Supplementary Data

SUPPLEMENTARY TABLE S1. CHARACTERISTICS OF 19 RANDOMIZED CLINICAL TRIALS OF PALLIATIVE CARE INTERVENTIONS IN CANCER

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Bakitas et al.[S1] (United States)	Patients recently diagnosed with GI, lung, GU, or breast cancer; prognosis approximately one year	Structure, physical, psychological, social, and legal	A manualized, psychoeducational intervention focusing on: symptom management, patient empowerment, self-management, problem solving, communication, and advance care planning	Longitudinal: four weekly educational sessions and monthly follow-up sessions, which reinforced session content and referred patients to appropriate care resources until patient death or study completion (four years)	Telephone-based format	Specialty PC: advanced practice nurses with PC specialty training	Quality of life; physical symptoms; survival; patient mood; resource utilization and expenditures
Bakitas et al.[S2] (United States)	Advanced-stage cancer (lung, GI tract, breast, other solid tumor, genitourinary tract) or hematologic malignancy; prognosis: 6–24 months	Structure, physical, psychological, social, spiritual, and legal	Early delivery (30–60 days postdiagnosis) of Bakitas et al.[S1] intervention plus three-session life review component and an intervention for caregivers	Longitudinal: six weekly educational sessions with follow-up calls reinforcing session content and helping navigate new patient challenges until patient death or study completion (three years)	Telephone-based format, predominately (preceded by only one in person at outpatient consultation)	Specialty PC: advanced practice nurses with PC specialty training	Quality of life; physical symptoms; survival; patient mood; site of death; resource utilization and expenditures
Clark et al.[S3] (United States)	Radiation therapy patients with advanced cancer (brain, gastrointestinal, head and neck, lung, and other), plus their caregivers; prognosis: 0%–50% at five years	Structure, physical, psychological, social, and spiritual	Psychosocial intervention to address the five domains of quality of life: physical, mental, social, emotional, and spiritual	Longitudinal: 27 weeks total; six sessions of counseling focused on quality of life, followed by telephone counseling sessions over the next six months	Mixed: six sessions delivered in person in a comprehensive cancer center, followed by 10 brief telephone counseling sessions	Primary PC: the multiprofessional team included a physical therapist, a clinical psychologist or psychiatrist, an advanced practice nurse, a hospital chaplain, and a social worker	Quality of life; caregiver outcomes
Dyar et al.[S4] (United States)	Metastatic cancer patients with a strong expectation of hospice referral within 12 months of enrollment	Physical, psychological, social, spiritual, EOL, and legal	Discussion-based intervention focusing on educating patients about hospice advance-care planning, and assessing the five domains of quality of life	Acute: one month	Inpatient	Primary PC: oncology advanced registered nurse practitioners	Quality of life

(*continued*)

SUPPLEMENTARY TABLE S1. (CONTINUED)

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Farquhar et al.[S5] (United Kingdom)	Advanced cancer patients (lung, breast, rectal, prostate, lymphoma, mesothelioma, gastroesophageal, renal, endometrial, hepatocellular, bladder, and unknown) diagnosed with breathlessness and troubled by it	Structure, physical, psychological, and social	The breathlessness support service: a nonpharmacological and pharmacological intervention (e.g., breathing control, individualized exercise plans, and brief cognitive therapy)	Acute: two weeks	Home based and telephone based	Specialty PC: a PC medical consultant, a clinical specialist physiotherapist, and an administrator	Physical symptoms; patient mood
Given et al.[S6] (United States)	Recently diagnosed cancer patients (breast, colon, lung, gynecologic, lymphoma, or other solid tumors) receiving chemotherapy and reporting both pain and fatigue plus their caregivers	Physical and social	A supportive, cognitive-behavioral pain and fatigue management intervention delivered using a computerized decision support tool; focused on symptom management and social functioning	Longitudinal: 18 weeks	Mixed: six in-person sessions at outpatient cancer treatment sites and four sessions delivered via telephone	Primary PC: oncology nurses	Quality of life; physical symptoms
Grudzen et al.[S7] (United States)	Stage III–IV cancer (solid or hematological, breast, colorectal, lung, or other) patients	Structure, physical, psychological, social, spiritual, EOL, and legal	A comprehensive PC consultation focusing on symptom assessment and treatment, social needs, goals of care, and transition planning	Acute: PC consultation on the same day as admission or the following day	Inpatient: emergency department	Specialty PC: PC physician, nurse practitioner, a social worker, and a chaplain	Quality of life; survival; patient mood; resource utilization and expenditures
Jordhoy et al.[S8] (Norway)	Incurable cancer patients (gastrointestinal, lung, breast, and female genitals, prostate and male genitals, kidney or vesical or ureter, lymphomas, skin, and other); prognosis: two to nine months	Structure, physical, psychological, and EOL	A multiprofessional, comprehensive intervention that combined hospital service with community service by providing PC education and training for community professionals	Longitudinal: assessments made until patients' deaths (two to nine months) with four months being median patient survival	Mixed: inpatient and outpatient clinics, with home-based services	Specialty PC: consultant PC nurse or physician, as well the patients' general practitioners and community nurses; the community staff had bedside training and 6–12 hours of lectures every six months	Quality of life; patient mood

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SUPPLEMENTARY TABLE S1. (CONTINUED)

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Kane et al.[S9] (United States)	Terminal cancer patients (lung, prostate, ear, nose, throat, brain, and other); prognosis: two weeks to six months	Structure, physical, psychological, social, spiritual, and EOL	Hospice services, focusing on conducting assessments and developing treatment plans	Longitudinal: patients followed until death; some patients died within 45 days of the start of the study, others dying up to two years after the study began	Mixed: inpatient or at home	Specialty PC: hospice physicians, nurses, a social worker, a chaplain, and 30 volunteers	Physical symptoms; patient mood; resource utilization and expenditures; satisfaction with care; caregiver outcomes
McCorkle et al.[S10] (United States)	Newly diagnosed patients with progressive, ≥Stage II lung cancer	Structure, physical, psychological, and social	Intervention 1: the oncology home care (OHC) program, focusing on symptom and pain management, psychosocial assessment, self-support and communication; Intervention 2: the standard home care (SHC) program, including an interdisciplinary team that would coordinate visits, length of services, and discharges from care	Longitudinal: six months of home care treatment	Home based	Primary PC: Intervention 1: masters-prepared nurses with advanced training in caring for Stage II lung cancer patients; Intervention 2: regular home care nurses, plus an interdisciplinary team of physical therapists, home health aides, medical social workers, occupational therapists, and speech pathologists	Physical symptoms; survival; resource utilization and expenditures
McCorkle et al.[S11] (United States)	Recently diagnosed late-stage cancer patients (lung, head or neck, gastrointestinal, gynecological) with ≥1 chronic condition who are postbiopsy or surgery	Structure, physical, psychological, social, and legal	Multidisciplinary intervention focusing on topics, including symptom management, care coordination, teaching patients and their family caregivers, and clarifying goals of care	Longitudinal: 10 weeks	Outpatient: disease-specific clinics: gynecologic and lung clinics were randomized to the 10-week intervention, and the head and neck and GI patients received enhanced usual care	Primary PC: advance practice nurses working closely with PAs, medical social workers, nurse coordinators, medical oncologists, surgeons, and radiation oncologists	Quality of life; physical symptoms; survival

(*continued*)

SUPPLEMENTARY TABLE S1. (CONTINUED)

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Northouse et al.[S12] (United States)	Recurrent breast cancer patients plus a family caregiver; prognosis: greater than or equal to six months	Physical, psychological, and social	Family-based, manualized intervention focusing on five domains: family involvement, optimistic attitude, coping effectiveness, uncertainty reduction, and symptom management	Longitudinal: six months	Home based and telephone based	Primary PC: intervention nurses trained in PC for 40 hours	Quality of life; caregiver outcomes
Northouse et al.[S13] (United States)	Prostate cancer patients (in one to three phases of prostate cancer: newly diagnosed, biochemical recurrence, or advanced) plus their spouses; prognosis more than 12 months	Physical, psychological, and social	Northouse et al.[S12] intervention adapted for prostate cancer patients	Longitudinal: four months	Home based and telephone based	Primary PC: intervention nurses trained in PC for 40 hours	Quality of life; physical symptoms; caregiver outcomes
Northouse et al.[S14] (Unite States)	Stage III or IV cancer patients (breast, colorectal, lung, and prostate) plus their caregivers; prognosis: greater than or equal to six months	Physical, psychological, and social	The Northouse et al.[S12] intervention reworked into Brief and Extensive versions; Brief: three contacts: two 90-min home visits, and one 30-min phone session; Extensive: six contacts: four 90-min home visits, and two 30-min phone sessions	Longitudinal: both programs were 10 weeks long	Home based and telephone based	Primary PC: intervention nurses trained in PC for 40 hours	Quality of life; caregiver outcomes

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SUPPLEMENTARY TABLE S1. (CONTINUED)

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Rummans et al.[S15] (United States)	Advanced cancer patients undergoing radiation therapy (brain, head and neck, lung, ovarian, GI, or other); Prognosis: estimated 5-year survival of 0%–50%	Structure, physical, psychological, social, and spiritual	Structured intervention to address the five domains of quality of life: physical, mental, social, emotional, and spiritual	Acute: four weeks	Outpatient: a comprehensive cancer center	Primary PC: psychiatrists, psychologists, advanced practice nurses, hospital chaplains, and social workers	Quality of life; physical symptoms; patient mood
Steel et al.[S16] (United States)	Patients with hepatocellular carcinoma, cholangiocarcinoma, gallbladder carcinoma, neuroendocrine carcinoma, pancreatic carcinoma, or other primary cancers with metastasis to the liver (ovarian, breast, and colorectal cancers), plus their family caregivers	Physical and psychological	Web-based collaborative care, psychoeducational intervention, including cognitive-behavioral therapy, self-management strategies, and symptom management recommendations	Longitudinal: total length of study unclear, but there were visits with care coordinators during physician's appointments every two months and telephone calls with the care coordinator every two weeks; assessments made at six months	Mixed: Website at home, telephone contact or face-to-face contact with the collaborative care coordinator in an oncology outpatient clinic or a hospital	Primary PC: Collaborative care coordinator with training in cognitive-behavioral therapy	Quality of life; physical symptoms; patient mood; caregiver outcomes
Temel et al.[S17] (Unite States)	Newly diagnosed (within 11 weeks) metastatic non-small cell lung cancer patients	Structure, physical, psychological, spiritual, EOL, and legal	Intervention consisted of specialist PC integrated with standard oncologic care	Longitudinal: monthly until patient death; median survival among patients was 10 months	Outpatient: a thoracic oncology clinic	Specialty PC: a PC team consisting of a board-certified PC physician, advanced-practice nurses, and oncologists	Quality of life; physical symptoms; survival; patient mood; advance care planning; resource utilization and expenditures

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SUPPLEMENTARY TABLE S1. (CONTINUED)

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Wallen et al.[S18] (United States)	Advanced cancer patients (types not specified)	Structure, physical, psychological, social, and spiritual	Intervention included consult services with assessments of pain, symptoms, and emotional and spiritual distress	Longitudinal: 12 months	Mixed: both inpatient and outpatient clinics	Specialty PC: two attending physicians, three nurse practitioners, a nurse thanatologist, and a physician fellow in hospice and palliative medicine	Physical symptoms; survival
Zimmermann et al.[S19] (Canada)	Advanced stage III or IV cancer patients (lung, gastrointestinal, genitourinary, breast, and gynecological); prognosis: 6–24 months	Structure, physical, psychological, social, spiritual, EOL, and legal	Intervention focusing on an assessment of symptoms, goals of care, advance care planning, psychological distress, and social support	Longitudinal: four months	Mixed: inpatient and outpatient PC, with home services and routine telephone contact	Specialty PC: PC physician and nurse	Quality of life; physical symptoms

PC, palliative care; GI, gastrointestinal; GU, genitourinary; EOL, end of life.

SUPPLEMENTARY TABLE S2. CHARACTERISTICS OF SIX RANDOMIZED CLINICAL TRIALS OF PALLIATIVE CARE INTERVENTIONS IN HEART FAILURE

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Aiken et al.[S20] (United States)	Class IIIB–IV chronic heart failure patients (68%) or chronic obstructive pulmonary disease patients (32%); prognosis: less than two years	Structure, physical, psychological, social, spiritual, and legal	Intensive, home-based care management coordinated by nurse case managers, along with patients' existing source of medical care, focusing on disease and symptom management, educational services, and support services	Longitudinal: total duration of intervention unclear, but patients averaged 44 contacts during the intervention, with three to six visits/calls per month during the first six months of participation	Home based and telephone based	Primary PC: registered nurse case managers with extensive specialized training in the intensive PC protocol	Physical symptoms; advance care planning; resource utilization and expenditures
Bekelman et al.[S21] (United States)	Chronic heart failure patients with heavy symptom burden, and impaired quality of life and functional status (as measured by a Kansas City Cardiomyopathy Questionnaire score of <60)	Structure, physical, and psychological	Multiprofessional chronic heart failure management, screening and treatment for depression, and telemonitoring with patient self-care support	Longitudinal: one year study period	Mixed: home based and telephone based, including some in-person meetings at a VA medical center, or at affiliated community-based outpatient clinics	Primary PC: a nurse coordinator, a cardiologist, a psychiatrist, and a primary care physician	Quality of life; survival; patient mood; resource utilization and expenditures
Brannstrom et al.[S22] (Sweden)[S22]	Patients with chronic heart failure (NYHA class III–IV) and a prognosis of less than one year	Structure, physical, psychological, social, and spiritual	Multidisciplinary, collaborative care intervention that integrates heart failure disease management and PC services focusing on continually assessing physiological, social, and spiritual needs and fostering a partnership between patients/carers and professional caregivers	Longitudinal: six months and then patients were transferred to the original care provider with their individual care plans established; meetings took place among the team members twice a month	Home based and telephone based	Specialty PC: specialized nurses, PC nurses, cardiologists, PC physicians, physiotherapists, and occupational therapists	Quality of life; physical symptoms; survival; resource utilization and expenditures

(*continued*)

SUPPLEMENTARY TABLE S2. (CONTINUED)

Study	*Patient population*	*Domains addressed*	*Intervention*	*Duration*	*Location*	*Provider specialization*	*Outcomes measured*
Hopp et al.[S23] (United States)	Advanced chronic heart failure patients (NYHA class III–IV) hospitalized for acute decompensation; prognosis: one-year mortality risk ≥33%	Structure, physical, psychological, social, spiritual, and legal	PC consultation	Acute: at least one PC consultation	Inpatient	Specialty PC: Palliative care consultation team, including a physician and a nurse practitioner; chaplain and social worker also available	Survival; advance care planning; resource utilization and expenditures
Sidebottom et al.[S24] (United States)	Adult inpatients with acute heart failure	Structure, physical, psychological, social, spiritual, and legal	Assessments of patients' symptom burden, depression, and quality of life, focusing on emotional, spiritual, and psychosocial aspects of their care and offering referrals for advance care planning	Acute: study paid for only the initial PC consultation, with any subsequent visits billed to the patients' insurance as "standard care"	Inpatient	Specialty PC: inpatient team of four physicians, board certified in hospice and palliative medicine, two clinical nurse specialists board certified in advance practice PC nursing, a social worker, and a chaplain	Quality of life; physical symptoms; survival; patient mood; advance care planning; resource utilization and expenditures
Wong et al.[S25] (Hong Kong)	Advanced heart failure patients (e.g., NYHA stage III or IV) in their last years of life	Structure, physical, psychological, social, and legal	Transitional PC	Longitudinal: 12 weeks	Home based and telephone based	Specialty PC: advanced care nurse practitioners and nurse case managers, with support from PC physicians	Quality of life; physical symptoms; resource utilization and expenditures; satisfaction with care

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