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PALLIATIVE CARE IN ONCOLOGY

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Palliative care (PC) is increasingly recognized as an essential component of high-quality cancer care, with evidence from randomized trials and meta-analyses demonstrating that it improves quality of life, mood, and goal-concordant end-of-life care. Despite these benefits, PC integration has been inconsistent, with many patients still receiving PC later in their disease course. Current models of integration include outpatient colocated PC clinics, inpatient consultation services, community and home-based programs, and more recent innovations, such as telehealth and stepped approaches. These models have shown clear benefits; however, they are frequently organized by care settings rather than patient-specific needs, resulting in both underuse and inefficiency. Emerging evidence has begun to clarify the mechanisms through which PC provides patient benefits. Symptom control, coping support, longitudinal communication, and existential or spiritual interventions are among the active ingredients that are most consistently associated with improvements in patient outcomes. Recognition of these mechanistic drivers highlights the potential for precision PC, in which care is tailored to the unique drivers of each patient's needs. Implementation of precision PC requires embedding validated patient-reported outcomes and structured referral algorithms into oncology workflows, enabling real-time triage of targeted interventions. Interoperable technology, workforce expansion through the training of non-specialists, and policy reforms that support scalable delivery models, such as telehealth and nurse-led pro- grams, will be essential for closing gaps in terms of access and equity. Precision PC offers a pragmatic framework for aligning limited resources with the diverse and evolving needs of patients with cancer, ensuring timely, individualized, and sustainable integration into modern oncology.

Key Words: Palliative care, Neoplasms, Patient reported outcome measures, Coping skills, Psychological stress

Introduction

Specialist palliative care (PC), first introduced in the 1970s, has evolved into its own discipline of team-based care, focusing on alleviating the symptoms, distress, and spiritual concerns of serious illnesses for patients and families/caregivers [1]. It can be initiated at any point along the disease trajectory and delivered concurrently with disease-directed therapy, rather than being limited to the end of life. In oncology, PC is now recognized as a standard component of high quality cancer care, with randomized trials and meta-analyses demonstrating that it yields improvements in quality of life, mood, and symptom control, and facilitates goal concordant end-of-life care [2,3]. Yet, more than a decade after the first ASCO Clinical Practice Guidelines, the consistent integration of PC into oncology remains more of an aspiration than a reality [4]. Specialist PC is still too often introduced late in the disease trajectory, if at all, and is most commonly delivered through generic, setting-based models that overlook the heterogeneity of patient needs [4-6]. In the past decade, PC services were largely confined to inpatient consultations or hospice care near the end of life [2]. Although newer models have expanded access, they typically prescribe uniform timing and modalities of intervention. Such approaches risk both under and over delivery of services by not matching care delivery to specific patient needs. These limitations are compounded by real world problems. Misperceptions of PC as synonymous with end-of-life care, limited emphasis within medical training, workforce short- ages, and inadequate reimbursement continue to constrain its implementation [7]. Even under trial conditions, consistent delivery has proven difficult. In the first large multisite United States (US) study of early PC, one in seven patients assigned to monthly visits received none by 24 weeks, despite the require- ments for adequate staffing and integration to participate as a trial site [8]. These findings underscore the persistent gap between evidence and practice, highlighting the fact that challenges are likely to be even greater in community-based oncology programs with fewer resources.

At the same time, oncology itself has become increasingly complex and individualized. Advances in precision oncology, immunotherapy, and targeted agents have extended the survival of many patients but have also introduced novel toxicities, prognostic uncertainty, and new psychosocial and financial stressors. Depending on the molecular testing results, treatment response, and availability of clinical trials, each patient faces a unique illness trajectory with distinct symptom burdens and survival expectations [2]. As oncology now personalizes therapy to tumor biology, PC must similarly adapt to patient-specific drivers such as symptom severity, coping style, existential distress, and family context.

Traditional “one-size-fits-all” models are poorly suited to this landscape. A precise approach is required, including in- terventions responsive to distinct patient subgroups, supported by technology that enables real-time triage, and implemented through close collaboration between oncologists and PC clini cians to manage unfamiliar toxicities and the evolving needs of modern cancer care. This review examines the prevailing mod- els of palliative care integration, highlights emerging insights into the potential mechanisms of benefit, and outlines future directions for a more precise and needs-based approach.

Current Models Of Integration

PC in oncology is currently delivered through several dominant integration models, most of which are structured according to care settings, rather than patient-specific characteristics [6]. Outpatient colocated PC clinics, for example, which are typically embedded in oncology programs, serve as the primary entry points for longitudinal support. They deliver symptom management, advance care planning, psychosocial support, and education, and have been shown to improve the quality of life while reducing acute care use [9]. Inpatient consultation services are particularly relevant for hematologic malignancies and patients undergoing transplantations, where acute com- plications and prognostic uncertainty are common. Randomized trials have demonstrated reductions in symptom burden, psychological distress, and caregiver strain when specialty PC is integrated into this setting. Inpatient consultative PC has also been associated with various outcome improvements across numerous cancer types [10,11]. Community and home- based programs extend the continuity of care beyond hospitals and clinics. Specialist teams improve comfort, symptom control, and the likelihood of dying at home, although their avail- ability remains limited in the US [12]. More recently, telehealth and nurseled interventions have broadened their reach, particularly in rural and resource-limited settings, with outcomes comparable to those of in-person care [13].

However, these models rarely stratify patients according to their diagnoses, prognoses, or evolving needs [14]. Referral criteria are often broad and inconsistently applied. Some programs adjust the timing based on prognosis, such as referral within eight weeks of metastatic diagnosis or following progression on second line therapy; however, such practices are variable and contribute to access inequities [5]. Increasingly, the symptom burden captured through patient reported outcomes (PROs) is emerging as a more reliable indicator for identifying high-need patients who might otherwise be over looked [5,15]. In addition to referral practices, persistent inefficiencies continue to constrain delivery. Uptake is inconsistent, referral pathways are applied unevenly, and siloes between oncology and PC impede integration [4,16]. Disparities are well-documented, with rural, minority, and socioeconomically disad- vantaged populations being more likely to experience delayed or preference discordant care [17]. Workforce shortages, especially in inpatient and rural settings, exacerbate these gaps and often necessitate reliance on nonspecialist clinicians [18].

Among emerging models, stepped PC offers the most systematic effort to align service intensity with patient needs. In this model, all patients are introduced to PC early through an ini- tial encounter, with subsequent escalation triggered by declines in PROs, clinical progression, or hospitalization [19]. In a multicenter randomized trial on advanced lung cancer, stepped PC achieved non-inferior outcomes in terms of quality of life, communication, and other patient-reported outcome measures (PROMs) compared with those achieved via standard monthly PC visits, while requiring roughly half as many specialist encounters [19]. By reducing visits without compromising outcomes, stepped care exemplifies how patient centered, trigger based strategies can extend workforce capacity and enable scalable integration [20]. The stepped PC model did not perform as well regarding hospice length of stay; however, this raises the need for further study, and perhaps recognition of the fact that certain patients or situations call for more frequent PC visits.

Mechanisms Of Benefit In Palliative Care

The clinical benefits of early and integrated PC are well established; however, increasing attention has shifted toward understanding the processes by which these benefits arise. Although several elements have been identified as likely contributors, their precise mechanisms remain unclear. Clarifying these mechanisms is essential for refining care models and facilitating wider dissemination.

Symptom assessment and management

Symptom burden is recognized as both a determinant of outcomes and a mediator of benefits in PC. Across cancer populations, uncontrolled symptoms such as pain, fatigue, insomnia, anxiety, and depressed mood are strongly associated with impaired quality of life, functional decline, psychological morbidity, and increased healthcare utilization and may even contribute to shorter survival [3,21]. Symptom severity is a major predictor of patient reported quality of life and often outweighs comorbidities and medical history [22]. Patients with higher baseline symptom scores appear to derive the greatest benefit from the early integration of PC, suggesting that symptom burden may serve as a reliable criterion for guiding referral [3,5].

PC interventions have been shown to alleviate symptom burden, and this reduction appears to mediate downstream improvements in patients' quality of life and mood [22]. In a meta analysis of 43 randomized trials, PC was associated with clinically significant improvements in quality of life (Functional Assessment of Chronic Illness Therapy Palliative Care score mean difference, +11.36) and reductions in symptom burden (Edmonton Symptom Assessment Scale [ESAS] mean difference, –10.30) at 1 to 3 months [3]. Additional systematic reviews and randomized trials across outpatient, inpatient, and home-based settings have confirmed these findings, demonstrating sustained reductions in physical symptoms and distress over time [21]. Importantly, PC clinicians approach symptom management in ways that complement their oncological practices [23]. Oncologists often focus on pharmacological adjustments and cancer-directed interventions, whereas PC clinicians emphasize patient education, counseling, and nonpharmacological strategies to address pain, fatigue, dyspnea, and delirium [23]. They are also specifically trained to manage complex, multifaceted symptom presentations and provide expertise in communication, decision-making, and care transitions. This specialized skill set makes PC clinicians valuable partners for oncologists when weighing the benefits and risks of interventions within the context of a patient's goals. By equipping patients with skills and support to manage their symptoms, these synergistic approaches can reduce acute care crises, improve treatment adherence, and enhance tolerance to cancer therapy [9]. As such, symptom management is best understood not only as an outcome of PC but also as a mecha- nism by which it enhances quality of life and care delivery.

Adaptive coping

Coping support has emerged as one of the most consistently demonstrated mechanisms by which PC improves outcomes [23]. From the time of diagnosis, patients with advanced stage cancer and their caregivers experience a cascade of practical, emotional, and existential challenges [24]. In the absence of structured support, many default to avoidant strategies, such as denial, disengagement, or self-blame, which are linked to worse psychological adjustment. In contrast, PC promotes adaptive, approach-oriented coping strategies, including acceptance, reframing, gratitude, and active problem-solving [24]. Regular encounters with PC clinicians reinforce these strategies over time, helping patients sustain resilience across cycles of treatment and disease progression.

Evidence of coping as a mechanistic driver spans both solid and hematological malignancies [23,25]. In a randomized trial of patients with newly diagnosed advanced lung and gastrointestinal cancers, those whose PC visits addressed coping more frequently reported a higher quality of life and fewer depressive symptoms at 24 weeks [23]. In acute myeloid leukemia, the integration of PC during intensive chemotherapy produced rapid gains in coping within two weeks, precisely when physical and psychological toxicity was greatest [25]. Mediation analyses showed that these changes accounted for 78% of the intervention's effect on quality of life, two-thirds of its effect on depression, and one-third of its effect on anxiety, with the benefits persisting well beyond hospitalization [25]. Collectively, these findings posit that coping is not an ancillary ben- efit but a central pathway through which PC exerts its effects. By fostering adaptive coping, PC enables patients to integrate prognostic information cognitively and emotionally, preserve their resilience, and make treatment decisions consistent with their values.

Longitudinal communication

Another core mechanism through which PC exert benefits is communication, which supports patients in navigating uncertainty and making informed decisions. Unlike static documentation of preferences, high-quality serious illness communication is a longitudinal process that adapts as the illness evolves. Structured and attuned conversations have focused on prog nosis, values, coping, and treatment tradeoffs to help patients integrate complex information, sustain trust in clinicians, and align care with what matters most to them [26].

Trials of structured communication interventions have demonstrated this effect. The Serious Illness Care Program (SICP), a multifaceted intervention that includes clinician training, a conversation guide, and electronic medical record (EMR) documentation tools, has demonstrated feasibility and high clinician uptake [26]. In a cluster randomized trial, the SICP reduced the proportion of patients reporting moderate to severe anxiety and depression at 14 and 24 weeks, although its effects on goal-concordant care and patient peacefulness were more difficult to capture [27]. Observational studies have shown that when a greater proportion of PC visits address communication themes such as prognostic awareness, goals of care, and advance care planning, patients reported a higher quality of life, reduced chemotherapy use near death, and greater hospice enrollment [5].

The qualitative work further illustrated how PC clinicians shape treatment trajectories. Patients often described how clinicians helped them weigh the risks and benefits of additional chemotherapy by situating decisions within the context of prognosis and personal goals [28]. By clarifying illness understanding and situating treatment choices within what matters most to the patient, these conversations shape both the care trajectories and psychological well-being of patients and care givers.

Recent trials demonstrated that communication benefits are preserved across delivery modalities. In a multisite randomized trial, telehealth delivery of early PC was noninferior to in-person encounters for quality of life, mood, and prognostic understanding, confirming that the relational aspects of communication can be maintained virtually [13]. These findings support the notion that longitudinal and adaptive communi- cation, whether in person or virtually, remains central to PC's impact.

Existential and spiritual support

The third pathway through which palliative care (PC) improves outcomes is by addressing the existential and spiritual dimensions of illness. Patients with advanced cancer frequently report a loss of meaning, hopelessness, and death-related anx iety, all of which are linked to worse psychological outcomes and a greater desire for hastened death [29]. These states are inversely related to spiritual well-being, defined by meaning, peace, and connectedness. Importantly, they are amenable to interventions [29].

Meaning Centered Psychotherapy (MCP) was designed to help patients sustain a sense of meaning and purpose despite advanced disease. In a randomized trial of 253 patients, patients who received group-MCP showed improved spiritual well-being, quality of life, and less hopelessness compared to those who received supportive psychotherapy, while also reducing depressive symptoms and the desire for hastened death [29]. Mediation analyses confirmed that increases in meaning accounted for most reductions in distress [30]. To extend access beyond the group setting, individual MCP (IMCP) was developed as a brief adaptation for patients who were unable to participate in group sessions. IMCP demonstrated similar short term gains in spiritual well being and quality of life, replicating the benefits of group-MCP with lower attrition [31]. Comparative studies further indicated that MCP outperformed cognitive-behavioral therapy for enhancing meaning, while offering comparable improvements in depression symptoms and posttraumatic growth [32].

Managing Cancer and Living Meaningfully (CALM) is another structured intervention designed to address existential and psychological needs. In a randomized trial of 305 patients, CALM significantly reduced depressive symptoms at 3 and 6 months and improved end-of-life preparedness compared with usual care [33].

Taken together, these findings demonstrate that existential and spiritual well being are modifiable and clinically meaningful targets. Screening for hopelessness, demoralization, or low spiritual well being (e.g., low Functional Assessment of Chronic Illness Therapy Spiritual Well Being Scale scores) can identify patients who are most likely to benefit from interventions, such as MCP or CALM. These therapies alleviate suffering and strengthen resilience by fostering meaning, rein- forcing legacy, and preparing patients for death.

These mechanisms also involve interactions with other PC domains. Coping, communication, and advanced care planning can reinforce one another, suggesting that combined intervention bundles may be the most effective for patients experienc ing high existential distress. This interdependence highlights the rationale for precision PC: tailoring the active ingredients of care to the drivers most relevant to each patient, guided by systematic screening and structured referral pathways.

Assessment As The Foundation Of Precision

The foundation of precision PC relies on a systematic multidimensional assessment [20,34]. Instruments such as the National Comprehensive Cancer Network (NCCN) Distress Thermometer (DT), the Integrated Palliative Outcome Scale (IPOS), and the ESAS are validated, practical tools that capture not only the presence of distress but also its underlying drivers [20,35]. These represent only a subset of available instruments, and no single tool is universally optimal. The selection should be guided by the clinical setting, resources, and patient population. Sedhom et al. [20] provided a broader inventory and highlighted the principles of integration in oncology workflows.

The DT uses a 0~10 scale, with scores of ≥4 generally considered clinically significant, and is accompanied by a problem checklist that spans physical, emotional, family, and spiritual concerns. When incorporated into clinical workflows, elevated scores can guide targeted referral, and patients who screen positive for anxiety or depression may be directed to psycho-oncology or mindfulness-based therapies, while those endorsing pain, fatigue, or sleep disturbances can trigger expedited symptom management or rehabilitation [36].

The IPOS provides a broader multidimensional profile, rating severity across the physical, psychological, social, and spiritual domains on a five-point Likert scale [37]. Unlike the dichoto- mous DT, the IPOS captures the gradations of burden and facilitates prioritization in patient-clinician discussions. High scores in existential or spiritual domains can prompt referral to meaning-centered psychotherapy or CALM, caregiver strain can initiate dyadic or family based programs, and practical concerns, such as financial or housing stress, can be routed to social work or navigation departments. Thus, PROMs pro- vide a mechanism for connecting the domains through which PC exerts benefit from interventions that are most relevant for each patient.

The ESAS is a validated PROM that systematically evaluates common symptoms of advanced cancer, including pain, fatigue, drowsiness, nausea, appetite loss, dyspnea, depression, anxiety, and overall well being [35]. Each is rated on an 11-point scale ranging from 0 (none) to 10 (worst possible), with scores typically categorized as mild, moderate, or severe. Its brevity allows rapid administration in the clinic, and its repeated use enables longitudinal tracking of symptom trajectories and unmet needs [38]. Studies have shown that higher ESAS scores, particularly values greater than or equal to 5, are associated with greater benefits from outpatient PC referral, making it a practical tool for both screening and monitoring in routine care [39].

Consensus work emphasizes that PROMs are most effective when embedded within structured referral algorithms rather than serving merely as “flags” [14]. Elevated scores should trigger protocolized responses such as automatic referral to the social work department for financial concerns or chaplaincy for spiritual distress, ideally integrated into EMRs and reinforced by automated alerts. Sedhom et al. [20] argued that precision PC requires four elements: routine screening, consensus referral criteria, timely triage of targeted services, and incorporation of behavioral economic principles to promote consistent clinician action. Referral criteria include severe symptoms, existential crises, assistance with complex decision making, or disease progression after second line therapy. These factors can be detected through structured EMR data, routine PROM collection, or machine learning algorithms capable of flagging high risk patients in real time.

Building The Framework For Precision Pc

An ideal precision PC system should be organized around the principle of delivering the right intervention at the right intensity to the right patient at the right time. At its core, such a model is needs driven and subspecialist-integrated, with care dynamically adapting both scope and expertise to the evolving drivers of patient distress.

The operational backbone of a precision PC relies on systematic monitoring and integration of data. Routine collection of PROs, structured distress screening, and clinical event triggers could provide a basis for identifying emerging needs. Embedding these data into interoperable EMRs supported by automated alerts and standardized assessments would allow continuous monitoring and real-time responses. As screening tools often have limited specificity, a positive result should not generate an automatic referral to specialty services [36]. Instead, positive screens should trigger structured followups to clarify needs and allocate responsibility consistent with models that weigh patient and caregiver concerns along with program capacity [20]. Within this framework, stepped care principles would guide delivery; all patients with advanced cancer would be introduced to PC early, with escalation to more intensive or subspecialist interventions occurring only when the thresholds of need are crossed [19]. This structure promotes efficiency, preserves scarce specialist resources for those most likely to benefit, and ensures early, universal exposure to supportive care.

Team structure is central to this model. Generalist teams, typically composed of oncologists, nurses, social workers, and chaplains, provide a foundation for supportive care across settings. When domain-specific complexity arises, algorithmic referral to subspecialists such as pain specialists, psycho-oncologists, geriatricians, or spiritual care providers ensures timely and targeted expertise [40]. Subspecialist input can then be flexibly layered into care plans, allowing management to remain coordinated, adaptive, and patient-centered. Collaborative approaches, such as inpatient co-rounding, have demonstrated that close partnerships between oncology and PC foster bidirectional learning, strengthen integration, and organically lead to the emergence of palliative oncology subspecialists who bridge both domains [41].

Prognosis based triggers should be systematically embedded as objective criteria for referral and escalation. These include advanced or metastatic disease, progression after second line therapy, and an estimated survival of <1 year. The American Society of Clinical Oncology recommends that all patients with advanced cancer be referred for specialty PC within 8 weeks of diagnosis, with particular emphasis on poor prognosis cancers, such as lung and pancreatic cancer, where early integration consistently improves the quality of life and mood [5]. For cancers with less consistent evidence, including gastrointestinal malignancies, referral may be best guided by disease progres sion or patient reported needs [5,42]. Embedding these triggers in EMRs linked to consensus referral algorithms would ensure a reproducible, equitable, and timely escalation of care.

Finally, diagnosis specific considerations must be combined with these triggers to account for the heterogeneous disease trajectories. For most solid tumors, outpatient integration offers the greatest benefit, whereas inpatient embedded models are often the most appropriate for hematologic malignancies, given their intensive therapies and frequent hospitalizations [5,6]. Stepped care approaches, such as those tested in advanced lung cancer, demonstrate how universal early integration with escalation based on changes in clinical status or patient-reported outcomes can optimize resource use while maintaining patient centered focus.

Conclusion

Specialist PC integration has been established as a standard in oncology; however, the prevailing delivery models fail to account for the heterogeneity of patient needs. The emerging framework of precise PC seeks to move beyond uniform approaches by systematically linking PROs and clinical triggers to targeted interventions. Evidence demonstrates that coping support, longitudinal communication, and existential interventions are among the active ingredients through which specialist palliative care integration improves the quality of life, mood, and decision making. Embedding validated tools, such as the DT and IPOS, into workflows, coupled with structured referral pathways and interoperable technology, provides an operational foundation for tailoring care to the sources of suffering most relevant to each patient.

Achieving this vision will require investment in workforce training, expansion of primary palliative care competencies among non-specialists, and policy reforms that support sustainable delivery models. Nurse navigation, community health

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