**Review Article** | Teamwork and Education in Palliative Medicine and Palliative Care

# Palliative care tumor board: a narrative review and presentation of a novel conference to enhance collaboration and coordination of pain and symptom management for patients with advanced cancer

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**Background and Objective:** The World Health Organization endorses that palliative care has a significant impact on the outcomes of patients with cancer. Integration of palliative care into standard oncology practice has been shown to improve a variety of patient outcomes. In this article, we present our experience with the development of a palliative care tumor board.

**Methods:** Starting in June 2021, we implemented a multidisciplinary palliative care and oncology tumor board focused on pain and symptom management. Complex cases were presented bimonthly. We retrospectively reviewed our experience. Data were collected on the attendees, the case presented, and the resultant therapeutic decisions made.

**Key Content and Findings:** Between June 2021 and September 2022, tumor board meetings were conducted in person and virtually. An average of twelve people attended, including physicians and nurse practitioners from the palliative care, oncology, interventional radiology, radiation oncology, psychiatry, pediatric palliative care, and physical medicine and rehab disciplines. There were 68 patients presented with the most frequently discussed cancer being breast cancer, followed by lung cancer. A total of 18 patients (26%) were referred for procedure, including 7 patients (10%) for radiation and 11 patients (16%) for interventional procedures, and 34 patients (50%) had medication changes as outcomes of the meeting.

**Conclusions:** The development of a biweekly palliative care conference modeled after traditional oncologic tumor board meetings allows patients to be discussed in a multidisciplinary setting and commonly results in changes in the management for pain and other cancer-related symptoms.

**Keywords:** Palliative care; tumor board; multidisciplinary conference; pain management

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## Introduction

### *Background*

Integration of palliative care into routine oncologic care is the gold standard for patients with metastatic solid tumors or advanced hematologic malignancies to help patients live as well as possible for as long as possible in the face of a cancer diagnosis (1). There is ample literature that supports early palliative care involvement in the care of cancer patients, yet many cancer patients have late or no referral to palliative care, so finding new approaches for the integration of the two disciplines is essential (2). In addition to assisting patients and their families achieve goal-concordant care, palliative care providers support colleagues across disciplines who must grapple with the challenging and emotionally onerous work of caring for patients with cancer.

Multidisciplinary tumor boards are groups of oncology providers that meet regularly to plan oncologic care for patients and serve as an opportunity for all involved parties (usually excluding the patient and the family) to discuss complex cases and propose an evidence-based plan of care for treatment. These panels are widely and routinely used in the care of patients with cancer because they promote collaborative care and improve patient outcomes (3,4). A 10-year review of the experience of patients with hepatic malignancies at the Veterans Affairs Hospitals revealed a 13% reduction in mortality for patients whose cases were presented at multidisciplinary tumor boards (5). Tumor boards usually include medical oncologists, radiation oncologists, surgical oncologists, radiologists, and pathologists, as well as representatives from other disciplines based on the disease site. Tumor boards enhance adherence to national guideline, increase enrollment in clinic trials, and improve survival (1-7). Large academic medical centers may have multiple tumor boards that specialize in specific disease sites, such as the gastrointestinal tumor board or the thoracic tumor board, while smaller institutions may have a single panel that discusses all cancer patients.

The American College of Surgeon's Commission on Cancer accreditation board encourages but does not require multidisciplinary tumor boards to have palliative care representatives attend (8). Cancer centers must monitor specific elements discussed, including the options and eligibility for palliative and supportive care services. Despite the guidelines to include palliative care representatives and palliative care topics, multidisciplinary tumor boards rarely have consistent palliative care providers as members for a variety of reasons, including scarcity of palliative care personnel. While using the multidisciplinary discussion as a trigger for a palliative care consultation has been proposed, it is not consistently done, although these discussions typically do consider comfort care approaches and often encourage the primary oncologist to involve palliative care services (6,7,9,10).

### *Rationale and knowledge gap*

Data on palliative care-focused tumor boards is limited. Chang *et al.* reported their experience with a palliative care tumor board where thirty-two patients were presented over twelve months. Their tumor board was well-received by clinicians and supported comprehensive management of pain and other symptoms. A mix of cases was discussed: multiple myeloma (n=11), gastrointestinal (n=9), genitourinary (n=5), breast (n=2), lung (n=2), skin (n=1), and unknown origin (n=2). Patients were briefly seen and managed by specialists after presentation (9). More recently, McNaughton *et al.* presented their experience creating a sustainable approach to implement a palliative care tumor board in a community setting. They concentrated on the methods of communication with patient and/or family. Their tumor board led to a total of 50 new referrals to inpatient and outpatient palliative care and 11 new advance care plans were documented in the electronic medical record (11).

### *Objective*

Given the relative lack of incorporation of the palliative care perspective in the traditional multidisciplinary tumor board setting and the scarcity of palliative care-specific panels, our team saw an opportunity to weave the palliative care ethos more tightly into the fabric of the culture of oncology at our institution with the creation of a palliative care tumor board and determine whether this type of conference would fill the gap in providing a palliative care voice when determining how to navigate complex cancer patients. Understanding the robust data supporting early palliative care integration in oncology care and acceptance as gold standard treatment, a dedicated case conference seemed like the next logical step (1,12-20). We present this article in accordance with the Narrative Review reporting checklist (available at https://apm.amegroups.com/article/view/10.21037/apm-22-1366/rc).

**Table 1** The search strategy summary

| Items | Specification |
|---|---|
| Date of search | 10/1/2022 |
| Databases and other sources searched | PubMed |
| Search terms used | Palliative care, tumor board, multidisciplinary conference |
| Timeframe | 1/1999–10/2022 |
| Inclusion criteria | English language articles included |
| Selection process | D.G. reviewed articles to determine relevance |

## Creation of a dedicated palliative care tumor board

### *Methods*

We reviewed PubMed database to outline the scope of palliative care involvement in the standard oncologic tumor board structure. The search criteria are outlined in *Table 1* and showed the team that there was very little precedent in the literature for a multidisciplinary case conference focused on symptom management in patients with advanced cancer. We used this information to create the Pain and Symptom Management Tumor Board (hereafter referred to as "tumor board"). The tumor board is a novel conference developed in 2021 at the Lifespan Cancer Institute of The Warren Alpert Medical School of Brown University. The twice-monthly conference brings together individual clinicians from multiple allied oncologic medical specialties who care for patients with cancer and pain. The panel includes representatives from palliative care, interventional radiology, radiation oncology, pediatric palliative care, psychiatry, physical medicine and rehabilitation, and medical oncology. To build support for the conference, the creators presented the concept at several oncology and radiation oncology division meetings and sent email calendar invitations to all members of the oncology division and cancer center staff, including nurses, oncology navigators, social workers, and chaplains. The tumor board coordinator created an email listserv that includes approximately one hundred people, and prior to each session, the coordinator solicits cases via email from the listserv. During each session, three to five patients are presented with typical discussions lasting for 15–20 minutes per patient. Each presentation starts with the medical oncologist sharing the history and medical details of the case, followed by a review of the pertinent imaging by the interventional radiologist. The discussion is then opened to the panel, and the members ask questions, offer ideas, suggestions, and treatment strategies, as well as validation for the challenging aspects of the case. The conference is a well-attended, well-received discussion that offers a novel space to discuss some of the most challenging aspects of caring for patients with complex pain and symptoms in the setting of an advanced cancer diagnosis. In addition to focusing on symptoms and the medical aspects of each case, the creators of the tumor board also intended that the conference could be a safe space in which providers could discuss the emotionally difficult parts of caring for patients with such complex symptoms and illnesses.

### *Tumor board structure*

The core members of the tumor board include one palliative care physician, one radiation oncologist, one interventional radiologist, one psychiatrist and one pediatric palliative care physician. Other attendees include people from multiple disciplines. There are routinely several palliative care physicians present, as well as palliative care fellows, who are encouraged by the fellowship program leadership to attend. Many medical oncologists and medical oncology fellows attend, both those presenting patients and those who are not on the docket to present that day. The oncologists who routinely attend specialize in different fields, including head and neck oncology, thoracic oncology, gastrointestinal oncology, breast oncology, gynecologic oncology, neuro-oncology and hematology. Other radiation oncologists sometimes attend, and a physical medicine and rehabilitation physician who heads the cancer rehabilitation program at our institution has recently joined the panel. Each conference is typically attended by between 15 and 20 people. No surgeons have attended the tumor board, as the time of day has interfered with operating room schedules.

The coordinator of the tumor board is a nurse who manages other tumor boards and leads the quality initiatives

 

| |
|---|
| Patient's case discussed at Pain and Symptom Management Tumor Board on September 2, 2022. Attendees present from the following disciplines: palliative care, medical oncology, radiation oncology, interventional radiology, physical medicine and rehab, psychiatry |
| Case summary: Mr. B is a 65-year-old man with metastatic pancreatic cancer with liver metastases and severe abdominal pain. Treatments include 8 months of palliative FOLFIRINOX, 4 months of gemcitabine/abraxane (ongoing) with disease stability on recent imaging. Abdominal pain has been increasing. Currently on MS Contin 100 mg TID and MSIR 60 mg q4h PRN with 4–5 doses daily |
| Recommendations: discontinue MS Contin and start methadone 10 mg TID, continue MSIR 60 mg q4h PRN, refer to interventional radiology for consideration of celiac plexus block |

**Figure 1** Sample tumor board note in EMR. MS Contin, morphine sulfate extended release; TID, three times daily; MSIR, morphine sulfate immediate release; PRN, as needed; EMR, electronic medical record.

for the cancer center. A written summary of each patient prepared by the coordinator is presented to the panel at the start of the session. After completion of the tumor board session, the palliative care nurse navigator enters a short summary of the tumor board's recommendations in the electronic medical record. The summary in the patient's medical chart was added 1 year after the tumor board started to ensure that the recommendations were clear to the care team, in the same way that many of the oncology tumor boards enter discussion notes into the medical record (*Figure 1*). This has also helped with tracking patients that have been presented.

### *Patient demographics and details*

In the first 15 months of the existence of the tumor board, 68 patients were discussed. Half of those patients have died as of September 2022. There were more than 30 types of cancer discussed and the three most common types of cancer presented were breast, lung and head and neck cancer. Half the patients [34] had a change in the medications that they were being prescribed for pain in the 4 weeks after presentation at tumor board. Eighteen patients underwent some type of procedure with seven patients receiving radiation in the 4 weeks after tumor board presentation. Twenty-seven patients did not have any procedures or immediate change in medication after presentation at tumor board (*Table 2*).

Twenty-seven different medical oncologists and hematologists presented patients at the tumor board, with one oncologist presenting 11 patients, averaging about one patient a month. The 27 different oncologists represent more than 70% of the medical oncologists and hematologists at the Lifespan Cancer Institute. Further analysis shows that 90% of medical oncologists presented at least one patient since the inception of the tumor board, and 22% of the hematologists presented patients. This suggests that patients with solid tumors tend to have more localized pain than patients with hematologic malignancies, except for patients with multiple myeloma and osseous disease. Patients with advanced hematologic malignancies do have significant symptom burden, though localized pain is less common. In addition, the culture of hematology tends to be different from medical oncology (21). Hematologists are more likely to provide all the care for their patients and oncologists are more likely to work with multiple providers, such as surgeons and radiation oncologists. At our institution, palliative care is well integrated into the routine care of patients with advanced hematologic malignancies, so we hypothesize that more medical oncologists presented patients than hematologists because medical oncologists are well versed in the use of an interdisciplinary approach to pain management given the frequent involvement of surgeons, radiation oncologists and other subspecialists into the care of oncologist patients (21-23).

### *Discussion categories*

In the first 15 months of the tumor board's existence, three categories of patient cases emerged from the discussions. The first category is patients who had pain in a concentrated area due to the specific location of the tumor, and discussion led to a targeted procedure, such as a course of radiation or an interventional radiology procedure. The second category that emerged were patients whose discussion revolved around the medication regimen. The third category of patients was that in which the medical plan of care was confirmed by members of the panel, but the conversation focused on certain psychosocial aspects of the case and the emotional toll of those details on the care team (*Figure 2*).

 

**Table 2** Summary of attendees, patients and discussion during the palliative care tumor board 2021–2022

| Variables | Values |
|---|---|
| Oncology attendees | 26 |
| Radiation oncology | 2 |
| Interventional radiologist | 2 |
| Number of patients presented | 68 |
| Patient deceased (as of Sep 2022) | 34 |
| Total number of diagnoses | |
| Breast cancer | 14 |
| Lung cancer | 13 |
| Head and neck cancer | 11 |
| Prostate cancer | 4 |
| Ovarian cancer | 3 |
| Multiple myeloma | 2 |
| Colorectal cancer | 2 |
| Renal cell carcinoma | 1 |
| Pancreatic cancer | 1 |
| Hepatocellular carcinoma | 1 |
| DLBCL | 1 |
| Sarcoma | 1 |
| Esophageal | 1 |
| Urothelial cell carcinoma | 1 |
| Ewing's sarcoma | 1 |
| CML | 1 |
| NUT midline carcinoma | 1 |
| Cancer of unknown primary | 1 |
| Other | 6 |
| Outcome | |
| Patients with change in pain management | 34 |
| Patients with interventions after tumor board (7 with palliative RT) | 18 |
| Patients with both change in pain management and interventions | 11 |
| Patients with no change in pain management or interventions | 27 |

DLBCL, diffuse large B-cell lymphoma; CML, chronic myelogenous leukemia; RT, radiation therapy.

The first category of patients was the type of patients that organizers of the tumor board anticipated as the most common and had in mind when the tumor board was conceptualized. The types of procedures that were prompted from the tumor board discussions included palliative radiation, nerve blocks, steroid injections, and cryo-ablative procedures. When radiation was advised, the tumor board would typically recommend a hypofractionated course of radiation to minimize the burden of repeated radiation visits. Members of the tumor board, led by the representative radiation oncologist, discussed data showing that the pain effects of single fraction or other hypofractionated courses was equally beneficial in pain management of patients with limited life expectancy. Other patients were referred for interventional procedures, which included celiac plexus block, aorticorenal nerve block, and ablative procedures, as well as epidural steroid injections. Typically, such procedures were offered to patients with symptoms well localized to a specific nerve distribution (e.g., intercostal nerve for chest wall symptoms, pudendal nerve for pelvic symptoms) that was amenable to local image-guided therapy, whether by targeted administration of local anesthetic agents and/or steroids, or by focused chemical (e.g., ethanol) or thermal ablative (e.g., cryoablation) techniques. Case 1 in *Figure 2* exemplifies this category of patients.

Other patients did not have any interventional options to manage pain based on the type or location of disease and prior treatments, and medications remained the mainstay of their care. These represented the second category of patients. Often the tumor board, led by the adult and pediatric palliative care physicians, suggested medication adjustments that would improve the pain control. Sometimes the patients' plans changed entirely to include an opioid rotation, adjuvant medication or even a wean off opioids. This was an opportunity for members of the tumor board to learn more about certain medications, notably methadone, buprenorphine, and ketamine. These drugs are in the wheelhouse of many palliative care physicians, but typically not used by oncologists. While most patients for whom these medications were used or recommended did have palliative care involvement, the oncologists involved expressed appreciation for the rationales for using medications outside of the typical first-line opioids, like morphine and oxycodone.

| Case 1 | Case 2 | Case 3 |
|---|---|---|
| Acute intervention | Medication intervention | Psychosocial and emotional discussion |
| Richard is a 53-year-old man with a history of hypertension, anxiety, and alcohol use disorder in sustained remission who developed progressive right sided flank pain over several months. His primary care physician tried various non-opioid pain medications and ultimately started him on oxycodone, which effectively decreased his pain to a manageable level. Imaging ordered by his PCP revealed a 10 cm × 14 cm tumor in his right kidney and he was diagnosed with renal cell carcinoma with metastases in the lymph nodes, adrenal glands, and lungs. Immunotherapy was initiated, and his medical oncologist referred him to the supportive care (palliative care) team for pain management. Richard was treated with pregabalin and escalating doses of opioids, as well as multiple opioid rotations. A typical pattern emerged where each new dose or medication would be highly effective for two to three months before losing efficacy. There was persistent decrease in the tumor size on sequential scans, but he rarely had prolonged periods of consistent and full pain relief and developed adverse effects from the opioids, including constipation, fatigue, and sexual dysfunction.<br>Given his persistent and burdensome pain, his case was presented at the Pain and Symptom Management Tumor Board. His oncologist shared his medical history, and the radiologist reviewed his imaging with the panel, highlighting the important findings from diagnosis to the current time. His palliative care physician explained how his medications had been adjusted over the prior six months and requested input on other options for pain. The interventional radiologist discussed the possibility of a renal nerve block based on the location of the patient's pain that remained localized to the right flank and back. The patient ultimately underwent a CT-guided right aorticorenal ganglia neurolysis—wherein ethyl alcohol was injected along the course of the right renal artery to denervate the ipsilateral tumor-bearing kidney and perirenal tissues that served as pain generators. The patient reported significant improvement in his pain after the chemical neurolysis procedure. He described positive changes in his functional status and ability to dine out with friends and perform light work around the yard and house. He also reported to his palliative care physician that his mood and spirits improved, "I'm not miserable anymore. I'm out there functioning." His palliative care physician decreased his opioid requirement by 30% in the month after the procedure with no worsening of his pain and improvement in the side effects he was having from the medications. | Rosa is a 57-year-old woman with tobacco, alcohol and opioid use disorder and laryngeal carcinoma treated with concurrent chemotherapy and radiation three years prior to presentation. Aggressive treatment cured her cancer with the long term sequalae of chronic oral and neck pain. She was on methadone during her initial treatment course with oxycodone for breakthrough pain, and then her primary care physician transitioned her to buprenorphine about a year after completing treatment. She re-presented to the oncology clinic after developing hoarseness and being diagnosed with recurrent laryngeal cancer. Salvage laryngectomy was planned, and her case was brought to the pain and symptom management tumor board to discuss her peri-operative pain management, as her oncologist was not familiar with or comfortable with the use of buprenorphine as a pain medication. A clear plan regarding her buprenorphine was discussed by the palliative care physicians, including dose reduction, parenteral short-acting opioid plan for the immediate post-operative period, and anticipated plan for the subacute recovery period. The palliative care physician also discussed her case with the inpatient palliative care consultants who saw her during the hospitalization, leading to a successful and coordinated pain plan during the perioperative period. Her ENT was not able to come to the conference but was involved with the team discussion. | Catherine was a seventy-nine-year-old woman with a history of osteoarthritis and chronic shoulder pain and had been started on opioid pain medications by her PCP due to escalating shoulder pain. Persistent pain led to continued evaluation, and she was diagnosed with a poorly differentiated sarcoma that originated near the brachial plexus and referred to medical oncology. Her pain worsened with no relief from transdermal fentanyl and oxycodone. She reported heavy alcohol use that ceased when she started taking opioids at the recommendation of her internist. Her oncologist referred her to the palliative care team for pain management and decision-making. She shared that the degree of pain she had made her quality of life was unacceptable, and she preferred to die rather than have a prolonged course of suffering. Prior family experience with chemotherapy also influenced her decision making, and she elected to forego systemic cancer treatment. She did agree to palliative radiation with the intent of pain control; however, it did not have a significant impact on her pain. The patient's daughter was a primary care physician at our institution, and when her case was presented to the tumor board, her daughter joined the meeting virtually with her mother's permission. The patient did not participate in the presentation. A discussion about nerve blocks occurred but given the location of her tumor, as well as her disinterest in procedures and strong desire to enroll in hospice care, the panel did not pursue the procedure. The panel also discussed how challenging it can be personally to accept when a patient chooses for forego cancer treatment when there are reasonable life-prolonging options available. Her daughter's presence at the discussion was celebrated because it allowed those who had not met the patient to hear firsthand how the pain was affecting the patient's and family's lives. Moreover, her daughter reported that the input from multiple physicians on her mother's case provided her with significant support and alleviated her own doubts about her mother's decisions to forego cancer treatment from the outset. After completion of her radiation, she enrolled in hospice care and her pain was managed effectively with a hydromorphone intravenous pump for the remaining months of her life. She ultimately died peacefully in inpatient hospice. |

**Figure 2** Representative cases of discussion categories. PCP, primary care provider; CT, computed tomography; ENT, otolaryngologist.

Many of the patients in this category included patients who had challenging-to-manage pain syndromes, and adjuvant medications, such as serotonin-norepinephrine reuptake inhibitors, gabapentinoids, non-steroidal anti-inflammatory medications, and muscle relaxants, were often recommended. Other patients in this category had opioid use disorders either in remission or actively problematic that affected the way their cancer pain was managed. The care for patients with opioid use disorder and cancer pain requires a nuanced approach to both effectively treat pain as well as prevent relapse and protect sobriety. Oftentimes these patients are labeled as "difficult" or "challenging", and the presentations at tumor board frequently allowed the physicians to further understand the complexities of living with substance use disorders and cancer and how those two circumstances weave together to affect a person's life and health. A representative case for this category of patients is case 2 in *Figure 2*.

The third and final category of patients has been perhaps the most interesting category, as well as the least anticipated. This category includes patients in whom no drastic procedural or medication adjustments were recommended, but about which a vigorous discussion occurred. The tumor board has discussed patients who have had unusual medical diagnoses but has also focused heavily on patients who have a social, emotional, or spiritual complexity that has led to challenging circumstances in their care. Throughout the past year, the discussions that have been eye-opening and fascinating include topics around chronic pain syndromes, the role of opioids in the management of patients' pain long after their cancer has been cured, voluntarily stopping eating and drinking (VSED), end-of-life options and medical aid in dying, interpersonal conflict between patient and physician, prognostication and missed prognostic estimates, communication around serious illness, being fired by a patient, substance use disorders, and boundaries around emotional involvement in a patient's care. Each of these topics has arisen organically during the conversations about a patient's symptoms and has led to spirited and supportive discussions. Many oncologists have reached out to the tumor board coordinators to offer gratitude for the discussions, as there are few spaces in medicine and oncology where the emotions of the physician are valued and examined in this way. Case 3 in *Figure 2* exemplifies the potential value for providers and this kind of collaborative arrangement dedicated to pain and symptom management in the oncology population.

This type of case has illuminated one of the most important aspects of the tumor board: the opportunity it provides for collaboration and support on an emotional and

 

psychological level for the physicians, nurse practitioners and other providers involved. Medicine can be isolating, particularly when physicians are super-specialized as many are in academic institutions. While the role of the traditional multidisciplinary tumor board to serve as a clearing house for treatment plans, an opportunity to discuss the medical details of difficult diagnoses and to get second, third and fourth opinions before initiating treatments that can be life-sustaining as well as life-altering matters deeply, our novel tumor board has emerged as a space in which providers can share the cases that challenge them in an emotional way as well as an intellectual way. Some of the hardest topics in medicine are discussed during these sessions, thus making them easier to process and handle.

### *Streamlining care*

Having cancer is devastating for most people. In addition to the emotional toll of the illness, the physical symptoms can be both overwhelming and disruptive. While treatments have improved, undergoing systemic therapy remains an arduous process that usually includes frequent clinic or hospital visits, regular blood work with either repeated needle sticks and IV placements or a port placement, and a demanding schedule that pulls patients and their caregivers away from their day-to-day lives. One of the additional benefits of the tumor board was limiting the number of physician visits that the patient had to attend to receive the consultation. Instead of going to the radiation oncologist, interventional radiologist, palliative care physician and psychiatrist, the patient's medical oncologist was able to convey the recommendations to the patient and then make one or more appropriate referrals for the intended management plan.

### *Recommended strategies*

Our experience has shown that the creation of a palliative care tumor board that brings together oncologic specialists from multiple fields is a beneficial entity to support a coordinated approach to managing complex symptoms. To create a similar conference, we recommend developing a core group of enthusiastic clinicians. Our interventional radiologist and palliative care physician worked together to conceptualize the tumor board and then proposed the idea to the cancer center administration, which was immediately supportive. The involved physicians reached out to a radiation oncologist, and then as the group coalesced, additional members were added organically over time—including a psychiatrist and physical medicine and rehabilitation specialist—to meet the evolving needs of the participating physicians and their patients. The tumor board nurse coordinator helped with establishing continuing medical education credits. Some weeks multiple patients are submitted when an email request is sent, and if no patients have been suggested 2 days prior to the discussion, the palliative care physician will solicit patients from specific oncologists (*Table 3*). Over the past year, the attendance at tumor board, as well as willingness to submit cases has increased. Future directions for our multidisciplinary tumor board include a clinic following the discussion where patients could meet with the appropriate physicians who offered strategies for their care, a more rigorous assessment of patient outcomes more formally regarding pain and symptom assessments, and surveying participating physicians regarding their satisfaction and take-aways from this conference.

## Conclusions

In conclusion, the creation and implementation of the Pain and Symptom Management Tumor Board has led to both expected results and the unanticipated experience of providing a vigorous exchange of ideas, increased collegiality, and opportunity for transdisciplinary teamwork. While some of the changes in patient care and pain management that resulted from the tumor board discussion may have occurred due to a medical oncologist independently requesting a palliative care or radiation oncology consultation, the increased exposure to multiple physicians with varied expertise likely led to a broader range of care possibilities and certain management strategies that would not otherwise have been considered. In addition to changes in patient care, the collaboration and mutual support experienced by the physician members of the panel has been incredibly meaningful. Oncologists who routinely attend the conference report that the experience is both thought-provoking, medically helpful, and uplifting. Working in isolation can lead to physician burnout and moral injury. Creating a forum in which physicians and advanced practice providers can discuss challenging cases and validate their own emotional reactions is a promising way to improve physician experience and work satisfaction. Further research is needed to fully explore the potential benefits for patients and families and the medical professionals who care for them.

**Table 3** Adherence to the structure and process functions of a palliative care tumor board recommended by practice guidelines for a PCTB

| Guideline category | Practices and processes |
|---|---|
| PCTB cases | Cases were forwarded to the PCTB coordinator twice monthly |
| | Any provider could bring forward a case for discussion in detail at the PCTB |
| | Cases were chosen based on symptomatic complexity identified by any member of the care team |
| Meeting format | Meeting occurred twice monthly |
| | Input and participation was encouraged from all members |
| | Attendance was recorded at each meeting and attendees received CME credits |
| | The confidentiality of all information disclosed at these meetings was maintained by all participants |
| Team members | Multidisciplinary representatives were present |
| | Community care providers were not present |
| | Attendance virtually was allowed |
| | Other PCTB participants were determined by the patient case(s) presented at a meeting |
| | Industry representatives were not allowed |
| | Patients or their representatives were present in only one case |
| Roles & responsibilities | Health care providers or delegates were responsible for |
| | • Presenting the patient case and maintaining patient confidentiality |
| | • Providing expert opinion from their area of expertise |
| | • Discussing the presenting issue and conclusions, as discussed at the PCTB, with the patient and making the ultimate treatment decisions |
| | • Responsible for entering the PCTB recommendations into the medical record |
| | • PCTB has a designated chair and a coordinator (with designated backups) |
| | • All members actively participated in case discussions |
| Institutional requirement were met | PCTB coordinator |
| | Dedicated meeting room with adequate facilities |
| | Projection equipment |
| | Secure, interactive computer systems |
| Terms of reference for the palliative MCC | The PCTB met the mandate specific to our institution |
| | The health care professional membership is up-to-date |
| | Meeting format, frequency, time length, and attendance were established |
| | Patient confidentiality was maintained |

PCTB, palliative care multidisciplinary tumor board; CME, continuing medical education; MCC, multidisciplinary case conference.

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*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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