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## The effect of a multidisciplinary palliative care initiative on end of life care in gynecologic oncology patients<sup>☆</sup>

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### HIGHLIGHTS

- Our initiative is associated with increased hospice enrollment.
- Our initiative is associated with increased time on hospice.
- Triggers for palliative care referral result in increased palliative consultations.
- Palliative care consultation is associated with increased hospice uptake.

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### ABSTRACT

**Objectives.** To evaluate the effect of palliative care (PC) consultation on hospice enrollment and end-of-life care in gynecologic oncology patients.

**Methods.** A retrospective chart review of gynecologic oncology patients who died 1 year before and after 2014 implementation of a PC initiative for patients at a single NCI-designated comprehensive cancer center. Patient demographics, admission and procedural history, anti-cancer therapy, and end-of-life care were collected retrospectively. Data was analyzed using Student's *t*-test, Mann-Whitney *U* test, Chi-Square test, or Fisher's exact test.

**Results.** We identified 308 patients. Median age at death was 63 years (range 17 to 91). Most patients were white (78.2%), married (47.4%), and had ovarian (35.7%) or uterine cancers (35.4%). Introduction of the PC initiative was associated with increased PC consultations (40%, 53%,  $p = 0.02$ ), increased hospice enrollment (57%, 61%,  $p = 0.29$ ), and fewer procedures in the last 30 days of life (44%, 31%,  $p = 0.01$ ). The rate of enrollment to inpatient hospice doubled from 12.5% to 25.7% ( $p = 0.02$ ) while time from inpatient hospice enrollment to death increased from 1.9 to 6.0 days ( $p = 0.02$ ). Time from outpatient hospice enrollment to death increased from 26.2 to 35.4 days ( $p = 0.18$ ). PC consultation was associated with a doubling of outpatient (40%) and inpatient (80%) hospice enrollment.

**Conclusions.** The PC quality improvement initiative was associated with more palliative care consults, increased rates of inpatient and outpatient hospice utilization, increased time on hospice, and fewer procedures in the last 30 days of life, although most women were not enrolled until the last days of life.

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### 1. Introduction

An estimated 31,600 women will die from gynecologic malignancy in 2017, making end-of-life care integral to the treatment of gynecologic

oncology patients [1]. The integration of palliative care and hospice into standard gynecologic oncology care is associated with cost-savings, longer survival, lower symptom burden, and better quality of life for both patients and caregivers [2–8]. This comprehensive approach is formally recognized and endorsed by the Society of Gynecologic Oncology, the National Comprehensive Cancer Network, and the American Society of Clinical Oncology [6,9]. However, despite formal recommendations, palliative care and hospice continue to be underutilized [7,10,11]. Only 70.5% of gynecologic oncology patients were referred to hospice or palliative care prior to death [11] and only 18% had palliative consultation

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prior to 30 days before death [3]. Furthermore, the median time between hospice enrollment and death was 22 days with 55% of patients enrolled <30 days before death [11].

Barriers to palliative care and/or hospice referral are multifactorial and include patient readiness to accept and participate in end-of-life discussions as well as a physician's willingness and knowledge of appropriate timing to refer [12–14]. Several studies demonstrate palliative care consultation can help overcome these barriers and fill gaps in knowledge [3,4,15,16].

Per a 2010 study by Barber et al., 60% of patients with advanced cancer are hospitalized in the last 30 days of life and 51% of women with gynecologic cancer died in an acute care bed as an inpatient [17]. Thus, hospital admission is an opportune time to introduce palliative care consultation in appropriate patients. Inpatient palliative care consultation and inpatient hospice have been associated with decreased health care costs, decreased symptom burden, and increased quality of life in cancer patients [4,18–21]. However, there is paucity of published evidence/experience regarding the effect of an inpatient palliative care program on gynecologic oncology patient outcomes.

In 2014 Barnes-Jewish Hospital in St. Louis developed a quality improvement initiative that required a palliative care consultation to enroll selected hospitalized patients into inpatient hospice care. Meanwhile, palliative consultations also continued to be available for all patients at the discretion of the attending physician. We hypothesized this intervention would result in increased utilization of hospice services and may improve end-of-life care in patients with gynecologic cancer.

## 2. Materials and methods

In 2014 our gynecologic oncology service along with the palliative care service implemented a quality improvement initiative. In order to enroll a selected patient into inpatient hospice the gynecologic oncology team must consult the palliative care team which consisted of two full-time attending physicians, one resident physician, two nurse practitioners, two social workers, and a chaplain. A palliative care consult entailed a documented assessment by one of the attending physicians. Once an assessment justifying inpatient hospice criteria was documented the selected patient could be enrolled into inpatient hospice.

A retrospective chart review of gynecologic oncology patients who died between January 2013 and December 2014 (1 year pre- and post-implementation of this palliative care intervention) was performed. The study was judged exempt from institutional review board approval by the Washington University School of Medicine Human Research Protection Office due to the fact that the patients included in this research were deceased.

Institutional databases were used to identify patients with gynecologic malignancy who died between January 1, 2013 and December 31, 2014. Patients who were lost to follow-up or who transferred care to another hospital were excluded. Three authors (MM, LMD, BPP) reviewed electronic medical records using a standardized data abstraction form. For quality control purposes, 10% of chart extractions were duplicated. All data were entered into REDCap, a Health Insurance Portability and Accountability Act compliant database [22]. Abstracted data included demographic data, date of diagnosis, date of death, cancer diagnosis, stage at diagnosis, date and type of last cancer treatment, date of inpatient palliative care consult, enrollment in hospice, documented goals of care conversation, presence of advance directive/living will, location of death, number and date of hospital/ICU admissions in the last 30 days of life, chief complaint and duration of each hospitalization in the last 30 days of life, and procedures performed in the last 30 days of life. An end-of-life conversation was defined as a documented discussion with the patient addressing prognosis, resuscitation status, or a treatment or hospice plan. A procedure was defined as a paracentesis/tunneled peritoneal catheter placement, abdominal surgery, port placement, thoracentesis/tunneled pleural catheter placement, biopsy,

gastrostomy tube placement, mechanical ventilation, or other invasive intervention.

Statistical analysis was performed using SPSS Statistics Version 23 (Armonk, NY). Baseline demographics were analyzed using descriptive statistics. Student's *t*-test or Mann-Whitney *U* test were used for continuous variables and either Chi-square or Fisher's exact test were used for categorical variables. Given multiple comparisons made for the demographic analysis, a Bonferroni correction was utilized and a *p*-value <0.006 was considered significant. For the other outcomes, a *p*-value <0.05 was considered significant.

## 3. Results

A total of 308 patients were included in the analysis: 141 women prior to and 167 women after implementation of the PC guidelines. Table 1 summarizes the baseline demographics for both groups. The only significant difference between the demographics of the two groups were stage distribution; patients in the post-intervention group had earlier-stage disease. Overall, the median age of death was 63 years (range 17 to 91). Most patients were white (78.2%), married (47.4%), and had ovarian (35.7%) or uterine cancers (35.4%).

**Table 1**  
Patient demographics and clinical characteristics.

	Pre-Intervention ( <i>n</i> = 141) <i>n</i>	Post-Intervention ( <i>n</i> = 167) <i>n</i>	<i>p</i> -Value
Age at Death (yrs)	64.4 + 14.5	61.0 + 14.9	0.01
Race			0.45
Asian	0	3	
Black	30	31	
White	110	131	
Hispanic	1	1	
Other	0	1	
Diagnosis			0.24
Cervix	20	32	
Uterus	47	56	
Fallopian Tube	3	4	
Ovarian	51	55	
Primary Peritoneal	9	4	
Vaginal	2	1	
Vulvar	2	10	
Multiple Diagnoses	4	4	
Other	3	1	
Stage			0.005
I	17	30	
II	8	13	
III	61	54	
IV	50	47	
Insurance			0.16
Medicare	85	82	
Medicaid	13	15	
Private Insurance	39	62	
Uninsured	3	8	
Other	1	0	
Marital Status			0.03
Single	18	39	
Married	65	81	
Divorced	28	21	
Widowed	30	24	
Religion			0.12
Yes	30	33	
No	111	129	
Education			0.49
Grade School	8	6	
High School	51	61	
Some College	25	29	
Bachelor's Degree	17	21	
Master's Degree	11	6	
Vocational	2	2	
Advanced Degree	2	10	
Unknown	25	32	

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