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Inpatient and Outpatient Palliative Care Utilization Rates of Patients with Spine Metastases

Meghan Price BS[1], Edwin Owolo MD[1], Dana Rowe BA[1], Isabel Prado BA[1], Tara Dalton Msc, MD[1], Jacob Sperber BS[1,] Harrison Hockenberry BS[1], James Herndon PhD[3], Kerri-Anne Crowell MPH[3], Elizabeth P Howell MD[1], Eli Johnson MD[1],Margaret Johnson MD, MPH[4], Elizabeth Fricklas PA[2] , Christopher Jones MD, MBA[2], Arif Kamal MD, MBA[2], C. Rory Goodwin MD, PhD[1]

[1]Department of Neurosurgery, Spine Division, Duke University Medical Center, Durham, NC, USA.
[2]Duke Cancer Institute, Duke University Medical Center, Durham, NC, USA
[3]Department of Biostatistics & Bioinformatics, Duke University School of Medicine
[4]The Preston Robert Tisch Brain Tumor Center, Duke University Medical Center, Durham, NC, USA

Corresponding Author:
C. Rory Goodwin, MD, PhD
Associate Professor of Neurosurgery
Department of Neurosurgery
Duke University Medical Center
200 Trent Drive
Durham, NC 27710
spineresearch@dm.duke.edu

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Objective: Specialty Palliative Care (PC) can be instrumental in improving patient quality of life for patients with spine metastasis. It is important to identify disparities in access to PC to ensure that equitable care is provided to all patients. No prior study has assessed the impact of sociodemographic and treatment factors on the utilization of in-patient PC (IPPC) and outpatient PC (OPPC) in patients with spine metastases.

Methods: We examined IPPC and OPPC utilization in a cohort of 265 patients seen by our institution's Brain and Spine Metastases Tumor Board (BSMTB) between February 1, 2018, and February 31, 2020. Statistical analyses were performed comparing characteristics and outcomes between patients who did or did not utilize IPPC and/or OPPC.

Results: We observed no difference in rates of IPPC and OPPC consultation between patients across gender or race. Outpatient PC consultations varied across insurance and primary tumor type ($p=0.056$ and $p=0.025$, respectively). Patients who received surgical intervention or radiation therapy within 30 days of being presented at BSMTB had higher rates of OPPC utilization than those who did not ($p = 0.0032$ and $p = 0.040$, respectively). Patients who received an IPPC consult had worse overall survival than patients who did not consult IPPC (6.5

months vs. 24.2 months median survival) while those seen by OPPC had less of a survival disadvantage; median survival for OPPC was 11.2 months versus 19.2 months for those who were not seen by OPPC.

Conclusion: We identified differences in PC utilization across insurance and primary tumor type. Additionally, we present the unique finding that patients who receive surgery or RT for their spine metastases had higher rates of OPPC consultations than those who did not. Further work is needed to better appreciate PC utilization trends and identify interventions that improve the accessibility of PC.

Key Points

- Spine Metastasis patients who receive radiotherapy or surgery have higher rates of palliative care utilization.
- There are several race-based differences in palliative care utilization with Black patients having greater rates of IPPC when compared to non-black patients and White patients having greater rates of OPPC when compared to non-white patients.
- Less than a third of all spine metastasis patients received a palliative care consult during the course of their disease progression.

I. Introduction

Metastases are the most common neoplasm in the spine, accounting for approximately 90% of all masses visualized with spinal imaging[1]. Further, spine metastases occur in over 70% of all cancer patients and become symptomatic in nearly 10%[2-4]. These lesions can have devastating sequalae including vertebral body destruction, bony instability and spinal cord compression, which can manifest as intractable pain, impaired ambulation, neurological dysfunction, and, paralysis[5]. Given the range of presentations associated with spine metastases, each patient requires a specialized approach that incorporates their specific symptoms, goals, and priorities into their treatment plan. Specialty Palliative Care (PC) can be instrumental in ensuring comprehensive symptom management, integrating goals of care discussions, and facilitating personalized approaches to patient care. However, despite the use of palliative interventions to decrease pain and improve quality of life, the role of specialty PC consultation in patients with spine metastases is not well described.

Thus, the primary objective of our study was to evaluate the rates of PC utilization for patients with spine metastases across inpatient and outpatient settings. We hypothesized that rates of inpatient palliative care (IPPC) consultation would be higher than those of outpatient palliative care (OPPC). Our secondary objective was to assess whether rates of outpatient and inpatient PC utilization in patients with spine metastases vary across a range of different demographics including age, sex, and race. We also aimed to quantify inpatient and outpatient PC utilization for patients based on the interventions they received for their metastases. Given the dearth of literature on this topic, we hope to gain a better understanding of PC practice patterns for patients with spine metastases while addressing potential disparities in these practice patterns.

II. Methods

We conducted a retrospective analysis of adult patients diagnosed with spine metastases. This study was determined to be exempt by our institution's Institutional Review Board (IRB).

Patient Sample

Patients were identified via our institution's Brain and Spine Metastases Tumor Board (BSMTB); we reviewed all patients with a diagnosis of spine metastasis who were presented at the tumor board from February 1, 2018 to February 31, 2020. Data were accessed and collected in April 2021. Patients younger than 18, those with a primary spine tumor, or those with a diagnosis of brain metastases without concurrent spine metastases were excluded. The BSMTB is a multi-disciplinary group that meets weekly to discuss treatment recommendations for patients with central nervous system (CNS) metastases. This group is made up of neurosurgeons, radiation oncologists, medical oncologists, orthopedic surgeons, interventional radiologists, and palliative care physicians. Patients who present with CNS metastases to either our main academic hospital or its two satellite affiliate hospitals are presented at this tumor board.

Palliative Care Utilization

Outpatient Palliative Care (OPPC) consultation was defined as a formal ambulatory outpatient referral to Palliative Care with a confirmed, completed visit with a specialized Palliative Care provider in the outpatient setting documented in the Electronic Health Record (EHR). Inpatient Palliative Care (IPPC) consultation was defined as a formal inpatient consult placed in the EHR during an admission that was followed by at least one documented and completed visit with the PC inpatient consult team. PC consultations were not used in place of

hospice referrals in either the inpatient or outpatient setting; Palliative Care could be consulted/ referred to for many reasons including symptom management, goals of care conversation, advance care planning, and family meetings.

Patient Variables

Via retrospective chart review, variables regarding patient demographics, oncologic history, and interventions recommended by and received after TB presentation were collected. These included patient age, sex, race/ethnicity (this was grouped into three groups: White, Black and Other based on available numbers in the data set), insurance status, primary tumor type, tumor location, and whether patients underwent surgery, biopsy, radiation therapy or chemotherapy. The "Other" race category includes American Indian/Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander. Data regarding intervention was collected both for the 30 days after TB presentation and throughout the entirety of the study period. Palliative care utilization was assessed by collecting the number of times PC was consulted while patients were admitted after TB presentation, as well as the number of times the patient saw an outpatient PC provider. Patient death date and/or last date of contact were confirmed via manual review of the EHR; only patients with known status of death or survival were included in survival analyses.

Statistical Analysis

Descriptive statistics were used to summarize the data with medians and IQR for continuous variables and frequency distributions for categorical variables. Group differences were analyzed using the Mann- Whitney non-parametric test for continuous variables and chi-square tests of independence for categorical variables. Survival within defined patient subgroups

were graphically displayed using the Kaplan Meier estimator and statistically compared with log-rank test. All analyses were performed using GraphPad software version 8.3.1 (332). Level of statistical significance was set at $P < 0.05$ in all analyses.

III. Results

Inpatient Palliative Care Demographics

Regarding overall rates of PC utilization, 47 of 265 (17.7%) patients received at least one inpatient PC (IPPC) consult. The patients receiving an IPPC consult had a mean age of 63.3 while those not receiving an IPPC consult were slightly younger at 62.2 (p = 0.9607) **(Table 1)**. We saw no significant difference in the proportion of males and females who received or did not receive an IPPC consult (p = 0.96) **(Table 1).** Although not statistically significant, compared to White and Other patients, Black patients received IPPC consults at a higher rates (15.09%, 0.0%, and 25.86% respectively, p = 0.058).There were no significant differences in the proportion of patients receiving IPPC consults across race, insurance status, and primary tumor type (p = 0.25, p = 0.19, p = 0.51, p = 0.34, respectively) **(Table 1)**. Patients with primary tumor types of renal, gynecologic, and hematologic had the highest rates of IPPC consultation **(Table 1)**.

Inpatient Palliative Care Interventions

We observed no significant difference in rates of IPPC consultation for patients receiving surgical intervention, radiation therapy, or chemotherapy within 30 days of being seen at tumor board (p = 0.16, p = 0.65, p = 0.67, respectively) **(Table 2)**. This lack of significant difference in IPPC utilization persisted when comparing patients who received surgical interventions, RT or chemotherapy at any point during the study (p =0.14, p = 0.34, p = 0.56, respectively **(Table 2).**

Outpatient Palliative Care Demographics

Seventy-three of 265 (27.5%) patients received at least one outpatient palliative care (OPPC) consult. Nineteen (26.0%) of these patients also received an IPPC consult. The mean ages for patients receiving and not receiving an OPPC consult were 62.0 and 62.6 years, respectively (p = 0.954) **(Table 3)**. No significant difference was observed in OPPC consultations across age, gender, or race (p = 0.95, p = 0.20, and p = 0.15, respectively) **(Table 3)**. In detecting a difference in the proportion of OPPC consultations by insurance type, we approached significance with patients on private insurance having the highest proportion of OPPC consults at 34.0% (p = 0.056) **(Table 3)**. There was significant variation in OPPC utilization by primary tumor type (p = 0.025). Patients with primary tumor types of sarcoma, skin, and breast had the highest rates of OPPC consultation **(Table 3).**

Outpatient Palliative Care Interventions

Patients receiving surgical intervention within 30 days of being presented at TB had a significantly higher utilization rate of OPPC than those who did not have a surgical intervention within 30 days of TB (43.9% vs 23.1%, p = 0.0032). This trend held true for surgical intervention overall (within 30 days and after) (38.2% vs 22.2%, p = 0.0089) **(Table 4)**. There was also a significant difference in OPPC consults based on the receipt of radiation therapy within 30 days of TB, wherein patients who received radiation therapy had higher rates of OPPC consults compared to patients who did not (34.5% vs 22.4%, p = 0.040). There were no significant differences in OPPC consult rates based on whether or not patients received chemotherapy, either within 30 days of TB presentation or at any point during the study period (p = 0.72 and p = 0.27, respectively) **(Table 4).**

Interventions by Demographics

Regarding differences in rates of interventions received based upon specific demographic factors, there were no differences by gender or age. Although White patients did not have significantly higher rates of surgery than non-White patients within 30 days of TB, they did have higher rates overall (39.5% vs 18.7%; p = 0.0020) **(Figures 1a,b).** There were not significant differences by race for either radiation therapy or chemotherapy at either time point **(Figure 1a,b).**

Survival Analysis

The median survival for our cohort was 15.53 months. Patients who did not receive at least one IPPC consult had a median survival of 24.2 months. Patients who did receive at least one IPPC consult had a lower median survival at 6.5 months. Median survival for patients who received an OPPC consult was 11.2 months and 19.2 months for those who were not seen by OPPC **(Figure 2).**

Supplementary Analysis

The breakdown in presenting facility between these hospitals is available in Table S1, Supplemental Digital Content 1, http://links.lww.com/BRS/C505. A comparison of the combined outpatient and inpatient palliative care groups to the patients receiving no palliative care consults is also included in supplementary Table S2, Supplemental Digital Content 2, http://links.lww.com/BRS/C506.

IV. Discussion

In this study, we evaluate utilization trends for both inpatient and outpatient PC. We present these trends for 265 patients diagnosed with spine metastasis who were reviewed by our institution's Brain and Spine Metastases Tumor Board (BSMTB). On average these patients received inpatient PC (IPPC) and outpatient PC (OPPC) consultations at rates of 17.7% and 27.5%, respectively; 7.17% received both IPPC and OPPC consultations. We did not find significant variations in IPPC or OPPC utilization rates based on patient age, gender, race, or insurance status. Patients with certain tumor types appear to receive higher rates of OPPC consultations than others. Additionally, we demonstrated that patients receiving surgery and/or radiation therapy for their spine metastasis had significantly higher rates of OPPC utilization than those who did not.

Demographics

The only sociodemographic factor that we found significant differences in PC consultation rates was insurance status, with those on private insurance having the highest proportion of OPPC consults followed by Medicare, then Medicaid, and lastly other/unknown. In the literature, the data on the association of insurance status and PC utilization is mixed.[6-10] In contrast with our results, another retrospective study examining out-patient specialty PC utilization, patients with private/commercial insurance were found to have lower odds of utilization than patients on Medicare or Medicaid.[11] These trends also appear to vary between PC utilization in the in- and out-patient settings. A study examining PC utilization in patients with end-stage COPD found that patients receiving IPPC consultations were more likely to be uninsured.[12] This finding is logical under the notion that patients that are uninsured may delay seeking care until their

condition has significantly worsened. At that point, their physicians may be more inclined to involve PC.

Patients with certain primary tumor types were more likely to have OPPC consults. Interestingly, within the same primary tumor type, rates of OPPC consultations were equivalent or higher when compared to IPPC consultation for all types of tumors except gynecologic, renal, and hematologic. This trend may be partially explained by the improvement of therapies for the treatment of various cancers. Given that treatments may prolong life in patients suffering from cancer, this may augment the need for OPPC in the long-term to manage sequelae of more slowly progressive disease. With that said, additional analyses with larger sample size will be needed to delineate specific associations with different cancer types.

In our analysis, Black patients received IPPC consults at higher rates than White patients and those classified as Other, although this finding did not reach statistical significance. Nonetheless, this trend is consistent with previous studies that have reported minority patients, particularly Black patients, may receive IPPC at higher rates than White patients[13-15]. There are several hypothesized reasons for these higher rates of IPPC consultation including communication barriers, goal-discordance, and potential mistrust and/or misunderstanding between patients and providing teams resulting in primary teams relying on PC consulting services to have end-of-life (EOL) discussions[16,17]. Furthermore, there is evidence that IPPC is generally offered at higher rates to patients with poor prognoses or those who are closer to the EOL[13]. This, combined with data demonstrating that Black/minority patients often present with later stage disease and more severe sequelae of their spine metastases[18], suggests that Black patients may have worse prognoses upon admission and therefore may be more likely to receive IPPC consultations than White patients.

Interestingly, when assessing OPPC utilization rates, we observed the opposite trend with White patients seen by OPPC providers at higher rates than non-White (Black and Other) patients. Although these results did not reach statistical significance, likely due to sample size, the trend of reversal between rates of IPPC and OPPC consultation merits further discussion, as these differences highlight healthcare disparities and barriers to PC utilization. Generally, studies have demonstrated that White patients have better access to healthcare and receive earlier medical interventions compared to minority patients[19-23]. These findings are consistent with the higher rate of OPPC visits we observed for White patients; this disparity is particularly concerning as early outpatient PC has been shown to result in not only improved patient quality of life but also survival in RCTs [24-28]. It is important to note that several of these RCTs either did not enroll Black patients at all[24] or had very low enrollment numbers[26]. Thus, the effects of early PC integration are not well studied/understood and may not be as accessible for minority patient populations.

Similar to those underlying disparate rates of IPPC consultation, the reasons for these inequities in OPPC utilization are multi-factorial, complex, and rooted in patterns of systemic racial/ethnic disparities throughout our society and medical system. Regarding specific barriers to accessing OPPC visits, patients' current overall health, functional status and ability to travel to access care have been described, all of which have been shown to disproportionately affect non-White patients[24,29]. Further research will be important to better establish these utilization trends and assess targeted interventions to equalize access to/ utilization of PC.

Interventions

It is established that surgical patient populations are less likely to have PC incorporated into their care than those not receiving surgery[13,30-34]. Our findings regarding IPPC utilization rates were consistent with the existing literature, whereby surgical patients were less likely to receive IPPC compared to non-surgical patients. Several hypotheses have been proposed to explain this finding, including the prognostic challenges associated with surgical patients, the "rescue culture" of surgery, as well as surgeons' propensity to see palliative care as a sequential, rather than concurrent, strategy[33,35-37].

When assessing OPPC utilization by interventions received, we found that patients who underwent surgical treatment had significantly higher rates of OPPC visits compared to non-surgical patients. These findings notably contrast with the existing literature[33,34]. We hypothesize that the primary reason for these high rates of OPPC utilization for surgical patients may be the integration of a multidisciplinary tumor board into the care of all patients included in our study. Recent work has demonstrated the importance of multidisciplinary teams for successful, early incorporation of PC into the care of oncology patients[28,38-40]. The fact that every patient presented at our tumor board is evaluated for PC referral likely contributes to our higher reported rate of OPPC and highlights the importance of incorporating such multi-disciplinary boards into the care of patients with spine metastases.

Another factor that may contribute to the higher rates of OPPC in surgical patients is evidence that Black patients are less likely to receive surgical interventions than White patients[13,18,41-46]. This is consistent with our data which showed a significantly higher percentage of White patients in our cohort who received surgery compared to non-White patients. This finding, combined with the trend that White patients were more likely to receive OPPC consults than non-White patients, may be a secondary contributor to the higher rates of OPPC

consultation seen amongst surgical patients within our cohort. Additional studies will be important to further quantity contributions of the multi-disciplinary tumor board and racial disparities when evaluating PC utilization for surgical patients.

Amongst patients receiving radiation therapy (RT), we observed similar trends to those undergoing surgery with higher rates of OPPC in those receiving RT than those who did not. Regarding patients who were treated with or without chemotherapy, we saw no significant difference in rates of IPPC or OPPC utilization. This finding may reflect differences in comfort level between medical and surgical oncologists in providing PC interventions to their patients. Medical oncologists may be more comfortable incorporating PC into their practice for patients receiving chemotherapy, and less likely to refer their patients to OPPC than surgical oncologists[47,48]. Surgeons, by contrast, may rely more heavily on PC specialists to manage symptoms and have difficult EOL conversations, thus reflecting the higher OPPC consultation rates amongst the surgical cohort[49-51].

Survival

Within our study, we found that patients who received IPPC consultation had worse overall survival than those who did not. This finding is consistent with a previous study that demonstrated lower overall survival rates for advanced-stage cancer patients who received IPPC consults than those who did not[13]. These results likely do not suggest that IPPC is causal in higher mortality rates but rather that patients who receive IPPC are more likely to have worse prognoses on admission. Interestingly, when considering survival outcomes for patients consulted by OPPC, we found that the median survival was still less than that for patients who did not utilize PC; however, this difference was not as extreme as that seen with IPPC. This trend

supports previous literature that demonstrates early integration of PC is critical to maximizing the benefits derived from this specialty resource[52,53]. These findings further highlight the importance of early integration of PC.

Limitations

There are several limitations to our study. First, while most patients with spine metastases who present to our institution are reviewed by the multidisciplinary BSMTB, some are not. Thus, we may have missed a small subset of patients with spine metastases not presented. Second, we acknowledge that many institutions do not have a multi-disciplinary tumor board that proactively assesses need for PC referral in all patients. Our results, are therefore likely not generalizable to many other institutions. Similarly, given that our institution has a high volume of patients presenting with spine metastases, our experiences and findings may not apply to other hospital systems with lower volumes of patients with spine metastases. Third, we did not collect the reason for PC consultation or referral; thus, we cannot comment on whether rates of PC utilization for symptom management versus EOL care differed by demographic or intervention-based factors. Similarly, while we collected information from EHRs that interface with our own, patients could have had consults with PC practitioners outside of our EHR that we were not able to document. Finally, while we were able to identify statistically significant differences in rates of PC utilization based on some demographic factors and interventions, our sample size limited the significance of some of our findings. In a similar vein, we did not collect data on individual patients' performance or functional status given inconsistencies in reporting of this measure in the EHR. Underlying disease status, as well as treatment sensitivity for different cancer types, could be additional confounding factor as to why certain patient groups are more likely to receive surgical interventions than others. Specifically, we acknowledge the limitation of

grouping patient population into categories of Black, White, and Other as that eliminates significant nuance and racial diversity in our sample. Moreover, other socioeconomic factors not collected like patient zip code, education status, and household income could help provide more nuance to subsequent studies. Given the potential for multiple confounders, our study is limited in statistical power to perform a more robust multivariate regression analysis that could allow for more robust conclusions to be drawn. .Although the vast majority of patients included in our analysis presented at the same facility, indicating some level of socioeconomic homogeneity, it will be important to analyze many of these differences in PC utilization amongst patients with spine metastases with larger patient populations.

V. Conclusion

Our study is the first to assess the impact of sociodemographic and treatment factors on rates of IPPC and OPPC utilization in patients with spine metastases. We explored several sociodemographic differences in PC utilization, which may highlight potential barriers to PC access for specific patient populations. In addition, we present the unique finding that patients who received surgery or radiation therapy for their spine metastases had higher rates of PC consultations than those who did not. This result emphasizes the potential value of a multi-disciplinary tumor board in early integration of PC for patients with spine metastases--particularly surgical patient populations for whom PC is typically under-utilized. Finally, we found that IPPC consultation was associated with worse overall survival, a disadvantage that was mitigated by OPPC. Consistent with previous research, these findings demonstrate that early PC integration is critical to maximizing not only the quality of life but also the potential survival advantage of this resource. Further research will be necessary to better appreciate PC utilization trends and identify interventions that may improve the equity and accessibility of PC.

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Figure 1. a. Interventions (surgery, radiation therapy, or chemotherapy) received within 30 days of TB presentation comparing White versus non-White patients. **b.** Interventions received throughout study period comparing White versus non-White patients.

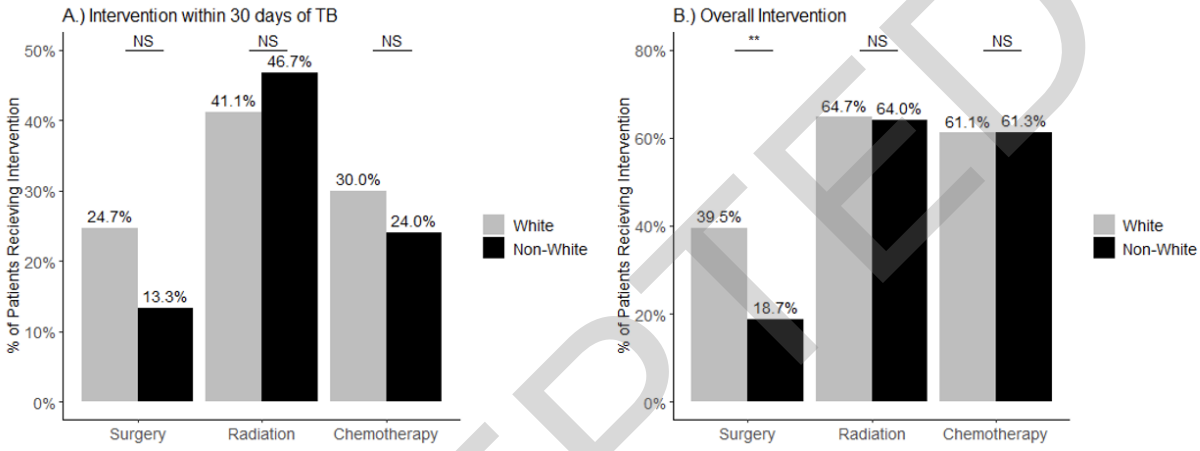

Figure 2. a. Baseline survival across spine metastasis patients. **b.** Overall survival across Inpatient palliative care utilization versus non-inpatient palliative care utilization. **c.** Overall survival across outpatient palliative care utilization versus non-outpatient palliative care utilization. ** = P <0.01

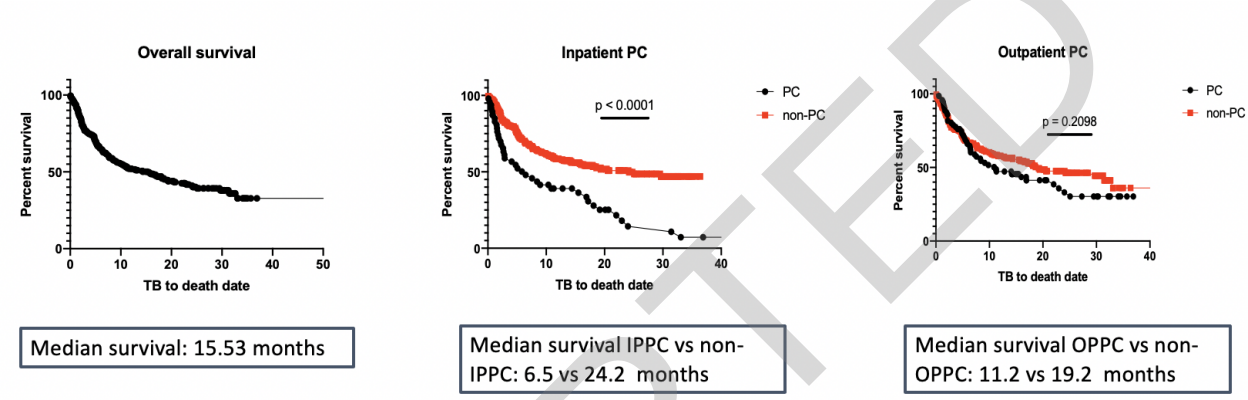

Table 1. Baseline demographics by inpatient palliative care consultation status

Variable	Total Number of Patients (n= 265)	Patients Receiving IPPC Consult (n= 47)	Patients Not Receiving IPPC Consult (n= 218)	P-value
Age (Mean+/-SD)	62.4	63.3	62.2	
Age > 65 years old				
Yes	126 (47.5%)	23 (18.3%)	103 (81.7%)	0.9607
No	139 (52.5%)	24 (17.3%)	115 (82.7%)	
Gender				0.2526
Female	130 (49.1%)	19 (14.6%)	111 (85.4%)	
Male	135 (50.9%)	28 (20.7%)	107 (79.3%)	
Race				
White	190 (71.7%)	32 (16.8%)	158 (83.2%)	0.1854
Black	58 (21.9%)	14 (24.1%)	44 (75.9%)	
Other	17 (6.4%)	1 (5.9%)	16 (94.1%)	
Insurance Status				0.5146
Medicare	128 (48.3%)	26 (20.3%)	102 (79.7%)	
Medicaid	16 (6.0%)	4 (25.0%)	12 (75.0%)	
Private	100 (37.7%)	14 (14.0%)	86 (86.0%)	
Other/Unknown	21 (7.9%)	3 (14.3%)	18 (85.7%)	
Primary Tumor Type				0.3388
Breast	61 (23.0%)	9 (14.8%)	52 (85.2%)	
GU	47 (17.7%)	8 (17.0%)	39 (83.0%)	
Lung	39 (14.7%)	9 (23.1%)	30 (76.9%)	
Unknown	34 (12.8%)	6 (17.6%)	28 (82.4%)	
GI	24 (9.1%)	2 (8.3%)	22 (91.7%)	
Gynecologic	2 (1.0%)	1 (50.0%)	1 (50.0%)	
Skin	9 (3.4%)	0 (0.0%)	9 (100.0%)	
Other	13 (4.9%)	2 (15.4%)	11 (84.6%)	
Endo	6 (2.3%)	1 (16.7%)	5 (83.3%)	
Sarcoma	5 (1.9%)	1 (20.0%)	4 (80.0%)	
Renal	3 (1.1%)	2 (66.7%)	1 (33.3%)	
Heme	22 (0.8%)	6 (27.3%)	16 (72.7%)	

Table 2. Interventions (surgery, radiation therapy, or chemotherapy) by inpatient palliative care consultation status

Variable	Total Number of Patients (n= 265)	Patients Receiving IP PC Consult (n= 47)	Patients Not Receiving IP PC Consult (n= 218)	P-value
Surgery				
Yes, 30 days TB	57 (21.5%)	6 (10.5%)	51 (89.5%)	
No, 30 days TB	208 (78.5%)	41 (19.7%)	167 (80.3%)	0.1577
Yes	89 (33.6%)	11 (12.4%)	78 (87.6%)	
No	176 (66.4%)	36 (20.5%)	149 (79.5%)	0.1445
Radiation Therapy				
Yes, 30 days TB	113 (42.6%)	22 (19.5%)	91 (80.5%)	0.6353
No, 30 days TB	152 (57.4%)	25 (16.4%)	127 (83.6%)	
Yes	171 (64.5%)	27 (15.8%)	144 (84.2%)	0.3417
No	94 (35.5%)	20 (21.3%)	74 (78.7%)	
Chemotherapy				
Yes, 30 days TB	75 (28.3%)	15 (20.0%)	60 (80.0%)	0.6688
No, 30 days TB	190 (71.7%)	32 (16.8%)	158 (83.2%)	
Yes	162 (61.1%)	31 (19.1%)	131 (80.9%)	0.5597
No	103 (38.9%)	16 (15.5%)	87 (84.5%)	

Table 3. Baseline demographics by patients who received an outpatient palliative care consultation status

Variable	Total Number of Patients (n= 265)	Patients Receiving OPPC Consult (n= 73)	Patients Not Receiving OPPC Consult (n= 192)	P-value
Age (Mean+/-SD)	62.4	62.0	62.6	
Age > 65 years old				0.954
Yes	126 (47.5%)	34 (27.0%)	92 (73.0%)	
No	139 (52.5%)	39 (28.1%)	100 (71.9%)	
Gender				0.1972
Female	130 (49.1%)	41 (31.5%)	89 (68.5%)	
Male	135 (50.9%)	32 (23.7%)	103 (76.3%)	
Race				0.1547
White	190 (71.7%)	58 (30.5%)	132 (69.5%)	
Black	58 (21.9%)	13 (22.4%)	45 (77.6%)	
Other	17 (6.4%)	2 (11.8%)	15 (88.2%)	
Insurance Status				0.0557
Medicare	128 (48.3%)	35 (27.3%)	93 (72.7%)	
Medicaid	16 (6.0%)	1 (6.3%)	15 (93.8%)	
Private	100 (37.7%)	34 (34.0%)	66 (66.0%)	
Other/Unknown	21 (7.9%)	3 (14.3%)	18 (85.7%)	
Primary Tumor Type				**0.0251**
Breast	61 (23.0%)	23 (37.7%)	38 (62.3%)	
GU	47 (17.7%)	9 (19.1%)	38 (80.9%)	
Lung	39 (14.7%)	13 (33.3%)	26 (66.7%)	
Unknown	34 (12.8%)	5 (14.7%)	29 (85.3%)	
GI	24 (9.1%)	8 (33.3%)	16 (66.7%)	
Gynecologic	2 (1.0%)	0 (0.00%)	2 (100.0%)	
Skin	9 (3.4%)	4 (44.4%)	5 (55.6%)	
Other	13 (4.9%)	3 (23.1%)	10 (76.9%)	
Endo	6 (2.3%)	1 (16.7%)	5 (83.3%)	
Sarcoma	5 (1.9%)	4 (80.0%)	1 (20.0%)	
Renal	3 (1.1%)	1 (33.3%)	2 (66.7%)	
Heme	22 (0.8%)	2 (9.1%)	20 (90.9%)	

Table 4. Interventions (surgery, radiation therapy, or chemotherapy) received by patients by outpatient palliative care consultation status

Variable	Total Number of Patients (n= 265)	Patients Receiving OP PC Consult (n= 73)	Patients Not Receiving OP PC Consult (n= 192)	P-value
Surgery				
Yes, 30 days TB	57 (21.5%)	25 (43.9%)	36 (56.1%)	**0.0032**
No, 30 days TB	208 (78.5%)	48 (23.1%)	160 (76.9%)	
Yes	89 (33.6%)	34 (38.2%)	55 (61.8%)	**0.0089**
No	176 (66.4%)	39 (22.2%)	137 (77.8%)	
Radiation Therapy				
Yes, 30 days TB	113 (42.6%)	39 (34.5%)	74 (65.5%)	**0.0404**
No, 30 days TB	152 (57.4%)	34 (22.4%)	118 (77.6%)	
Yes	171 (64.5%)	54 (31.6%)	117 (68.4%)	0.0661
No	94 (35.5%)	19 (20.2%)	75 (79.8%)	
Chemotherapy				
Yes, 30 days TB	75 (28.3%)	19 (25.3%)	56 (74.7%)	0.7232
No, 30 days TB	190 (71.7%)	54 (28.4%)	136 (71.6%)	
Yes	162 (61.1%)	49 (30.2%)	113 (69.8%)	0.2745
No	103 (38.9%)	24 (23.3%)	79 (76.7%)	