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Improving Patient and Caregiver Outcomes in Oncology: Team-Based, Timely, and Targeted Palliative Care

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Abstract

Over the past decade, a large body of evidence has accumulated supporting the integration of palliative care into oncology practice for patients with advanced cancer. The question is no longer whether palliative care should be offered, but what is the optimal model of delivery, when is the ideal time to refer, who is in greatest need of a referral, and how much palliative care should oncologists themselves be providing. These questions are particularly relevant given the scarcity of palliative care resources internationally. In this state-of-science review directed at the practicing cancer clinician, we will first discuss the contemporary literature examining the impact of specialist palliative care on various health outcomes. We will then provide conceptual models to support team-based, timely and targeted palliative care. Team-based palliative care allows the interdisciplinary members to address comprehensively the multi-dimensional care needs of patients and their caregivers. Timely palliative care, at its best, is preventative care to minimize crises at the end-of-life. Targeted palliative care involves identifying patients most likely to benefit from specialist palliative care interventions, akin to the concept of targeted cancer therapies. Finally, we will summarize the strengths and weaknesses of innovative care models, such as outpatient clinics, embedded clinics, nurse-led palliative care, primary palliative care provided by oncology teams, and automatic referral. Moving forward, more research is needed to determine how different health systems can best personalize palliative care to provide the right level of intervention, for the right patient, in the right setting, at the right time.

Keywords

delivery of health care; integration; education; health care quality; access; evaluation; neoplasms; palliative care

Introduction

Despite major advances in cancer therapeutics over the past decades, patients with cancer continue to experience significant morbidity and mortality.¹ Cross-sectional studies have reported consistently that cancer patients experience a median of 8–12 symptoms, many of which are under-diagnosed and under-treated.^{2, 3} In addition to physical symptom burden, these patients often have other unmet supportive care needs, such as psychological distress, and need for health information and care planning.⁴ This supportive care need is further amplified by the fact that the incidence of cancer is increasing worldwide with an aging population and that many patients with advanced cancer are living longer with an incurable illness because of more effective cancer treatments.⁵

Traditionally, oncologists have played a central role in the delivery of supportive care. Many oncologists see supportive care as an essential component of oncology care and derive satisfaction from providing it.^{6, 7} Working on the front lines of cancer care, oncologists are invariably involved in palliating cancer-related symptoms, managing treatment side-effects, discussing prognosis, facilitating end-of-life discussions, and referring patients to other specialties.⁸ However, there is significant variation in the provision of supportive care and palliative care referral among oncologists.^{9, 10} The increasingly complex oncology therapeutic landscape, coupled with busier clinics, means that it is more and more challenging for the oncology team alone to address supportive care needs comprehensively.^{8, 11} Meanwhile, the implementation of routine symptom distress screening is uncovering even more supportive care needs among cancer patients.^{11, 12} As well, supportive care is itself becoming increasingly specialized, with a rapidly-growing body of knowledge and research.¹³

Palliative care has evolved over the last few decades from a philosophy of care for dying patients to a professional discipline with expertise in symptom management, psychosocial and spiritual care, caregiver support, patient-clinician communication, complex decision-making, and end-of-life care.^{14, 15} It is particularly well-positioned to work alongside oncology teams to address the complex supportive care needs of cancer patients and their families.^{16, 17} Importantly, the provision of palliative care should not be limited to the last days or weeks of life, because many of the key domains of care above can - and should - be provided much earlier in the disease trajectory to improve patient and caregiver outcomes.¹⁸

Recognizing the added value of palliative care, many national and international organizations such as the World Health Organization, American Society of Clinical Oncology, the American Cancer Society and the Institute of Medicine all promote early palliative care involvement alongside standard oncology care.^{19, 20, 21, 22} The relevant question is no longer whether palliative care should be offered, but what is the optimal model of delivery, when is the ideal time to refer, who is in greatest need of a referral, and how much palliative care should oncologists be providing, particularly given the scarcity of palliative care resources internationally. In this state-of-science review directed at the practicing oncology clinician, we will (1) discuss the contemporary literature examining the impact of palliative care on care outcomes, (2) provide conceptual frameworks on interdisciplinary, timely, and targeted palliative care, and (3) summarize the strengths and

weaknesses of innovative care models, such as outpatient clinics, embedded clinics, nurse-led palliative care, primary palliative care provided by oncology teams, and automatic referral.

Summary/Key points

- The growing number of patients living longer with advanced cancer, coupled with heightened awareness of distress through routine symptom screening, translates into an increasing demand for supportive care.
- Palliative care is a professional discipline that is well positioned to work together with the oncology team to support the physical, emotional, social, spiritual, informational, and decision-making needs of cancer patients and their families throughout the disease trajectory.

Evidence to support early palliative care

Randomized controlled trials

Over the past decade, there has been an explosion of clinical trials comparing concurrent oncologic and palliative care versus usual oncologic care alone in outpatient and inpatient settings, providing level I evidence to support integration of palliative care along the disease trajectory.^{23–40} In this section, we shall focus on more recent publications because older studies have already been summarized in previous reviews.^{18, 41–43} Table 1 highlights the key elements of study design and outcomes. A majority of these clinical trials concluded that concurrent palliative care improves quality of life, symptoms and patient-clinician communication compared to oncologic care alone.^{25, 26, 29, 31, 37, 39, 44} Some studies also demonstrated that palliative care enhances mood, patient satisfaction, quality of end-of-life care, survival and caregiver outcomes (Table 1). Of note, none of the studies favored oncologic care alone for the primary outcome.

It is noteworthy that there is heterogeneity in trial design among the clinical trials, with variable inclusion criteria, care settings, outcome measures and timing of assessment. These differences in design, combined with significant differences in the nature of palliative care interventions and the timing and intensity of care delivery, contributed to the variability in study outcomes (Table 1).^{25, 26, 29–31, 33–39, 44} Although the diversity in trial design makes it more difficult to assess the magnitude of benefit associated with palliative care, it also provides a unique opportunity to ascertain what aspects of palliative care may be most beneficial, particularly concerning the level of comprehensiveness of the palliative care service and the timing of referral.

Palliative care is a highly complex, multi-dimensional intervention, making it difficult to standardize. Although efforts have been made to define the key domains of palliative care,^{14, 15} it is less clear who is best positioned to deliver palliative care and how comprehensive the team should be. Furthermore, palliative care has not yet been accredited in some countries, which may contribute further to inconsistencies in its delivery. As shown in Table 1, it appears that studies involving interdisciplinary palliative care teams were more likely to have a positive outcome than those involving nurse-led palliative care (4/5 vs. 2/6 trials for

the primary outcome). However, to date no single study has directly compared interdisciplinary teams with single practitioner-led models, and further research is needed.

Although earlier referral to palliative care is considered to be better than late referral, the optimal timing of referral has not yet been defined. To date, only one randomized clinical trial (RCT) has attempted to address this question directly. By using a wait list design, the Project ENABLE III study compared early palliative care (within 8 to 12 weeks of diagnosis) vs. delayed (3 months later).³⁶ The primary outcome was measured at 3 months. The investigators also conducted longitudinal analyses and reported no significant difference between the two groups in quality of life. However, this study had several limitations complicating its interpretation, including under-enrollment and contamination. Moreover, the study intervention was predominantly nurse-led and telephone-based, with referral to an interdisciplinary palliative care team on an as-needed basis²⁸. We will discuss studies using other designs to address the optimal timing of referral below.

Meta-analyses

Summarizing data from the aforementioned trials and others, three meta-analyses were published in 2016/2017 on the impact of palliative care on health outcomes (Table 2).^{45–47} All three concluded that palliative care was associated with improved quality of life, albeit with a small effect size;^{45–47} two also concluded that palliative care was associated with improved symptom control;^{45, 47} none reported a significant improvement in survival. This small observed benefit may be partly explained by the fact that the studies included in the meta-analyses mostly had small effect sizes and also included trials with variable designs.⁴⁸ One study further concluded that earlier palliative care was associated with a greater quality of life benefit,⁴⁶ although this subgroup analysis included only 6 studies (2 early palliative care^{25, 44} and 4 non-early palliative care).

In addition to the heterogeneity among clinical trials, the three meta-analyses used different eligibility criteria, resulting in the inclusion of different trials and somewhat variable findings. The review by Kavalieratos et al. had the broadest inclusion criteria, including 43 trials in patients with life-limiting illness, for which interventions comprised at least 2 of 8 possible domains of palliative care, as defined by the National Consensus Project for Quality Palliative Care.⁴⁹ Palliative care was associated with a statistically and clinically meaningful improvement in quality of life overall for the 15 studies included in meta-analysis, but not when patients with (or without) cancer were analyzed in isolation.⁴⁵ The review by Gaertner et al. included 10 trials of patients with any advanced illness where the intervention was a multiprofessional palliative care team, and reported a marginally larger effect of palliative care on quality of life in patients with cancer than in those without cancer.⁴⁶ The review by Haun et al. included 7 cancer trials that assessed specifically the effects of early palliative care intervention, concluding that quality of life was better in cancer patients who received early palliative care.⁴⁷ Ultimately, these meta-analyses underscore the need to conduct further research to identify the optimal model(s) of palliative care delivery in different settings.

Cost benefits

In addition to improved patient and caregiver outcomes, palliative care is also associated with reduced healthcare costs. In part, this is driven by the tendency of palliative care teams to minimize investigations, interventions and hospitalizations at the end-of-life that not only have questionable benefits, but are also expensive.⁵⁰ Morrison et al. reported that an inpatient palliative care consultation was associated with significant cost savings compared to no palliative care, supporting the economic benefit of palliative care for third-party payers and institutions under the Diagnostic Related Grouping payment system.^{51, 52} Smith et al. conducted a systematic review of 46 studies and concluded that palliative care was consistently less costly relative to comparator groups.⁵³ Another systematic review in 2018 reported that a palliative care consultation within 3 days of admission for cancer patients was associated with a reduction in total direct hospital cost by \$4251 (95% CI \$3837 to \$4664) per hospitalization.⁵⁴ More high quality studies are needed to investigate the economic impact from the perspective of different payers (e.g. government, insurers, third party organizations, patients, and family caregivers), in different settings (e.g. outpatient, inpatient, homecare), and with different models of palliative care (e.g. comprehensive teams vs. nurse-led care).

Summary

- A majority of RCTs demonstrate that palliative care combined with oncologic care improves quality of life and symptom control.
- Clinical trials involving interdisciplinary palliative care teams, instead of nurse-led palliative care, appear to be more likely to be associated with positive findings.
- Three recent meta-analyses concluded that palliative care was associated with improved quality of life. However, the effect size was small, which may be related to heterogeneity in trial design.
- A meta-analysis examining the timing of palliative care referral supported that earlier referral was associated with greater benefits on quality of life.
- Palliative care can improve healthcare value by reducing costly investigations, interventions and hospitalizations at the end-of-life, especially those with questionable benefits.

Defining Key Elements of Palliative Care Delivery: Team-Based, Timely and Targeted Care

Our critical appraisal of contemporary RCTs above supports the association between specialist palliative care and improved outcomes. Efforts are currently underway to identify the “active ingredients” in this complex intervention and to help standardize the delivery of palliative care. In the following section, we will use conceptual frameworks to discuss 4 key questions: *What* is the right service model? *When* is the right time? *Who* is the right patient? And *How* much palliative care should oncologists provide?

What is the Right Service Model? The Role of Team-Based Palliative Care

One of the most unique and fundamental aspects of palliative care is its interdisciplinary nature, which allows the team to deliver multidimensional care addressing the complex supportive care needs of patients with advanced cancer. Figure 1 illustrates the interconnectedness of the supportive care needs of patients with advanced cancer. One of the strengths of this interdisciplinary palliative care approach is the shared decision-making, responsibility and leadership to support patients and families. The physician, nurse, psychologist, social worker, chaplain, pharmacist, physiotherapist, occupational therapist and other allied health professionals each contribute their unique expertise, while working together in a cohesive manner to support the patient's goals of care through impeccable assessments, coordinated communication and multidimensional interventions (Figure 2). Not all members are required at all times—some may be needed more often than others, and some may form a closer relationship with the patient. In a secondary analysis of the Temel 2 trial,²⁶ Hoerger et al. reported that patients with a greater proportion of visits focused on coping, treatment decisions, and advance care planning (ACP) had better outcomes related to quality of life, chemotherapy use at the end-of-life and hospice utilization, respectively, suggesting that each component of palliative care has a specific and complementary purpose.⁵⁵ While this interprofessional approach is particularly useful in addressing intense care needs at the end-of-life, it is also appropriate for patients earlier in the disease trajectory. For example, an interdisciplinary intervention may be particularly helpful to support cancer patients at risk of opioid misuse.⁵⁶ This teamwork may also help to reduce burnout among palliative care clinicians, which represents an area for future research. An international Delphi study in 2015 reached consensus that at a minimum, interdisciplinary teams should consist of a physician, nurse and psychosocial team member.⁵⁷ The interdisciplinary team may be led by a physician, nurse or another discipline, with situational leadership depending on the care needs.

Based on the conceptual framework and evidence presented above, models of palliative care involving predominantly a single profession may not be able to support patients with more complex care needs as comprehensively. For example, there is much variation in the intensity of interdisciplinary palliative care involvement among the nurse-led palliative care trials (Table 2), although they generally involved a nurse providing palliative care education/support in the front line with referral to specialist palliative care teams on an as needed basis.^{36, 37} Studies with limited longitudinal interdisciplinary palliative care engagement often had negative outcomes.^{34, 35} Properly designed and incorporated, nurse-led interventions may augment the basic level of primary palliative care provided by oncologists, with specialist palliative care reserved for patients in greater distress. Although single disciplinary palliative care should not replace specialist palliative care teams, it may have a role in resource-limited settings such as rural areas or developing regions. Further research is needed to identify the *right* intervention for the *right* setting.

When is the Right Time? The Rationale for Timely Palliative Care

Although referrals to palliative care often occur at times of crisis (e.g. end-of-life), palliative care is most effective when introduced early. Figure 3 illustrates some postulated mechanisms on how timely palliative care can improve various patient-related outcomes.

Appropriate and timely symptom interventions, patient education, and side-effect management may help to minimize emergency room visits and hospitalizations while maximizing patients' function.⁵⁸ Longitudinal counseling can help to enhance coping strategies in times of stress.⁵⁵ Prospective observational studies and RCTs have shown that serious illness conversations, ACP, spiritual care, and improved prognostic understanding can help reduce aggressive care at the end-of-life;^{59–61} all of these are longitudinal processes that require adequate lead-time. By facilitating ACP and providing community-based services, palliative care can support individuals who wish to die at home.⁶² Figure 4 illustrates that palliative care, at its best, is a form of preventative care.

The optimal timing of specialist palliative care referral remains unclear, but likely depends on the individual patient and the healthcare system. In addition to a meta-analysis suggesting that earlier referral was associated with a greater benefit,⁴⁶ several non-randomized studies have also demonstrated the impact of timely palliative care on aggressiveness of care at the end of life.^{58, 63–65} In a retrospective cohort study, patients referred to a comprehensive cancer center >6 months before death were compared to those referred 6 months before death. Earlier referrals were associated with significantly better outcomes in the last 30 days of life, with lower rates of emergency room visits (41% vs. 63%, $P=0.002$) and hospitalizations (51% vs. 75%, $P<0.001$).⁵⁸ Jang et al. conducted a population-based study to examine the impact of palliative care on aggressiveness of end-of-life care for 5381 patients with advanced pancreatic cancer. Palliative care involvement was associated with less aggressive care, as measured by use of chemotherapy near death (odds ratio [OR] 0.34), ICU admissions (OR 0.12), emergency room visits (OR 0.19) and hospitalizations near death (OR 0.24); moreover, earlier palliative care was associated with better outcomes.⁶³ Studies from Italy and United Kingdom examining the effect of palliative care confirmed similar benefits with earlier referral.^{64, 65}

Although early palliative care referral is generally preferred, some investigators have speculated whether it is ever too early. Many contemporary RCTs involved specialist palliative care referral within three months of diagnosis of advanced cancer regardless of symptom burden; however, this model of care is currently infeasible given the limited palliative care infrastructure internationally.^{66, 67} Furthermore, some patients with advanced cancer may have limited supportive care needs around the time of diagnosis and may not require palliative care. Thus, instead of early palliative care for all, we advocate for *timely* palliative care, selecting the *right* patient for the *right* level of intervention at the *right* time.

One approach to determining the “right” time involves a Delphi consensus.⁶⁸ In one study, 60 international experts were asked when was the appropriate time to refer patients with advanced cancer to outpatient palliative care. A consensus was defined *a priori* as at least 70% of experts reaching agreement. The timing of referral was assessed from 4 different angles: prognosis, time from diagnosis, treatment trajectory, and performance status. Most experts considered >24 months to be too early, and identified the optimal timing as prognosis of 6–24 months. Similarly, the ideal timing for referral was within three months of diagnosis of advanced cancer *if* patients had a median survival of 1 year, had progressed through at least one line of systemic therapy, and had ECOG 2 (Figure 5). A survey asked patients with advanced cancer referred to outpatient palliative care about their opinion

regarding the optimal timing of referral.⁶⁹ The median survival was 8.5 months, and a majority (n=144, 72%) reported that the timing of referral was appropriate, with 42 (21%) perceiving that the referral was too late and only 14 (7%) feeling that it was too early.

Timely palliative care is best delivered in the outpatient setting, where patients can receive proactive rather than reactive care.¹⁷ The strengths and weakness of various models of palliative care delivery in the outpatient setting will be discussed below.

Who is the Right Patient? A Targeted Approach to Referral

There is currently a gap between the research literature, which recommends routine early palliative care referral, and the reality of clinical practice. If we apply the eligibility criteria in RCTs strictly and adhere to the 2017 ASCO guideline, patients with advanced cancer would be referred regardless of symptom burden as long as they meet pre-defined time-based criteria (e.g. time from diagnosis and/or prognosis) (Table 2), resulting in universal early referral (Figure 6a).^{44, 70} In contrast, oncologists often refer patients selectively based on care needs, which may be delayed because of the under-detection of symptoms and lack of standardized need-based criteria (Figure 6b).^{9, 71}

The optimal model may be a combination of these two extremes, with the use of standardized need-based criteria to trigger a referral for patients most appropriate for specialist palliative care in the outpatient setting (Figure 6c). Similar to cancer targeted therapy, in which tumors with particular mutations are most likely to respond, palliative care is likely to confer the greatest benefit for patients experiencing or anticipated to have high symptom intensity or other supportive care needs. This would allow for a more personalized approach, matching the scarce palliative care resources to the needs of the individuals. The literature to support this more targeted approach is still emerging. Groenvold et al. enrolled solid tumor patients who were symptomatic based on the EORTC-QLQ-C30 questionnaire.³⁰ Although the primary outcome (i.e. most severe EORTC-QLQ-C30 symptom item) had greater improvement with palliative care than usual care, this did not reach statistical significance. Interpretation of this study is complicated by the fact that the responsiveness to change of this primary outcome is not well defined. Secondary analysis of other completed RCTs may provide further insights.

How Much Palliative Care Should Oncologists Provide? The Role of Primary Palliative Care

While oncologists always have a role in the provision of palliative care, one key question is how much they should reasonably be expected to provide.⁷² Conceptually, palliative care can be categorized into 3 levels based on expertise (Figure 7). Primary palliative care is basic palliative care provided by the oncology team and primary care physicians; secondary palliative care is defined as specialist palliative care teams working as consultants to address the more complex supportive care needs. Tertiary palliative care involves palliative care as the attending team providing intensive supportive care for the most complex patients, such as in an acute palliative care unit.⁷³ The introduction of nurse-led palliative care models, with an advance practice nurse embedded into an oncology practice blurs the division between primary and secondary palliative care.

RCTs to date have demonstrated clearly that secondary palliative care integrated with primary palliative care is superior to primary palliative care alone (Tables 2 and 3). However, in resource-restricted circumstances, a fully integrated approach may not be feasible and a solo practice model in which the oncologist assumes all aspects of supportive/palliative care may be the only option.^{8, 74}

Even under a fully integrated model, oncologists are expected to provide primary palliative care and address basic supportive care needs in the front lines,⁷⁵ partly because there is an insufficient palliative care workforce to support all patients with advanced cancer and/or significant symptom burden.⁷⁶ Previous studies revealed that although a majority of oncologists believe that they are responsible for providing primary palliative care,⁶ their level of confidence and interest vary widely.⁷⁷ For example, solid tumor oncologists perceived themselves as more comfortable with provision of supportive care than hematologic oncologists ($P=0.003$).⁷⁸ Primary palliative care delivery by oncologists can also be assessed indirectly by the extent of palliative care education and their knowledge base. Currently, only 20–25% of medical oncology fellowship programs in the US have mandatory palliative care rotations.^{66, 79} Furthermore, a majority of medical oncology fellows had difficulty with opioid rotation and desired more palliative care education.⁷⁹

Several groups have undertaken efforts to standardize primary palliative care competencies.^{80–82} This should start with routine systematic screening, basic management of acute or common issues, and recognition of when a patient needs to be referred to specialized services.⁸³ Standardized referral criteria may further streamline this process and will be discussed below. It is also important to differentiate palliative care issues from other supportive care needs best managed by oncologists or other specialists, such as immunotherapy-related toxicities and thromboembolism. More research is needed to define the core competencies and best approaches to educating the next generation of oncologists.⁸⁴

Summary/Key Points

- The interconnectedness of symptoms and supportive care needs necessitates a comprehensive interdisciplinary team to provide multidimensional care.
- Although interdisciplinary palliative care teams are ideal, single-disciplinary palliative care may have a role in the provision of primary palliative care, particularly in resource-limited settings.
- Palliative care is most effective as a preventative measure when it is introduced early in the disease trajectory. Its roles in this setting include patient education, proper symptom management, longitudinal counseling and spiritual care, enhancing illness understanding, and advance care planning.
- Timely palliative care is associated with improved quality of life and end-of-life care.
- Because of scarce healthcare resources, it is impossible for all patients to be seen by palliative care from the time of diagnosis. Similar to cancer targeted therapy, a more personalized approach to refer patients with higher current or anticipated supportive care needs may result in better outcomes.

- Oncologists have an important role in providing primary palliative care, which includes basic symptom assessment and treatment, communication, decision making, and referral to specialist palliative care.

Innovative Models of Care Delivery

We have described the evidence for timely involvement of palliative care and key elements in its delivery. This section will examine components of innovative care models for palliative care delivered in the outpatient setting, with an emphasis on highlighting their strengths and limitations. These include freestanding outpatient clinics, palliative care consultants embedded within oncology clinics, nurse practitioner consultants, automated referral to palliative care, and primary palliative care delivered by oncology teams alone (Table 3).

Outpatient Clinics

Timely, integrated palliative care requires contact with patients with advanced cancer at a time when they remain ambulatory, functionally independent and engaged with their oncology team in active anticancer treatment. Outpatient clinics provide an ideal setting within which to build trusting relationships with patients and their families,¹⁵ optimize symptom control issues in a timely manner,^{85, 86} and explore ACP in a structured, longitudinal fashion in tandem with changes in the patients' cancer treatment plan.^{85, 87}

In 2009, 59% of National Cancer Institute (NCI) Designated Cancer Centers and 22% of non-NCI Designated Cancer Centers reported having outpatient palliative care clinics in the US;⁶⁶ this proportion has likely grown over time.⁸⁸ Several centers have published their experience with freestanding outpatient clinics.^{89–94} In most cases, these clinics have begun as single, half-day clinics per week and have grown quickly with increasing demand.^{95–97} Large cancer centers such as MD Anderson Cancer Center and the Princess Margaret Cancer Centre have clinics that operate daily, and offer both booked and urgent same-day appointments. Typically, the core team members providing expertise in the clinic are palliative care physicians and nurses, with other interdisciplinary team members including social workers, psychologists, spiritual care workers, pharmacists, dietitians, wound care specialists, and occupational and physiotherapists offering input as required.^{91, 95, 98} Referrals are received and booked centrally, and can be coordinated with oncology clinic visits if that is the patient's preference.⁹⁹

There is strong evidence demonstrating the benefits of stand-alone clinics (Table 1). Patients whose initial palliative care contact was in these clinics have improved outcomes related to aggressiveness of care at the end of life (characterized by fewer prolonged hospitalizations, intensive care unit admissions, and emergency department visits in the last month of life, and lower rates of in-hospital death) compared with patients seen by the palliative care team as inpatients.⁵⁸ Robust evidence from several large-scale RCTs has demonstrated clear benefits for patients in terms of improved quality of life,^{25, 26, 29, 44} with some trials also demonstrating benefits in satisfaction with care,²⁵ symptom management,²⁵ caregiver distress,^{27, 100} and overall survival.⁴⁴

In addition, stand-alone clinics offer several advantages (Table 3). They allow for centralization of interdisciplinary services, with an organized triage process. This allows for better day-to-day planning and efficient use of the multidisciplinary team, which is particularly important with large volume services and for teams where members simultaneously cover inpatient and outpatient palliative care services. Clear referral criteria are set, prioritizing urgent same-day referrals for patients with physical or psychosocial distress. The clinic itself may be customized for patients with complex care needs, with low examining tables, a waiting room (or lack thereof) with an emphasis on privacy, ambient music, and standardized comprehensive palliative care assessments.^{91, 98, 101} Moreover, the clinic can serve as a specialized setting for education and research.⁹⁹ This model also solidifies the independent role played by palliative care teams in cancer care rather than being seen as an appendage of individual oncology clinics. A centralized clinic may also facilitate coordination of telehealth interventions to proactively prevent symptom crisis.^{102, 103}

The main limitations of freestanding outpatient clinics are budgetary and funding restrictions. Consideration needs to be given to this from the outset, with a strong business model and planning for additional resources, space and clinicians over time. In small centers, it may not be possible to allocate separate space to a clinic that only runs once weekly. Developing positive relationships with referring oncologists may require greater attention compared with embedded clinics.⁹⁹ Thus, this model is best suited for large cancer centers with an established palliative care program.

Embedded Clinics

Outpatient palliative care clinics may also be directly embedded within oncology clinics.^{17, 74, 104, 105} A small number of studies have described successful examples of embedded clinics. In one, a palliative care clinic consisting of a physician and fellow within a private oncology clinic provided one half-day per week of consult support. This was shown to improve symptom burden and increased referral rates by 87% over a two-year period; each consultation was estimated to save up to 170 minutes of the referring oncologist's time. The close proximity to one another was felt by both oncologists and palliative care physicians to facilitate better integration of practices.¹⁰⁴ Cassel et al. reported a palliative care physician within oncology clinics in a rural setting was associated with high levels of patient, family, and referring physician satisfaction.¹⁰⁵ In a retrospective cohort study, Einstein et al. reported their experience embedding a physician and chaplain weekly into an oncology clinic specializing in targeted and immune-based therapies.¹⁰⁶ Patients under the embedded model (n=26) were more likely than those outside of the embedded clinic (n=88) to be seen by palliative care for longer periods (173 vs. 61 days, $P<0.001$) and to be referred to hospice earlier (34 vs. 10 days, $P=0.006$).

Embedded clinics offer some advantages both clinically and practically (Table 3). They allow for direct access to the palliative care team, minimize the number of hospital trips¹⁰⁷ and wait times for patients.¹⁷ In contrast to stand-alone clinics,¹⁰⁸ they may also help to minimize stigma by offering palliative care in the same location as standard oncology care. Embedded clinics may foster improved face-to-face communication and collaboration

between oncology and palliative care teams,^{74, 107, 109} that may spur educational and research opportunities.⁷⁴ Support staff may be shared between the oncology and palliative care services in an embedded model, again allowing for more cohesive care¹⁰⁹ and cost-effectiveness. This may be particularly advantageous for newly-established palliative care teams with limited budgets.⁹⁹

On the other hand, this model also has important limitations. Space limitations restrict involvement of the palliative care team to one discipline, typically a sole physician or nurse, and limit the possibility of expansion.^{74, 104, 105} Patients with advanced cancer may not wish to add an additional consultation on to their existing oncology appointment due to lack of time or energy.¹⁰⁷ The consultation may be rushed and conducted in a cramped environment, rather than proceeding at a more relaxed pace in a customized environment. If a palliative care follow-up is required independent of an oncology appointment, this may be challenging to schedule due to space limitations. In large centers where oncology clinics are organized by tumor site, it may be unrealistic to have a physician or nurse in each clinic. Thus a model that relies exclusively on embedded clinics may hamper the ability of the palliative care team to see patients across all tumor sites.¹⁷ It may be challenging to plan palliative care resources and manpower as referrals may be unpredictable from day to day,⁹⁹ with resources potentially spread across a variety of clinics.⁷⁴ Since the principles of symptom management and ACP are universal across all tumor sites, the need to subspecialize within individual oncology clinics is likely unwarranted. Lastly, there is scant published literature regarding embedded clinics. One study reported poor recruitment (only three of 13 patients approached agreed to be seen by the palliative care consultant), primarily due to lack of willingness to engage in an additional consultation or deteriorating health status.¹¹⁰

In summary, the embedded clinic model may be the best available option for centers that are newly developing an outpatient clinic, and allows for promotion of a palliative care model within the oncology team. However, it is not optimal for larger centers where palliative care services are well established.

Nurse Practitioners and Nurse-Led Palliative Care

Nurses specialized in palliative care may enhance the level of palliative care delivery in the oncology setting. Advanced practice nurses (APNs) or registered nurses (RNs) may work as specialists embedded within oncology clinics or be available by telephone or in person on an as-needed basis.

As discussed above, RCTs on nurse-led palliative care have yielded mixed findings (Table 1).^{31, 33–37} Other studies involving nurse-led models are hampered by limitations in study design that complicate their interpretation.¹¹¹ In a non-randomized study, a palliative care APN within a community cancer center was associated with lower rates of hospitalization (odds ratio 0.16, $p<0.01$) and improved survival at four months (odds ratio 24.6, $p=0.02$), but there was no improvement in quality of life or symptom management.¹¹² Ferrell et al. conducted a large study examining a nurse-led palliative care intervention in which patients with stage I-IV non-small cell lung cancer received an initial assessment followed by a discussion at an interdisciplinary team meeting and then nursing education over four

sessions; some improvements in quality of life were reported in a before-after comparison.⁷⁰ Interestingly, the beneficial effect was observed mostly in patients with stage I-IIIb disease instead of stage IV disease, although the timing of inception for patient enrollment was not clearly defined. Walling et al. embedded a palliative care nurse practitioner in two breast medical oncology clinics.¹¹³ Compared to 35 oncology clinics without a nurse practitioner, there was greater referral for psychosocial support, ACP and hospice referral. However, symptoms and quality of life outcomes were not assessed.

Nurse-led models may be less expensive than interdisciplinary palliative care teams to implement. They may increase the level of palliative care available at some oncology clinics, while allow for mentoring of clinic nurses providing oncology care.¹¹⁴ However, the billing and remuneration aspects of nurse-based models need further clarification.¹⁰⁵ Similar to the embedded model, it may be difficult to ensure that each clinic is staffed with a palliative care nurse in larger centers. Because one discipline in isolation is unlikely to allow patients and families to benefit from the attention to all aspects of quality of life, nurse-led palliative care should be regarded as complementary to, rather than replacing interdisciplinary palliative care teams.

Palliative care Delivered by Oncology Teams

There are limited data describing optimal models of primary palliative care provided by oncology teams alone. A pilot study was conducted utilizing oncology clinic nurses trained in a care management intervention facilitating symptom assessment, engaging in ACP, providing emotional support to patients and caregivers, and communicating with other oncology team members.¹¹⁵ This model was feasible and acceptable to patients, families and oncologists; a cluster RCT of this intervention is ongoing.¹¹⁶ Of note, care delivered by oncology teams alone was the control arm in a number of RCTs demonstrating improved quality of life when a palliative care team was also involved.^{25, 26, 29, 44} In one of these trials, patients perceived clear differences in the focus (disease versus person/family), motive (managing cancer treatment versus managing symptoms), and model of care (physician-led, time-constrained versus patient-led, flexible) in oncology versus palliative care clinics.¹⁶ These findings underscore the complexity of palliative care and indicate that additional education of oncology clinicians is required to address palliative care needs more comprehensively.

This “solo practice” model of palliative care delivered by oncology teams has some advantages (Table 3).⁸ Patients benefit from the ability to access good symptom support from early in their diagnosis; many of whom may not require secondary palliative care input and can benefit from completely integrated care from diagnosis to death. Oncology teams in turn may derive additional professional satisfaction from being able to provide symptom support, especially in areas where access to specialist palliative care teams may be limited.

Potential limitations to the provision of primary palliative care by oncology teams include the time required within oncology clinics to adequately address all aspects of care.¹⁰⁴ Maintaining competencies in both active anticancer treatment modalities and symptom assessment and management may be challenging, if not impossible.⁷⁴ For oncology teams without access to multidisciplinary supports, fully holistic care may not be feasible and the

risk of burnout may be increased.¹¹⁷ The needs of caregivers may be overlooked in busy clinical settings, and psychosocial and bereavement support may be challenging to coordinate; palliative care teams may be better able to address these needs.¹⁰⁰ Managing transitions in care, including the switch from active anticancer therapy to a purely supportive care approach may be difficult to balance in a primary palliative care role. As well, relationships with patients may be based upon expectations of maintaining positivity and hope, which may be impacted by attempts to direct care towards a purely symptom management approach.^{118, 119}

Automatic Referral with Standardized Criteria

In the era of personalized cancer care, patients who have the greatest supportive care needs may be identified and automatically referred to specialist palliative care (Figure 6c). This approach requires (1) routine screening of supportive care needs, (2) pre-defined referral criteria with clinician endorsement, and (3) an automatic referral system in place.¹⁷ Importantly, this more targeted approach should not replace clinical judgement, but can help to inform the treating oncologist to augment care.¹²⁰

Recent studies suggest that routine symptom assessment in the ambulatory oncology setting not only improves quality of life but also survival.^{121–123} The Commission on Cancer mandates routine distress screening, with the Distress Thermometer and Edmonton Symptom Assessment System (ESAS) being used frequently.^{11, 124, 125} These efforts will likely result in greater awareness of symptom distress and timely, targeted referral.

Ongoing work is being conducted to identify proper standardized criteria, based on care needs and/or timing, to trigger referrals. Patients generally prefer to be referred based on their needs; one study found that those who felt palliative care referral was too early had limited symptom burden at the time of referral.⁶⁹ Referral based on patient care needs is also supported by the findings from a 2016 international consensus panel. After three rounds of deliberation, a panel of 60 experts reached consensus on 11 major criteria for referral to outpatient palliative care.⁶⁸ Patients who met any one of the criteria would be appropriate for referral. Interestingly, nine of the 11 criteria were based on patient care needs, and only two were time-based (Table 4). Active work is underway to validate the use of these criteria to facilitate referral. In another population-based study of over 11,000 patients used the palliative performance scale (PPS) to assign patients as stable (PPS 70%–100%), transitional (40%–60%), end-of-life (10%–30%), or dead. Entry into the transitional state (PPS 60% or less) was considered a potential indicator for palliative care referral.¹²⁶ Although a poor performance status may be a good trigger because it indicates a greater functional need and shorter survival, the inter-rater reliability of performance status assessment is suboptimal.¹²⁷ Patient completion of performance status tools is one option to overcome this, but patients' self-rated scores tend to be worse than those of physicians.¹²⁸

The strengths and weakness of automatic referral models are highlighted in Table 3. In addition to streamlining referral and triaging resources, automatic referral can help to standardize care and normalize the process of referral. There are several challenges with automatic referral. First, implementation of routine symptom screening in the oncology setting requires resources, commitment and identification of an appropriate questionnaire,

along with cutoffs to trigger referral.¹²⁵ Second, routine screening will inevitably result in false negatives and positives, and procedures need to be established to address these issues.^{129, 130} Third, the palliative care team needs to have adequate resources to handle the increased volume of referrals. Finally, the literature on automatic referral is still evolving, with only a few groups publishing their experience.

In a quality improvement project, the ESAS was used in a community hospital for distress screening in cancer patients.¹¹ Patients were assessed by a social worker for triaging if they screened positive, defined as at least three of eight target symptoms with an intensity of 7/10. Comparing between the 4-week period before and 4-week period after program implementation, there was a significant increase in social work assessments (21% vs. 79%, $P<0.001$) and a non-statistically significant trend towards increased palliative care referral (12% vs. 28%, $P=0.21$) among patients who screened positive. Other groups have also reported their preliminary experience related to distress screening to trigger supportive/palliative care referrals.^{106, 131, 132}

Summary/Key Points

- There is strong evidence to support stand-alone palliative care clinics to improve patient outcomes. These clinics are ideally staffed with an interdisciplinary team in larger centers. These clinics represent the current standard of care against which other outpatient models should be measured.
- Embedded clinics may be more suitable in smaller centers with limited palliative care resources.
- Further research is needed to assess the impact of nurse-led palliative care and how this care model interfaces with specialist palliative care teams.
- RCTs have found that oncology teams delivering palliative care alone resulted in poorer quality of life outcomes compared to concurrent care with a specialist palliative care team; however, it is important that all oncologists are trained in providing a basic level of palliative care.
- Automatic referral to palliative care may allow for more personalized care. It requires routine screening, standardized referral criteria and an established palliative care team.
- An international consensus study identified nine needs-based criteria and two time-based criteria for referral to outpatient palliative care for patients with advanced cancer.

Conclusion

Patients with cancer have significant supportive/palliative care needs along their disease journey. These needs are growing due to an aging population with multiple comorbidities, increased number of patients living with advanced cancer for longer periods, greater emphasis on quality of life, and heightened awareness as a result of more widespread symptom screening. Specialist palliative care teams are well positioned to complement the

primary palliative care provided by oncologists towards improving patients' quality of life, symptom control, mood, end-of-life care and satisfaction.

Evidence from RCTs supports the interdisciplinary nature of palliative care. Palliative care teams provide broad expertise to support the multi-dimensional care needs of patients and their caregivers. Timely palliative care further enables the team to provide longitudinal pharmacologic interventions, counseling, education, monitoring and care planning to prevent crises such as ER visits and ICU admissions.

In the era of personalized medicine, the provision of palliative care should be tailored to provide the *right* level of intervention for the *right* patient in the *right* setting at the *right* time. By anticipating the natural history of advanced cancer and the potential challenges ahead, palliative care can proactively introduce multi-dimensional measures to improve quality of life throughout the disease course and ensure that end-of-life care is consistent with patients' wishes. Many innovative care models are being developed to foster improved integration between oncology and palliative care teams. There is strong evidence to support stand-alone palliative care clinics that provide interdisciplinary and timely care. Given the scarce palliative care resources, routine screening coupled with automatic referral may allow a more streamlined approach to identifying patients most likely to benefit from palliative care, akin to the use of molecular testing for targeted therapies.

Provision of palliative care in the oncology clinic can be enhanced by (1) increasing the delivery of primary palliative care by oncology teams, (2) introducing nurses/practitioners with specialized palliative care training, and/or (3) embedding palliative care physicians/specialists. These models may have an important role in rural areas and/or smaller community centers, but do not replace the need for specialist interdisciplinary palliative care teams for patients with more complex needs. The evidence to support these models is still limited, and more research is needed to determine how palliative care can further integrate with oncology to personalize supportive care for each patient.

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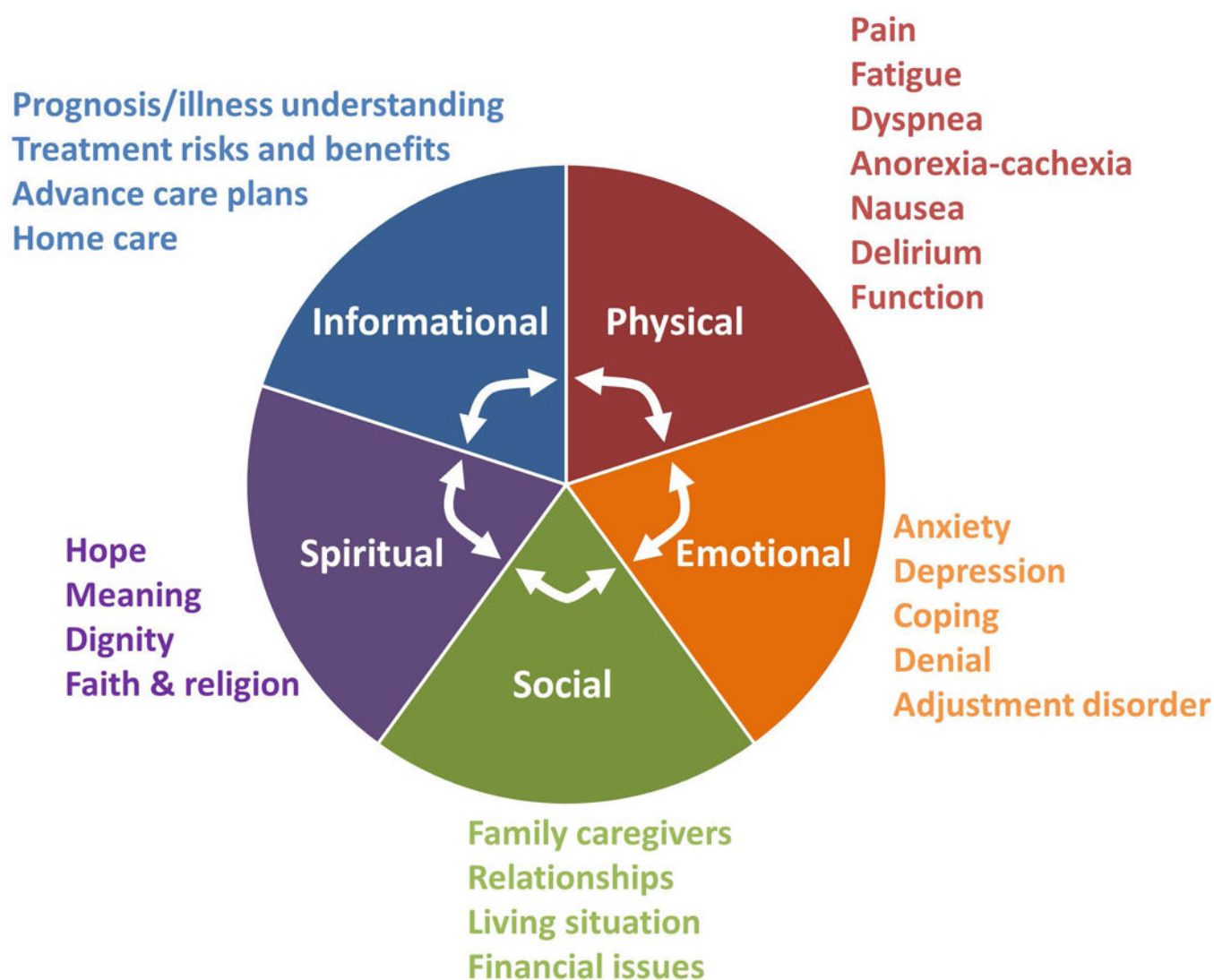


Figure 1. Multidimensional Supportive Care Needs.

A patient's supportive care needs can be classified as physical, emotional, spiritual, social and informational, which are often closely associated with each other. For example, depression can contribute to poor appetite and decreased function, and the reverse could be true. Depression may also impact a patient's decision making, their spiritual well being, and relationship with caregivers. This diagram highlights the interconnectedness of supportive care issues, and the need for multidimensional assessments and interventions with an interdisciplinary team.

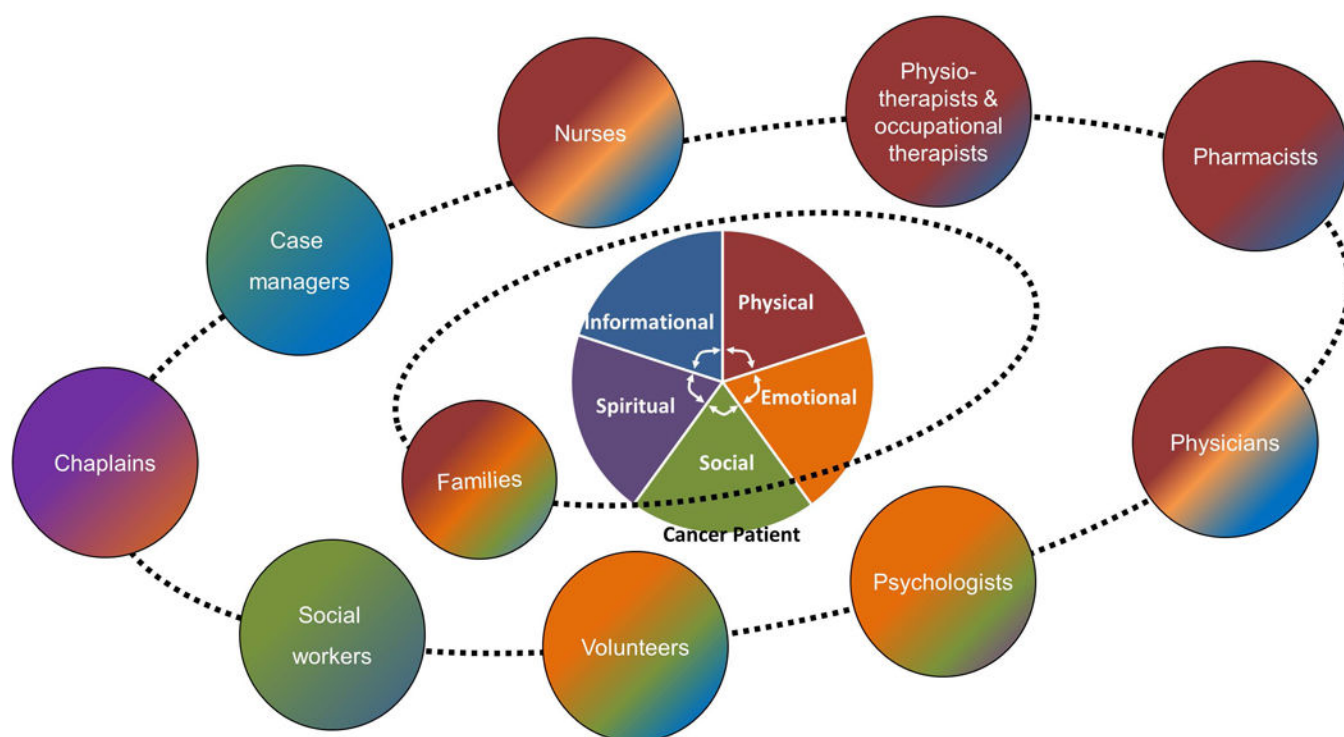


Figure 2. Interdisciplinary Palliative Care Team.

One of the most unique aspects of palliative care is the interdisciplinary nature, with different members of the team providing different expertise, thus allowing a patient's needs to be addressed in a holistic and timely fashion, and augmenting the family caregiver(s) ability to support the patient. Other advantages of an interdisciplinary team include enhanced patient-clinician communication and shared responsibility, work load, decision making, leadership and stresses while providing care for distressed patients.

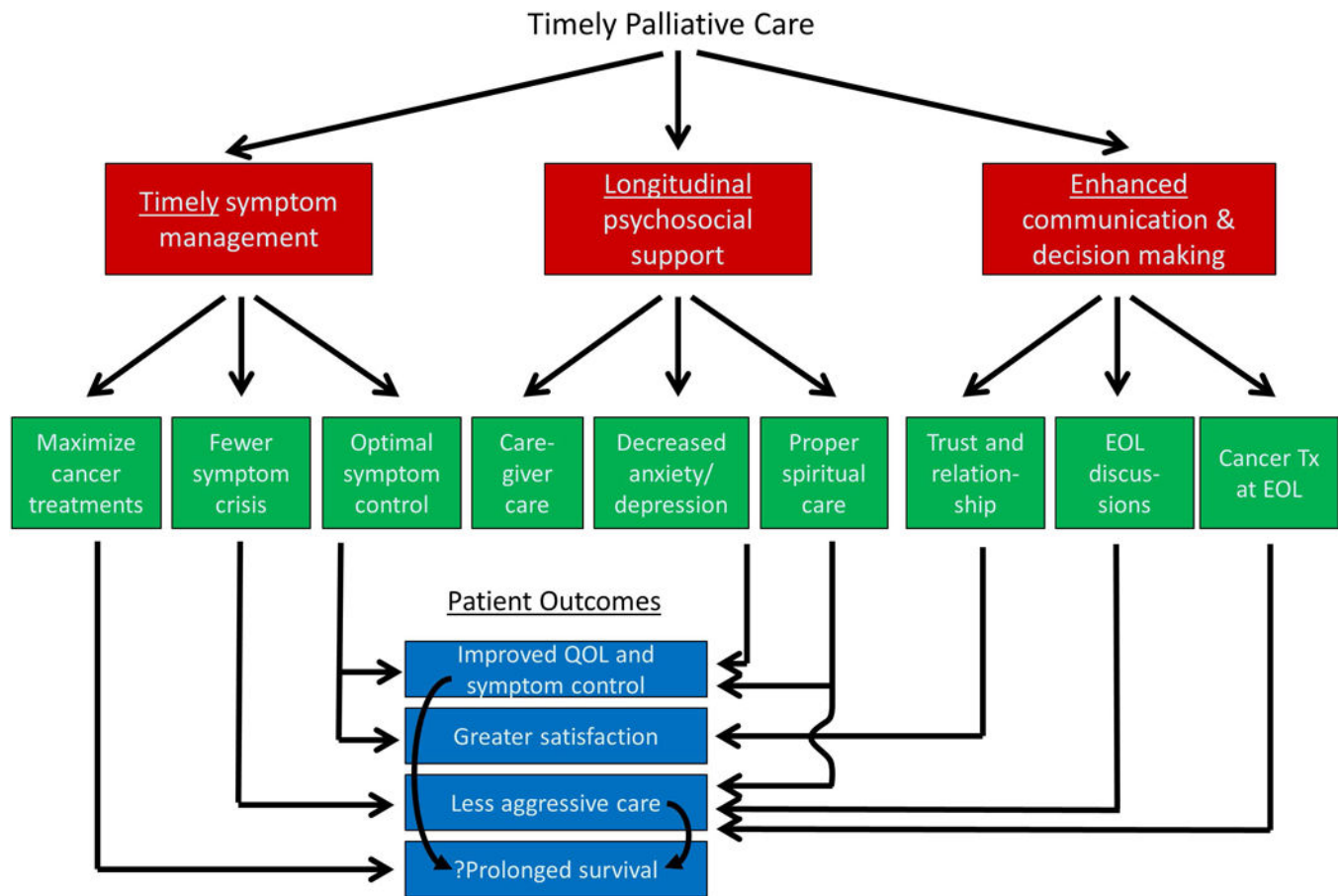


Figure 3. Conceptual Framework on How Timely Palliative Care can Impact Patient Outcomes. This conceptual model highlights that there may be multiple mechanisms by which palliative care can improve each outcome. An anticipatory approach to symptom management would allow patients to reduce their symptom burden related to cancer or cancer treatments, minimize symptom crises, and potentially tolerate cancer treatments better. These, in turn, may help to improve quality of life and quality of end-of-life care (e.g. avoiding emergency room visits). Longitudinal psychosocial support can improve emotional and spiritual well-being, which have also been shown to be associated with patient outcomes downstream. Enhanced communication over time may also assist palliative care teams to improve illness understanding and facilitate advance care planning, which could allow patients to minimize aggressive end-of-life care. It remains unclear if palliative care can have a survival benefit. Some investigators have postulated that a survival benefit from palliative care may be related to better management of depression, although palliative care may also improve survival by providing good symptom control and reducing intensive care at the end-of-life that could sometimes be detrimental to survival.¹³³

Components of preventative care	Key Aspects	Example 1 Symptom prevention	Example 2 Advance care plan
Insight into Illness	<ul style="list-style-type: none"> Natural history Prognostication 	Stage IV pancreatic cancer = symptoms	Stage IV lung cancer = short prognosis
Foresight for Individual	<ul style="list-style-type: none"> Anticipate concerns Risk factors 	Mild pain now can get worse	Patient will deteriorate
Interventions Available	<ul style="list-style-type: none"> Risk reduction Evidence-based 	Opioids can be useful	Serious illness conversations
Introduce Intervention	<ul style="list-style-type: none"> Timely initiation Longitudinal followup 	Start scheduled opioids Educate and monitor	Prognostic discussions Advance care planning
Crisis Prevention	<ul style="list-style-type: none"> Improved outcomes Preparations in place 	Better quality of life Avoid pain crisis	Better quality of EOL Avoid ICU visit

Figure 4. Palliative Care is Preventative Care.

By seeing patients in a timely fashion, anticipating care needs, and providing effective interventions through education and longitudinal monitoring, the palliative care team can potentially prevent symptom crises, avoidable hospitalizations, information gaps, and catastrophes at the end-of-life (e.g. intubation at an intensive care unit).

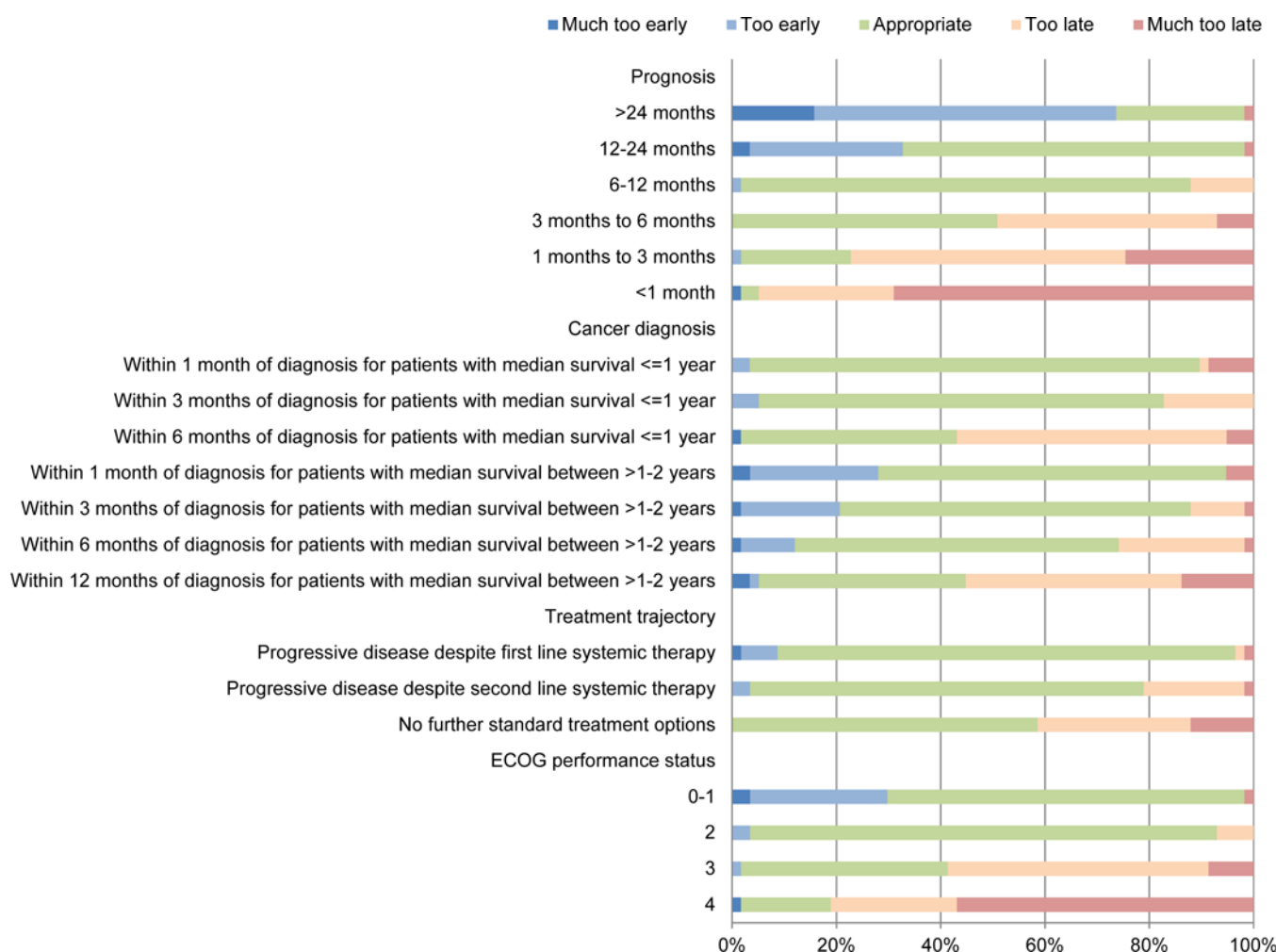


Figure 5. Timing for Outpatient Palliative Care Referral.

In a Delphi study, a panel of 60 international experts were asked to rate the timing of outpatient palliative care referral for patients with advanced cancer from “much too early” to “much too late”. Consensus was defined *a priori* at 70% or greater. The items that reached consensus are shown on the right. Permission to reprint obtained from copyright.com.

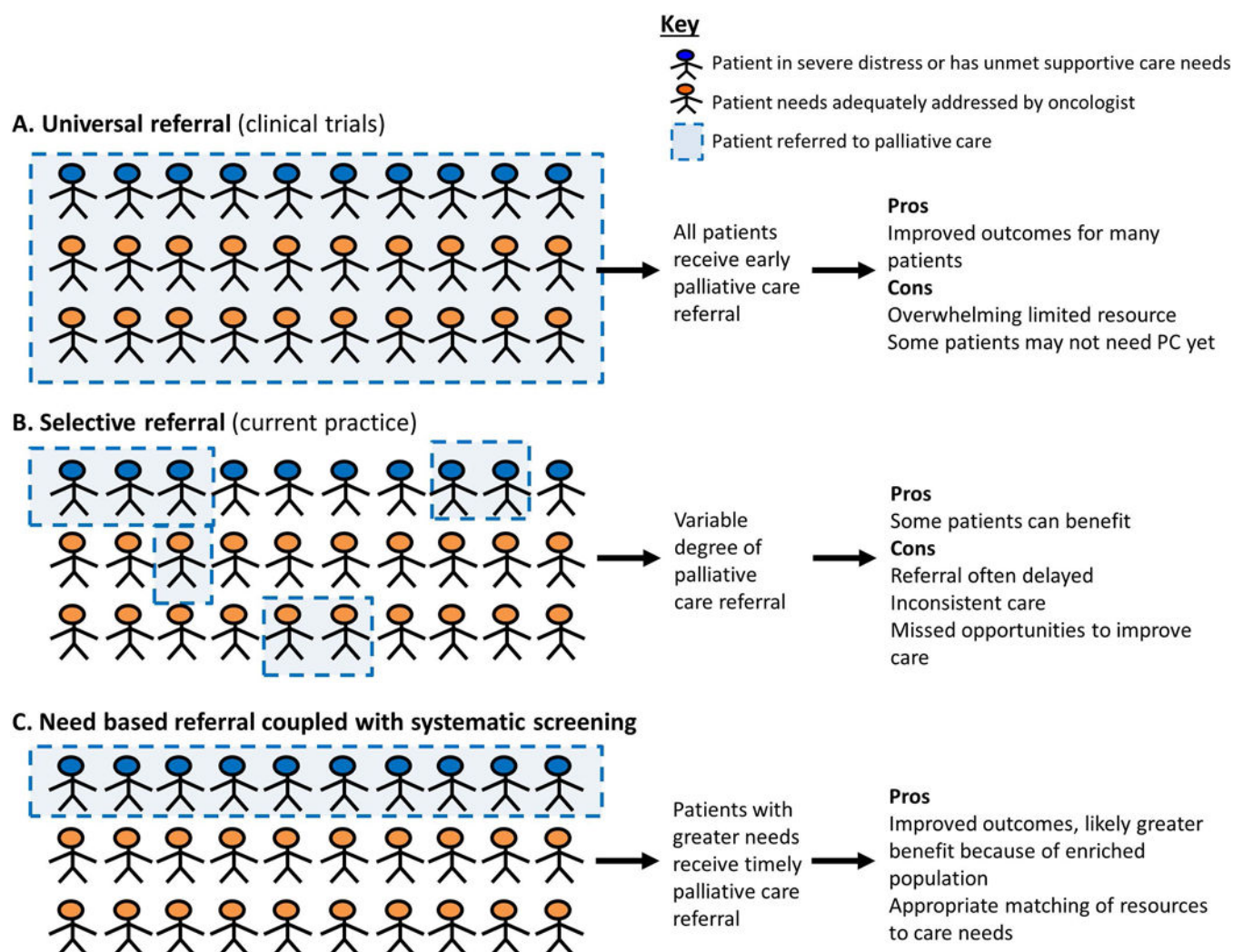


Figure 6. Standardizing Referral to Palliative Care.

(A) Universal referral to palliative care based on prognosis is supported by randomized control trials; however, this could result in overwhelming number of patients being referred, some of whom may not require palliative care; (B) Selective referral is currently the standard practice, with the oncologist deciding if the patient would require a referral. Because there is much variability in the attitudes and beliefs of oncologists toward palliative care, referral is inconsistent and often delayed; (C) Palliative care referral based on standardized need-based criteria coupled with systematic needs assessment would allow timely identification of patients in need, and trigger referral to supportive care. This more targeted approach would allow the *right* individuals to be referred to palliative care at the *right* time, allowing the scarce resource to be used most efficiently.

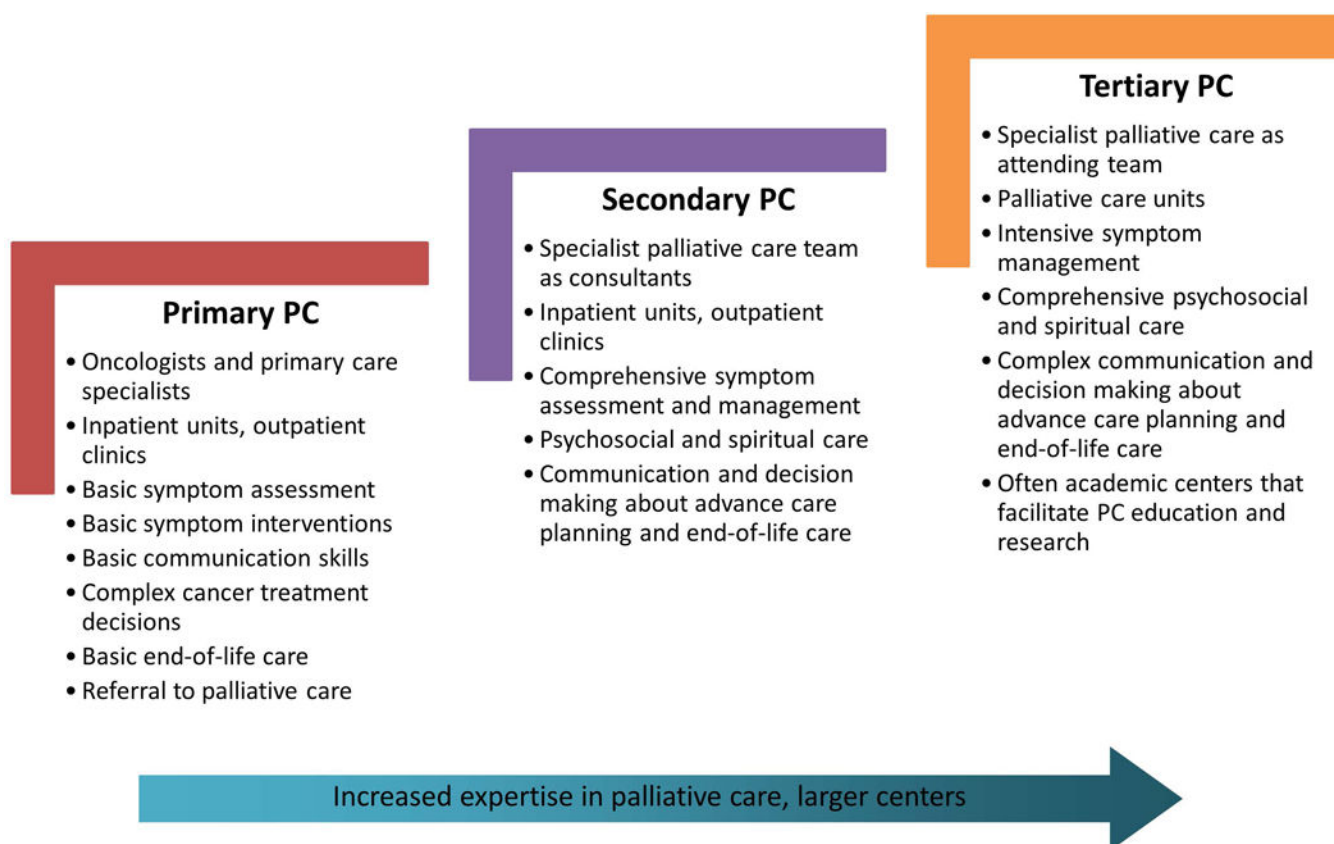


Figure 7. Primary, Secondary and Tertiary Palliative Care.

Primary palliative care is basic palliative care provided by the oncology team and primary care physicians; secondary palliative care involves specialist palliative care teams working as consultants to address the more complex supportive care needs. Tertiary palliative care involves palliative care being the attending team providing intensive supportive care for the most complex patients, such as in an acute palliative care unit.

Table 1.

Since 2009 Comparing Palliative Care and Usual Oncologic Care vs. Usual Care Alone*

	Who (advanced)	When	Where	What	Quality of life	Symptoms	Mood	Satisfaction	Communication	EOL care	Survival	Care-givers
2010 ^{42,3, 24}	Lung	Within 8 w of diagnosis	USA	Outpatient-based	Favors PC		Favors PC		Favors PC	Favors PC	Favors PC	
Lancet 2014 ²⁵	Breast, lung, GI, GU, GYN	Prognosis 6–24 m	Canada	Outpatient-based	Favors PC	Favors PC		Favors PC	Favors PC			
2016 ^{26, 27}	Lung, GI	Within 8 w of diagnosis	USA	Outpatient-based	Favors PC		Favors PC		Mixed findings			Mixed findings
2016 ^{28, 29}	Pancreas	Within 8 w of diagnosis Prognosis >2 m	Italy	Outpatient-based	Favors PC		Did not differ			Mixed findings	Did not differ	
J Palliat Med	Solid tumors	Symptomatic based on EORTC-QLQ-C30	Denmark	Outpatient-based		Mixed findings					Did not differ	
2017 ^{30, 32}	Breast, lung, GI, GU	Within 8–12 w of diagnosis	USA	APN led Phone based	Favors PC	Did not differ	Favors PC			Did not differ	Did not differ	Mixed findings
2017 ³³	Solid tumors	Likely to be referred to hospice within the next 12 months	USA	APN embedded in oncology	Mixed findings	Mixed findings				Did not differ		
J Palliat Care & Support	Solid tumors	Newly diagnosed metastatic disease Prognosis <12 m	Australia	RN led	Did not differ	Mixed findings	Did not differ			Did not differ	Favors no PC	
J Palliat Med	Not clearly specified	Within 100 d of diagnosis	USA	APN led	Did not differ	Did not differ			Favors PC			
2015 ³⁶	Solid and hematologic malignancies	Within 1–2 m of diagnosis Prognosis 6–24 m	USA	APN led Phone based	Did not differ	Did not differ	Did not differ			Did not differ	Favors PC	Favors PC
Lancet Oncol	Solid tumors	Within 12 w of diagnosis or recent progression Prognosis ~12 m	Belgium	RN led OP team	Favors PC	Did not differ	Did not differ		Mixed findings		Did not differ	
JAMA Oncol	Solid and hematologic malignancies	On admission	USA	IP team	Favors PC	Did not differ	Did not differ			Did not differ	Did not differ	
JAMA 2016 ^{39, 40}	Stem cell transplant	On admission	USA	IP team	Favors PC	Favors PC	Favors PC					Mixed findings

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Abbreviations: APN, advanced practice nurse; EOL, end-of-life; EORTC-QLQ-C30, European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire; GI, gastrointestinal; GU, genitourinary; GYN, gynecologic; IP, inpatient; OP, outpatient; PC, palliative care; RN, registered nurse

*The outcomes are color coded to facilitate interpretation. Green = favored the palliative care group with statistically significant findings; light green = some outcomes significantly favored palliative care group, other outcomes equivocal; orange = no statistically significant difference between the palliative care group and usual oncologic care group; red = favored the usual oncologic care group with statistically significant findings

Table 2.
Recent Systematic Reviews Comparing Palliative Care and Usual Oncologic Care vs. Usual Care Alone

Meta-analysis	Setting	Number of studies	Number of patients	Quality of life	Symptoms	Mood	Survival	Other outcomes
Kavalieratos JAMA 2016 ⁴⁵	Cancer and non-cancer	15	2355	Favors PC; SMD 0.46; 95% CI 0.08 to 0.83	Favors PC; SMD -0.66; 95% CI -1.25 to -0.07		Did not differ; HR 0.90; 95% CI 0.69 to 1.1	Palliative care was associated consistently with improvements in advance care planning, patient and caregiver satisfaction, and lower health care utilization.
	Cancer only	11	1670	Did not differ SMD 0.12; 95% CI -0.02 to 0.27	Did not differ SMD -0.14; 95% CI -0.39 to 0.10		Did not differ; HR 0.82; 95% CI 0.60 to 1.13	
Gartner BMJ 2017 ⁴⁶	Cancer and non-cancer	12	2454	Favors PC; SMD 0.16; 95% CI 0.01 to 0.31	Did not differ; SMD -0.38; 95% CI -0.82 to 0.06			
	Cancer only	5	828	Favors PC; SMD 0.20; 95% CI 0.01 to 0.38;	Did not differ; SMD -0.21; 95% CI -1.35 to 0.94			
	Early only	2	388	Favors PC; SMD 0.33; 95% CI 0.05 to 0.61				
Haun Cochrane 2017 ⁴⁷	Advanced cancer	7	1614	Favors PC; SMD 0.27; 95% CI 0.15 to 0.38	Favors PC; SMD -0.23; 95% CI -0.35 to -0.10	Did not differ; SMD -0.11; 95% CI -0.26 to 0.03	Did not differ; HR 0.85; 95% CI 0.56 to 1.28	RCTs on professional PC services that provided or coordinated comprehensive care for adults at early advanced stages of cancer

Abbreviations: CI, confidence interval; HR, hazard ratio; PC, palliative care; SMD, standardized mean difference

*The outcomes are color coded to facilitate interpretation. Green = favored the palliative care group with statistically significant findings; orange = no statistically significant difference between the palliative care group and usual oncologic care group

Table 3.**Strengths and Weaknesses of Innovative Care Models**

Models	Potential strengths	Potential weaknesses
Freestanding clinics	<ul style="list-style-type: none"> • Strong evidence base • Centralized services • Allows for more consistent day-to-day planning and resource utilization • Autonomy around clear and consistent referral criteria • Customized space for patients with advanced disease • Site for education and research in palliative medicine • Greater scope for expansion • Visible 'home' for the palliative care ambulatory service 	<ul style="list-style-type: none"> • More startup costs, overheads and budgetary considerations • Developing positive collaborative relationships with the oncology team may require greater attention • More clinic appointments for patients
Embedded clinics	<ul style="list-style-type: none"> • Immediate access to palliative care team • Minimizes trips to hospital and wait times • May facilitate collaboration (clinical and research) between oncology & palliative care teams • May help to destigmatize referral • Cost effective in early development of palliative care (shared space, support staff and other resources) 	<ul style="list-style-type: none"> • Difficult to predict volumes and staffing needs from day-to-day • Follow-ups may be challenging to schedule if needed for palliative care but not oncology • Limited scope for expansion • Typically room only for one discipline • Consultation may be rushed and completed in a cramped environment • Patient and family may be fatigued due to adding on another appointment • Providing care across multiple clinics simultaneously may fragment or overstretch services • Limited evidence base
Nurse led practitioners	<ul style="list-style-type: none"> • Capacity to engage in oncology rounds and to foster stronger communication between services • Nurse education and mentoring role • May be more financially viable than a physician-led model 	<ul style="list-style-type: none"> • Reimbursement for nurses • A single practitioner cannot replicate the multidisciplinary team involved in holistic palliative care provision • It may be difficult to staff multiple clinics with palliative care nurses in larger centers • Mixed evidence base and highly heterogeneous models of delivery
Palliative care delivered by oncology teams	<ul style="list-style-type: none"> • Immediate attention to symptom management concerns • Care delivered longitudinally from diagnosis to death by the oncology team • Necessary when access to palliative care services limited 	<ul style="list-style-type: none"> • Time constraints in oncology clinics may limit focus • Maintaining dual competencies may be a challenge • Lack of access to interdisciplinary team may make comprehensive palliative care provision challenging • Expectations of patients may limit ability to conduct timely advance care planning • Current evidence does not support this model in isolation

Models	Potential strengths	Potential weaknesses
Automatic referral	<ul style="list-style-type: none">• Standardizes the referral process across clinicians• Normalizes the referral process• Results in more appropriate referrals, with specialized services provided for those with greatest need• Optimizing healthcare resource utilization by aligning scared palliative care resource to patients most in need	<ul style="list-style-type: none">• Limited evidence for choice of screening tool, cutoff points for referral• Lack of buy-in from patients and/or clinicians may result in low screening rates• May trigger unnecessary referrals for symptoms that are transient or could be managed by oncology team

Table 4.

Major Criteria for Outpatient Palliative Care Referral based on an International Consensus Panel

Criteria	Category
1. Severe physical symptom(s)	Need-based criteria, distress
2. Severe emotional symptom(s)	Need-based criteria, distress
3. Request for hastened death	Need-based criteria, distress
4. Spiritual or existential crisis	Need-based criteria, distress
5. Assistance with decision making/care planning	Need-based criteria, care needs
6. Patient request	Need-based criteria, care needs
7. Delirium	Need-based criteria, neurologic
8. Brain or leptomeningeal metastases	Need-based criteria, neurologic
9. Spinal cord compression or cauda equina	Need-based criteria, neurologic
10. Within 3 months of diagnosis of advanced/incurable cancer for patients with median survival 1 year or less	Time-based criteria
11. Diagnosis of advanced cancer with progressive disease despite second line systemic therapy (incurable)	Time-based criteria