

Improving Care of Advanced Cancer Patients with a Dedicated Palliative Radiotherapy Team





Patients suffering from cancer in its advanced stages often experience symptoms of pain and discomfort. Palliative radiation therapy, or radiation therapy focused on ameliorating symptoms from metastatic disease, is a highly effective treatment modality when utilized appropriately. Palliative radiation can have lasting benefits for patients with advanced cancers with limited prognosis by reducing tumor-causing pain (and thereby significantly cutting opiate requirements, sometimes to zero), improving mobility, and consequently improving the overall quality of life.

Similar to the Sword of Damocles, two opposing sides exist within the concept of palliative radiation therapy. Despite its efficacy, at times the treatment course places an increased burden of care and responsibility on patients and their families because it can involve lengthy durations of daily treatments, lasting up to two weeks or longer. In turn, this may lead to prolonged hospitalizations for patients who are unable to travel back and forth to the radiation facility on a daily basis for treatment. Moreover, the immediate radiation-related side effects may sometimes outweigh treatment benefits in patients with short life expectancies.

Traditionally, radiation oncology programs have been disease-focused rather than person-focused and as yet have not put a high priority on creating systems of care around palliative radiation therapy for patients with advanced cancers. The consequence of this has been that palliative radiation therapy has involved lengthier courses than necessary and lengthier wait times for patients, thereby posing challenges for patients with advanced cancers in terms of financial costs, travel time, and temporary detriments to quality of life.

This innovative radiation oncology-based clinical service operates closely with the palliative medicine service within Mount Sinai Hospital. Its core mission is to care for the whole person, not merely the metastatic lesion causing the pain symptom prompting the initial radiation consultation.

Mount Sinai Hospital's Department of Radiation Oncology and the Tisch Cancer Institute in New York, N.Y., saw these challenges as an opportunity to incorporate radiation oncology within a multidisciplinary workflow that included palliative care providers and other supportive oncology services in order to improve upon the national benchmarks. Through the establishment of a specialized service model called the Palliative Radiation Oncology Consult service, the radiation oncology department was able to increase the use of shorter-course radiation treatments, reduce lengths of hospital stay, and improve access to and utilization of palliative care services for patients with advanced cancers after radiation treatment.

Palliative Radiotherapy in Practice

It has been estimated that approximately a third of cancer patients who receive radiation therapy receive it in a palliative capacity.^{1,2} Though treatment regimens for palliation among cancer patients with bone metastases can be two weeks or longer, shorter regimens are available and have proven to be equally efficacious.³ According to a study published by Gripp et al., prolonged irradiation schedules probably reflect overly optimistic prognoses and unrealistic concerns about late radiation damage.⁴ In light of this, shorter regimens have historically not been commonly used. For instance, in a 2013 study from Surveillance, Epidemiology and End Results Medicare data, only 3.3 percent of Medicare beneficiaries with bone metastases from prostate cancer received single-fraction treatment.⁵

For individuals with limited prognosis and/or severe debility, however, the length of a treatment course can be burdensome. Overall, palliative radiation for symptoms of bone metastases can effectively relieve symptoms 80 to 90 percent of the time. Notably, patients generally do not experience an immediate benefit from palliative radiation. Because radiation response is of a cumulative nature, patients will likely experience symptom relief approximately four to six weeks after completion of the radiation treatment course. Anything that providers can do to reduce suffering from symptom burden during this period is of critical importance.

The Palliative Radiation Oncology Consult

This innovative radiation oncology-based clinical service operates closely with the palliative medicine service within Mount Sinai Hospital. Its core mission is to care for the whole person, not merely the metastatic lesion causing the pain symptom prompting the initial radiation consultation. The Palliative Radiation Oncology Consult performs its mission in three ways: first, by employing the shortest evidence-based and guideline-directed radiation treatment courses for metastases without compromising efficacy; second, by discussing individual cases in a tumor board forum attended by representatives from multiple disciplines with emphasis on symptom management; and, third, by routinely participating in goals of care conversations held often with patients, family members, palliative medicine specialists, and patients' primary oncology providers.

The Palliative Radiation Oncology Consult service is staffed by a radiation oncologist with a special interest in the needs of patients with advanced cancers, a nurse, an administrative assistant, and rotating residents and fellows representing both radiation oncology and palliative medicine disciplines. The Palliative Radiation Oncology Consult cares for patients with advanced cancers with any type of palliative radiation need. As a complement to the Palliative Radiation Oncology Consult service, a multidisciplinary symptom management tumor board exists whose role is to discuss optimal management of individual cases. The tumor board is attended by representatives from radiation oncology, palliative medicine, anesthesia, interventional radiology, social work, and nursing. In this way, radiation oncology and other

care teams are directly involved in face-to-face shared decision making, often prior to the start of radiotherapy. The Department of Radiation Oncology at the Mount Sinai Hospital treats approximately 2,000 cancer patients per year. The program utilizes five linear accelerators and two radiotherapy simulators.

The Palliative Radiation Oncology Consult was conceptualized as a cohesive team-based approach with three disciplines working in close communication: radiation oncology, palliative medicine, and primary oncology. Each discipline in the model was responsible for a different aspect of the patient's treatment (see Figure 1, right), ensuring that all of the patient's needs and concerns were addressed in a timely manner.

Individually, these teams were responsible for:

- **Radiation oncology:** Guided by symptoms, interpreting imaging and planning radiation therapy by utilizing the shortest evidence-based and guideline-directed radiation treatment courses.
- **Primary oncology:** Evaluating feasibility and efficacy of systemic treatment options given the patient's prognosis and clinical situation.
- **Palliative medicine:** Addressing new or existing physical and nonphysical symptoms of distress, providing support to patients and family members, and assisting with goals of care conversations with patients and families.

Together, the three teams were responsible for working together and gathering information from patients and families in order to incorporate it into recommendations for management that were: 1) better aligned with patients' elicited values and goals and 2) consistent with what would be reasonably achievable given the prognosis and/or clinical situation at hand.

A number of important steps were often taken in order to ensure the successful integration of the Palliative Radiation Oncology Consult service into the overall management plan. First, palliative radiation oncology was often actively involved in goals of care discussions prior to the start of radiation therapy. These conversations often helped crystallize a rationale for shorter, or longer, where appropriate, courses of palliative radiation. For example, it was important to understand the differences in purpose and potential outcomes of single-fraction radiation treatments compared to multiple-fraction courses of radiation treatments in the setting of vertebral metastases. These discussions influenced decision making and empowered patients and families to make better informed choices about where to have radiation, when to have it, how many treatments they needed to undergo, etc. We were also able to place more timely referrals to specialist-level palliative and supportive care services when necessary.⁶

Obtaining support from colleagues within the radiation oncology department was critical. This meant getting buy-in from departmental medical physics and therapy staff to keep slots open for patients with advanced cancers and turn around radiation treatment plans quickly. This can be difficult to do on a routine basis in many radiation oncology practices where schedules are often operating at maximum capacity.

Results

We undertook an early assessment of the efficacy of the Palliative Radiation Oncology Consult service by comparing patterns of care and outcomes for patients with symptomatic bone metastases treated before and after the establishment of the consult service.

Demographic variables between the two studied cohorts were similar in sex, age, and the proportion receiving radiation therapy during a hospitalization (Table 1, below). We performed a propensity-adjusted score analysis to match patients on several variables, including medical insurance, which is known to affect timeliness of outpatient treatment accessibility.

Since the Palliative Radiation Oncology Consult's inception in 2014, we have seen a five-day reduction in hospital length of stay for inpatients receiving radiation; a \$20,000 cost savings per hospitalized radiation patient; a fourfold decrease in unnecessarily lengthy radiation courses; a corresponding two- to threefold increase in the use of shorter but equally efficacious radiation courses such that patients spent less of their time receiving palli-

ative radiation; and a 15 percent increase in patients who met with a palliative care provider within a month of completing their radiation. Pain improvement was not compromised (Figures 2 and 3, page 32).^{7,8}

The increased risk of needing retreatment is often cited as a reason for patients and providers to forgo abbreviated treatment regimens in lieu of multifraction treatments. In our experience, patients who came back to our department for reconsultation were most often returning to discuss treatment at a new site, not the same site. Additionally, we found that some patients were ready to accept the possibility of needing a retreatment later if it meant coming for only one treatment now.

For patients with metastases where fracture risk or spinal cord compression was a concern, we continued to prescribe multiple-fraction radiotherapy treatments as appropriate, because these were cases of tumor control rather than palliation. The goal of the Palliative Radiation Oncology Consult program was to move the needle for patients with uncomplicated metastases who could appropriately be treated with one radiation fraction.

Figure 1. The Palliative Radiation Oncology Consult Service

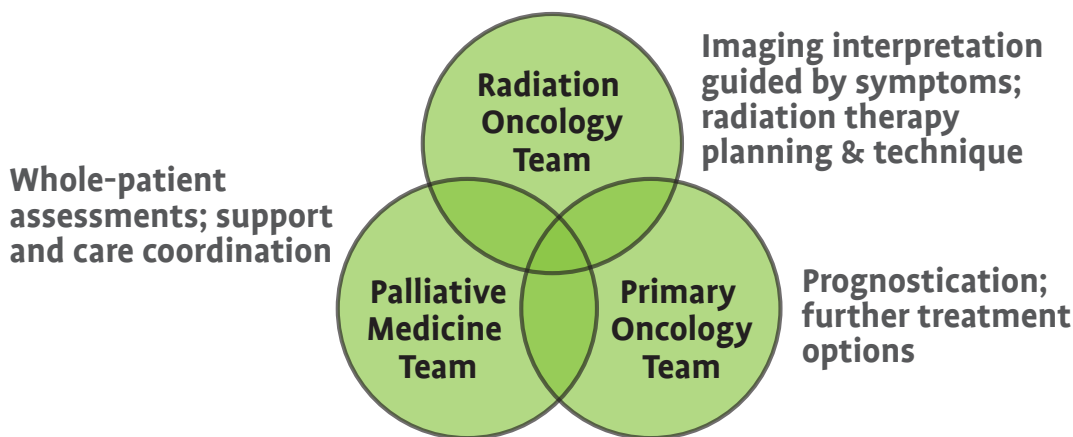


Table 1. Analysis of Study Patient Population Pre- and Post-Implementation of the Palliative Radiation Oncology Consult Service

| | Pre-Implementation (n = 175) | Post-Implementation (n = 261) | p-value |
|--|---------------------------------|----------------------------------|---------|
| Male sex | 110 (63%) | 97 (60%) | 0.62 |
| Median age | 64 | 64 | 0.54 |
| Median Charlson Index score | 9 | 9 | 0.48 |
| Radiation treatment during hospitalization | 67 (38%) | 55 (34%) | 0.38 |

Figure 2. The Palliative Radiation Oncology Consult Service

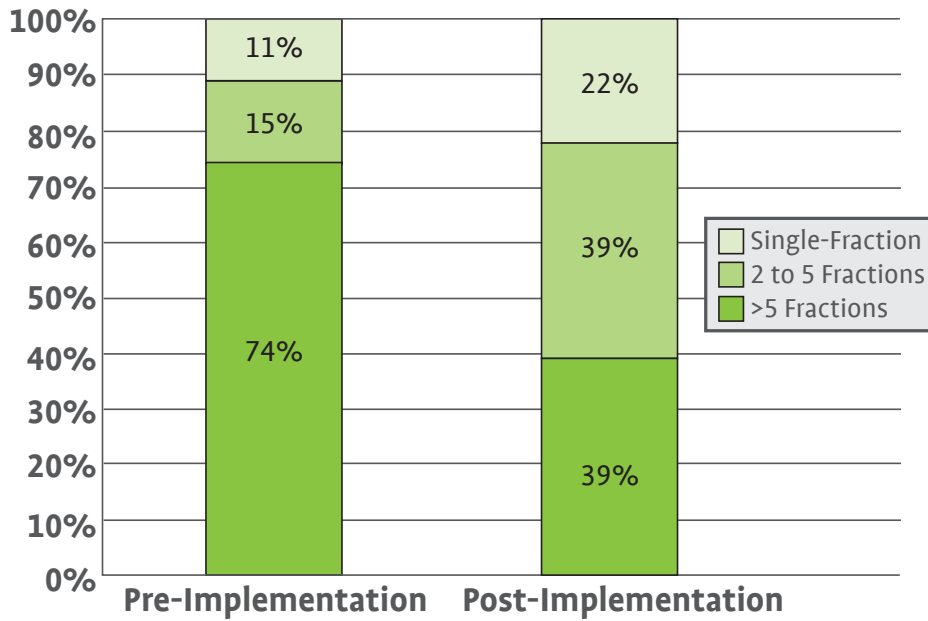
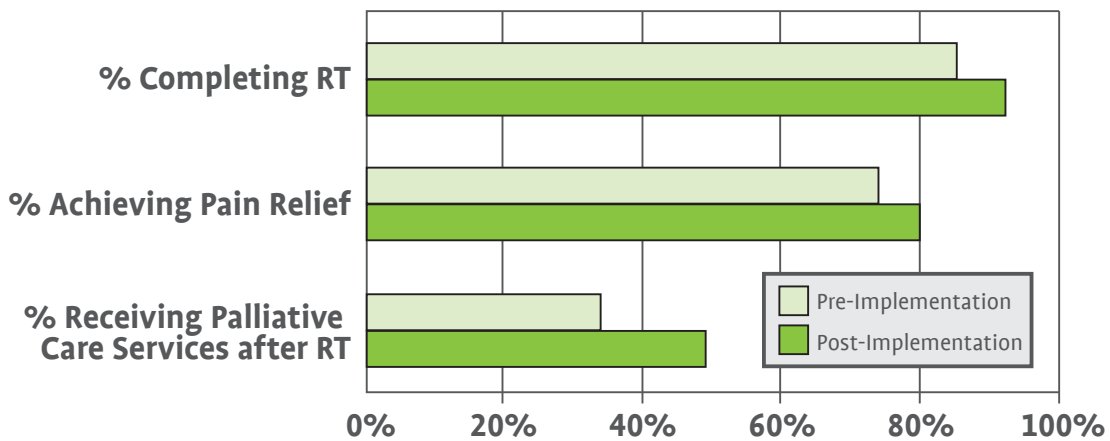


Figure 3. Treatment Adherence, Pain Relief, and Palliative Service Utilization Pre- and Post-Implementation of the Palliative Radiation Oncology Consult Service



Closing Thoughts

Through the implementation of a palliative oncology consult, the Department of Radiation Oncology and the Tisch Cancer Institute at Mount Sinai Hospital were able to reduce the length of radiation treatments for patients with advanced cancers, reduce the length of hospitalization, and reduce the cost of care for patients with advanced cancers. With the implementation of shorter-course radiation treatments, patients were more likely to complete their treatment, while maintaining consistently high

rates of tumor-related pain relief. They were also more likely to receive more timely support from palliative care services when needed. In our experience, radiation oncology’s approach to patients with advanced cancers can be broadened to incorporate key principles of palliative care in the real world.

Our program launched into its fourth year in 2018, proving its sustainability. The model of whole-person care that it emphasizes has encouraged many members of the care team to collaborate who previously would not have spoken to one another about a



The team of clinicians, social workers, nurses, and medical physicists who are involved in the delivery of palliative radiotherapy at Mount Sinai.

patient's management. Together we have made better decisions for our shared patients that have translated into real and measurable improvement in their outcomes.

In conclusion, we found that patients with advanced cancers benefit from a system of care that is person-focused rather than disease-focused. The dedicated palliative radiation oncology service model with a person focused mission at its core could greatly improve quality of life for patients with advanced cancers referred for palliative radiation therapy. The Palliative Radiation Oncology Consult model of multidisciplinary shared decision making highlights the fact that we cannot make complex management decisions about patients with advanced cancers in a silo. The bits and pieces of information gathered by the patient, family, and members of the disciplines on the care team are all critical in real-time decision making about palliative radiation treatment.



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