefit is demonstrated quantitatively. Studies indicated either benefit in favor of a palliative care team or no difference. Some studies suggested lower costs. Quality of life, when measured, less often was different between groups and tended to deteriorate over time. However, there were biases in all studies, even when there were control groups, because of selection bias of patients into the palliative care service or control.

Given the variety of interventions within each team and the wide range of services tested, more work is needed to test the specific components of palliative care team activity (eg, to compare different types of hospital team or inpatient unit or to test specific ways of working within their practice) and to discover if a different skill mix or interventions performed by the team are more effective than each other. More recent trials considered more integrated palliative care and oncology services, with joint activity and earlier referral to palliative care, and this seemed to provide benefit.

Studies tended to be from large teaching hospitals in urban areas, and only a few were multicenter, and included rural areas, although there was no difference in the nature of the results in these areas.

**DISCUSSION**

In this systematic review, we identified 8 RCTs and 32 observational or quasi-experimental studies offering a mixture of high-, moderate-, and low-grade evidence. Taken together, the results indicate positive benefits for specialist palliative care services of hospital teams, home care teams, and inpatient services. The main outcomes that showed improvement were pain and symptom control, hospital admissions or stays, and, in some studies, caregiver outcomes. Studies also found improved satisfaction for patients and caregivers and, in some instances, lessened anxiety or depression. Quality of life, when measured, showed fewer differences.

Contrary to earlier reviews, where most evidence was available for home care and inpatient services, there is now evidence for home, hospital, and inpatient services, with perhaps least evidence now for inpatient services. This is partly because most of the randomized trials are from the United States, where home care services predominate. A review found that palliative care teams have benefit in the management of patients with HIV and AIDS, although the evidence in this field was weaker. Separate reviews have considered the factors that enable patients to remain at home, and our review lends support to their finding that home support is an important factor in patients remaining at home, as it was primarily the home palliative care services that increased home care.

Further work is needed to investigate all types of team, to compare models of service, and to consider the impact of the different mix of individuals within teams. One way to achieve this is by better routine data collection within palliative care services. Currow et al. and Edgar et al. have developed the Palliative Care Outcomes Collaboration, an Australian initiative that allows specialist palliative care services to collect nationally agreed-upon measures to better understand quality, safety, and outcomes of care. Data include phase of illness, place of discharge, and, at each transition in place of care, the person’s functional status, dependency, and symptom scores. This allows benchmarking of services and comparison between different initiatives, which would now be valuable in further developing palliative care services.

Palliative and end-of-life care has traditionally emphasized supporting people with cancer, but since the 1980s and continuing today, U.K. policy has advocated extension to all population groups at the end of life. Many of the evaluations on palliative care reflected this with mixed populations of patients with either cancer or noncancer diagnoses. Publication of subgroup analysis by condition type could develop the evidence base on the effectiveness of palliative care for different population types, for example, the very old.

**Strengths and Limitations**

We were able to identify and include a wide range of robust literature, focusing more closely on specialist palliative care services and overcoming some of the weaknesses of earlier reviews that included specialist and nonspecialist services. However, our review was still weakened by the wide range of outcomes measured. There is a need to standardize outcome measurement in palliative care. One European-funded collaborative, PRISMA, is seeking to harmonize outcome measurement, which may help in the future. This is building on measures such as the Palliative Outcome Scale and the Support Team Assessment Schedule, which are now widely used to make available resources to enable their integration into research and practice.

**CONCLUSIONS AND IMPLICATIONS FOR PRACTICE**

The review shows a benefit of SPCTs in cancer, in terms of pain and symptom management and psychosocial and health care outcomes. This suggests that specialist palliative care should be part of oncology practice, and if the more recent studies hold true, be introduced earlier into practice, as this may prevent subsequent symptoms and inappropriate treatments.

**REFERENCES**


