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Rural Readmissions in the Palliative Care Vacuum

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Palliative care consultation is associated with reduced health care costs and improved quality of life while reducing length of stay. Small rural hospitals lack the depth of multidisciplinary resources to provide inpatient palliative care consult services. The purpose of this research was to assess the need for palliative care service in rural hospitals, while examining for a difference in hospital readmission rates in hospitals lacking palliative consult services. Data were obtained from the Pennsylvania Health Cost Containment Counsel including 3 hospitals with palliative programs and 3 without. Inclusion criteria were admissions for a patient carrying a diagnosis appropriate for palliative consultation between the last quarter of 2014 and 2015. There were 1394 index patients admitted to 3 rural hospitals lacking a palliative consult program. There was a higher rate of readmissions at the nonpalliative hospitals, 71.6% versus 55.1% ($P < .001$). Data suggest there is a need for palliative telemedicine services to meet needs in rural hospitals.

nursing, which is beneficial to patients and families facing serious illness.⁴ This includes, but is not limited to, illnesses such as cancer, cardiac disease, chronic obstructive pulmonary disease, and Alzheimer disease. Palliative consultation is associated with shorter intensive care unit (ICU) length of stay without altering mortality rates or disposition from the ICU.³ Palliative care services are becoming increasingly available in hospitals in urban centers or facilities with a bed capacity of greater than 200. Smaller, more rural hospitals, however, often lack the depth of multidisciplinary resources to provide an inpatient palliative care service.⁴ There is potential for palliative telemedicine services to reduce the burden to patient and families, as well as cost to the health care system.

The extent of the rural disparity has not been fully explored and represents a significant gap in our knowledge. This research is designed to assess the need for palliative care consultation across a group of 6 hospitals utilizing readmission data in the population appropriate for palliative consultation. Population data were identified using *International Classification of Diseases, Ninth Revision (ICD-9)* codes for all adult patients with diagnoses appropriate for palliative involvement. Data were obtained from Pennsylvania Health Cost Containment Counsel (PHC4). Three of the selected hospitals have an established palliative care program, and 3 hospitals do not. A correlational analysis of readmission rates was performed between these groups of hospitals in this patient population.

Aim and Objectives

The objectives of this research were to assess the need for development of a palliative telemedicine program by utilizing retrospective admission data to:

- quantify the need for palliative care services at rural hospitals without a program and
- gather data regarding the palliative consultation and readmission rates.

Background and Significance

In 2001, the Institute of Medicine (IOM) identified 20 priority health conditions. Palliative care has the potential to impact many of these areas. The most notable of these are end-of-life care, frailty associated with old age, ischemic heart disease, pain control in advanced cancer, diabetes, and stroke.⁵

KEY WORDS

family meeting, goals of care, palliative care, palliative consult, palliative needs, rural, rural health, telemedicine, teleconsult

Palliative care consultation is associated with a more positive patient and family assessment of quality of life in the setting of complex life-limiting illness, while also improving the informed selection of health care choices that reduce the cost of care being provided.¹⁻³ The Center for Advancing Palliative Care identifies palliative care as a multidisciplinary team including

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The IOM published criteria for the ideal approach to health care. The IOM defines the 6 aims of the ideal health care system as safe, effective, patient centered, timely, efficient, and equitable care. Regarding safe care, the IOM states, "Patients should not be harmed by the care that is intended to help them."⁵ Clarification of a patient's goals of care through palliative consultation can allow for more appropriate selection of interventions and diagnostics, thereby minimizing iatrogenic risk by excluding unnecessary interventions and procedures.

Regarding effective care, in the *Crossing the Quality Chasm* report, the IOM cited a need for an evidence base guiding care and that patient values are integrated into clinical decision making.⁵ Palliative consultants are skilled in clarifying goals of care and, in doing so, integrating patient values into decision making. Assessment of palliative care needs in rural communities may identify areas where programs could be initiated to improve integration of patient values.

Focusing on patient-centered care, the IOM views the ideal health care system as one that "...gives patients abundant opportunities to be informed and involved in medical decision making and guides and supports those providing care in attending to the patient's physical and emotional needs and maintaining or improving their quality of life to the extent possible."⁵

Regarding timely care, the IOM states, "Improved access reduces cost in health care."⁵ Clarification of goals has the potential to focus attention on the priorities of care. In the *Crossing the Quality Chasm* report, the IOM cites overuse as compromising efficiency and safety. Understanding where palliative care is absent may support initiatives for program development to provide better patient-centered care. The absence of palliative consultation services in rural communities represents a failure to provide equitable care.

LITERATURE REVIEW

A review of the literature was performed to seek out existing telemedicine palliative programs, as well as information pertaining to the value of family meetings, quality of life, and cost using Ovid, MEDLINE, and CINAHL. There is limited information pertaining to inpatient palliative telemedicine because established inpatient-to-inpatient palliative telemedicine services are exceedingly rare.

Del Gaudio et al⁶ explored what helps or contributes to psychological morbidity in families caring for a dying relative who received palliative counseling. In this qualitative study, the researchers recorded 2 sessions per family for 74 family meetings and coded the data with the Family Focused Grief Therapy Model. The authors found that families with poor communication and teamwork had higher psychological morbidity.⁶ The act of counseling can be beneficial to enlightening family communication dynamics and serve as a therapeutic intervention.

Enguidanos et al⁷ completed a qualitative study using a phenomenological framework to explore family perceptions of inpatient palliative consult services on impacting the understanding of patient condition, knowledge of options, and decision-making ability. A semistructured interview protocol was used for 23 families of seriously ill patients purposely recruited from a community hospital.

The authors found that family members report improved communication and knowledge, which facilitated decision-making capacity.⁷ The study also noted some areas of conflict or inconsistent information between palliative care and the attending physician, leading to the recommendation that attending physicians be included in family meetings.⁷

The Improving Palliative Care in the Intensive Care Unit initiative was developed to improve communication regarding goals of care and to align treatment with these goals. This included assessing patient values, managing symptoms, and aiding in transitions of care. Nelson et al⁸ developed a consensus report from a MEDLINE review and expert opinions from the Improving Palliative Care in the Intensive Care Unit advisory board describing models of palliative care programs in the ICU. Two models for palliative care intervention are consultative or integrative.⁸ In the consultative models, palliative care providers engage in working with ICU patients and families identified as being at highest risk of poor outcomes. Recommendations include an assessment of available expertise, key stakeholders, and local practice culture.⁸

Fox⁹ completed a review of the literature, examining quantitative and qualitative studies on the role of nurses in ICU communication as members of a multidisciplinary team. This review of the literature, including 35 peer-reviewed publications and guidelines, again supported historic findings that families rank communication as a top priority.⁹ Communication during end-of-life care was identified as an essential component of care and integral in reducing psychological distress. Fox⁹ identified palliative care as a resource for the ICU nurse and asserted that it should be available at all hospitals. The author saw a mentoring relationship between ICU nurses and advanced practice palliative nurses as a means to improve communication.⁹

Picker et al¹⁰ conducted a prospective randomized trial comparing rapid response team (RRT) and palliative consultation versus RRT alone. Early warning triggers were used to alert the RRT of a clinically compromised patient. The RRT consisted of a nurse, third-year resident, and respiratory therapist. The study population consisted of 206 patients, with 89 in the intervention group and 117 in the control group.¹⁰

Picker et al¹⁰ found that changes in code status occurred earlier in the palliative care group. The number of patients transferred to the ICU was also reduced in the intervention group (12.4% vs 27.4%, $P = .009$).¹⁰ The length of ICU stay



and hospital mortality were similar between those receiving a palliative consultation and those in the control group.

Lynch¹¹ examined access to palliative and hospice care in rural areas. A review of literature was completed evaluating the historical evolution of hospice care since creation of the Medicare benefit in 1982. Barriers to access were cited as including limited providing facilities, access to supplies, and drive times for staff.¹¹ Zip codes that did not border urban zip codes provided services only 24% of the time.¹¹

The literature suggests that reduced community wealth, low population density, age, and nonwhite ethnicity are associated with low availability of hospice and palliative care services.¹¹ The reasons behind these health disparities may include hospice-inclusion criteria, provider availability, and cultural factors in accepting or offering services.¹¹ These barriers were more pronounced in rural settings. Recommendations include elimination of barriers for nurse practitioners certifying hospice eligibility and broadening inclusion criteria. In the 26 articles reviewed, Lynch¹¹ cited poor differentiation between hospice and palliative care as a limitation.

Lupu¹² reported work with the American Academy of Hospice and Palliative Medicine Workforce Task Force to better understand the availability of hospice and palliative medicine physicians in comparison to national need. The task force found an estimated 1700 full-time hospice and palliative medicine physician providers and an estimated need between 4487 and 10 810 providers.¹² The staffing needs for long-term-care setting or home-based palliative care programs are excluded from the projection. While it found an acute palliative physician staffing shortage, the study fails to take into account the engagement of nursing or advanced certified hospice and palliative nurse practitioners.

Menon et al¹³ observe that critically ill patients with poor prognosis were being transferred from rural hospitals to a tertiary hospital in Vermont. Starting in 2008, they began utilizing telemedicine to engage in hospital-to-hospital palliative consultation to clarify family goals of care prior to transfer. The authors conducted a retrospective data review to more closely examine cases from 2008 to 2009. The transferring provider, patient's family, receiving critical care attending physician, palliative care clinician, and social worker were involved in a total of 12 telemedicine consultations.¹³ Following consultation, 33% of families declined transfer favoring local care or hospice transition.¹³ Of the patients who underwent a transfer to the tertiary center, 88% ultimately transferred back to local care. While noting sample size limitations, Menon et al¹³ felt palliative telemedicine consultation between centers was feasible and inferred a reduction in cost and psychosocial burden to patients and family.

Head et al¹⁴ conducted a systematic review of patient-reported outcomes in the use of telehealth in palliative care. This review included 11 qualitative studies between 2006 and 2016 in the home setting. Patient health condi-

tions included advanced cancer, end-stage renal disease, heart failure, unnamed comorbidities, and hospice patients.¹⁴ The authors observed findings of equitable or improved symptom management, disease understanding, and communication along with reduced anxiety and depression.¹⁴ The majority of the telehealth interventions were nurse driven and supported by a multidisciplinary team. There was an overall improved quality of life and reduction in readmission associated with palliative telehealth.¹⁴

Worster and Swartz¹⁵ reviewed the palliative care literature in relation to palliative care, telemedicine, and palliative care access for the oncology population. The authors cite the shortage of palliative care providers in the United States as 1 per 1200 persons living with serious illness.¹⁵ The lack of access to palliative services is most acute in the rural setting. The researchers find support for the assertion that palliative care improves quality of life, reduces burdens faced by care providers, and in some circumstances increases life expectancy.¹⁵

The authors state, "...increased attention to symptom management and goals of care from a palliative care perspective is a necessary step to improve quality of life. Telemedicine may prove to be an indispensable part of cancer patient care going forward."¹⁵ There is a greater use of palliative telemedicine and oncology collaboration in the United Kingdom compared with the United States. This review observed that nurses were closely involved in symptom management monitoring in the home setting.¹⁵ The reviewers note that oncologists and palliative care specialists have found partnerships in patient care to be positive for team members and patients.¹⁵

Morrison et al² studied the effect of palliative engagement on costs of patient care. In this study, the researchers reviewed the data for Medicare patient admissions between 2004 and 2007 at 4 New York State hospitals. The patients included in the retrospective data review include those with a list of comorbidities appropriate for a palliative care consultation.² The patients were matched to a group receiving usual care. For patients receiving palliative care who were discharged alive, less time was spent in the ICU, and a \$4098 cost per admission savings was noted ($P = .04$).² For patients who died in the hospital after a palliative consult, the cost savings are comparatively greater at \$7563 ($P = .02$).² The researchers utilize these findings to project what state-wide cost savings might be annually if 2% to 6% of hospitalized Medicaid patients receive palliative care. This estimate was between \$84 million to \$252 million per year.²

May et al¹⁶ conducted a prospective observational study at 5 hospital centers focused on 3218 patients with a cancer diagnosis between 2007 and 2011. This study explores whether the timing of a palliative care team consultation results in a difference in direct cost savings. The intervention was a specialist-led palliative care team compared with a usual-care group. Patient property score kernels were



used to match patients between groups.¹⁶ May et al¹⁶ found that there are cost savings associated with earlier palliative care consultation.¹⁶ A 14% cost reduction, \$1312, was observed if consultation occurred by day 6 of hospital course ($P = .04$). A greater cost reduction of 24%, or \$2280, was observed for patients receiving consultation within 2 days of admission ($P < 0.001$).¹⁶

METHODS

The study design was a descriptive, correlational, retrospective data analysis utilizing data collected by the PHC4. Data were collected following institutional review board approval through DeSales University in association with its doctorate of nursing program. Readmission data for 6 hospitals were obtained through PHC4's data request process. The data consist of the last quarter of 2014 and the entirety of 2015 for 3 hospitals with a palliative care program and 3 hospitals without a palliative consult team among relevant selected diagnoses. Selected diagnoses are located in Supplemental Digital Content 1 (see Supplemental Digital Content 1, <http://links.lww.com/JHPN/A15>). The PHC4 disclaimer is available at the following link (see Supplemental Digital Content 2, <http://links.lww.com/JHPN/A16>).

Study Population

The target population included adult patients who were admitted and would have been appropriate for palliative consultation. Appropriateness for palliative care consultation was identified by *ICD-9* codes for complaints leading to admission. Exclusion criteria was the lack of a palliative care appropriate diagnosis, among their top 6 diagnoses, during the study period. See Supplemental Digital Content 1 (see Supplemental Digital Content 1, <http://links.lww.com/JHPN/A15>) for pertinent *ICD-9* codes. The included hospitals were selected because they repre-

sent regional coverage for health care and commonly transfer care for more complex cases between the rural hospital and regional medical centers. In addition, they were purposefully selected because of the presence and absence of established palliative care programs. There is no palliative telemedicine program between selected hospitals.

Palliative consult hospitals:

1. St Luke's Hospital, Ostrum St, Bethlehem, Pennsylvania
2. Lehigh Valley Hospital Cedar Crest, Allentown, Pennsylvania
3. Lehigh Valley Hospital, Muhlenberg, Bethlehem, Pennsylvania

Nonpalliative consult hospitals:

1. Lehigh Valley Hospital, Hazleton, Pennsylvania
2. Schuylkill Medical Center, Pottsville, Pennsylvania
3. St Luke's Miner's Hospital, Coaldale, Pennsylvania

Data Analysis

Descriptive statistics are used to quantify the rural need for palliative services. χ^2 statistics were used for a comparative analysis of readmission rates for palliative appropriate diagnostic groups between programs with a palliative service and those without. A secondary analysis was conducted using χ^2 for a comparative analysis of readmission rates in patients who had a dual exposure to hospitals without a palliative program and those with a program.

RESULTS

There were 6140 patients carrying a palliative-consult appropriate diagnosis identified by *ICD-9* codes in the selected hospitals (Table 1). The number of admissions per study period ranged from 1 to 22 admissions, with a mean of 2.52 and SD of 2.113 (Table 2).

There were 1394 index patients admitted at the 3 rural, nonpalliative hospitals. There were 4746 index patients

TABLE 1 Index Patient Distribution

Hospital	Index Total	Percent	Valid Percent	Cumulative Percent
Palliative hospitals				
LVHN Cedar Crest	2306	37.6	37.6	37.6
St Luke's Ostrum	1640	26.7	26.7	64.3
LVHN Muhlenberg	800	13.0	13.0	77.3
Nonpalliative hospitals				
LVHN Schuylkill	638	10.4	10.4	87.7
LVHN Hazleton	558	9.1	9.1	96.8
St Luke's Miners	198	3.2	3.2	100.0
Total	6140	100.0	100.0	100.0

Abbreviation: LVHN, Lehigh Valley Health Network.



TABLE 2 Frequency of Admissions

Admission Frequency	No. of Patients	Valid Percent	Cumulative Percent
1	2511	40.9	40.9
2	1486	24.2	65.1
3	845	13.8	78.9
4	517	8.4	87.3
5	306	5.0	92.3
6	157	2.6	94.8
7	110	1.8	96.6
8	65	1.1	97.7
9	41	0.7	98.3
10	31	0.5	98.8
11	25	0.4	99.3
12	13	0.2	99.5
13	8	0.1	99.6
14	10	0.2	99.8
15	3	0.0	99.8
16	3	0.0	99.9
17	3	0.0	99.9
18	3	0.0	100.0
19	1	0.0	100.0
20	1	0.0	100.0
22	1	0.0	100.0
Total	6140	100.0	100.0

admitted at the 3 tertiary hospitals possessing a palliative care program.

During the study period, there were 13 928 readmissions among all hospitals. Over the course of the study period, the rural, nonpalliative hospitals saw 3369 readmissions, whereas the hospitals with a palliative program saw 10 559 readmissions (Table 3). The most common frequency of readmission is a single visit, and 92.3% of patients were encountered 5 or fewer times in the study period.

An analysis of correlation between readmission rates and the existence of a palliative care program was completed. Patient readmissions refer to those occurring during the study period and not the commonly observed 30-day interval. Index patients and subsequent readmissions for patients who first presented in the last quarter of 2015 were excluded because there was insufficient time to track readmissions in the final quarter of the data set. The analysis was run including patients who had received care in hospitals with both palliative and without palliative consult programs. The analysis was run again, excluding patients with a dual exposure to both hospital groups (Table 4).

DISCUSSION

Data support the existence of a patient population that could benefit from palliative care consult services at hospitals that do not have such a program. The literature indicates a limited availability of palliative care services.^{11,12,15} Development of a palliative telemedicine consult program has the potential to leverage the multidisciplinary resources of mature palliative care teams across geographic distances.¹³⁻¹⁵

When examining readmission rates and excluding patients who were exposed to both palliative and nonpalliative hospital groups, there is a lower rate of readmission in the palliative care hospital group. Rural nonpalliative hospitals saw a rate of 58.3% versus 52.6% at hospitals

TABLE 3 Hospital Readmission Distribution

Hospital	Readmission No.	Percent	Valid Percent	Cumulative Percent
Palliative hospitals				
LVHN Cedar Crest	4982	35.8	35.8	35.8
LVHN Muhlenberg	1961	14.1	14.1	49.9
St Luke's Ostrum	3616	26.0	26.0	75.9
Nonpalliative hospitals				
LVHN Schuylkill	1510	10.8	10.8	86.7
St Luke's Miner's	463	3.3	3.3	90
LVHN Hazleton	1396	10.0	10.0	100
Total	13 928	100.0	100.0	100.0

Abbreviation: LVHN, Lehigh Valley Health Network.

**TABLE 4 Palliative Care Readmission Correlation**

	Nonpalliative Hospitals	Palliative Hospitals	P
All readmissions	3508 (71.6%)	5813 (55.1%)	<.001
Excluding dual exposure	1751 (58.3%)	4436 (52.6%)	<.001

possessing a palliative care program (Table 4). This difference between palliative and nonpalliative hospital admissions of 5.79% represents a difference of 101 readmissions at nonpalliative hospitals over a similar period.

Historically, the sickest patients are often among those transferred from primary to tertiary centers. This may be reflected in the higher rate of readmission seen in the dual exposure population. In the dual-exposure group, there was a readmission rate of 71.6% in nonpalliative hospitals versus 55.1% at tertiary hospitals with a palliative care consult program. A difference of 16.5% equates to 578 readmissions in the nonpalliative care group over the study period.

LIMITATIONS

The primary goal of this work was an assessment of need for palliative consult services in the rural setting. Different rural communities may have different population health profiles and demographics potentially limiting the generalizability of these findings. The correlational analysis was done without case matching and does not control for variables such as income, health habits, age, gender, or access to specialist care.

RECOMMENDATIONS

The findings support an unmet need for a palliative consult service in rural hospitals. A review of the literature supports a positive impact of palliative telemedicine in the home setting. A viable cost-effective approach to meeting the inpatient need includes the use of existing telemedicine infrastructure between affiliated hospitals. Established palliative consult programs can leverage personnel and expertise across the geographic gap between tertiary hospitals and rural primary hospitals. The recommendation includes education for rural hospitals regarding the role and benefit of palliative consultation. This is envisioned as a period where a palliative care team introduces the service and assesses rural providers' needs by rounding at the rural hospitals. Rural providers and ICU nurses should be invited to witness the work of the established palliative care team at tertiary care centers. The establishment of palliative telemedicine pilot programs among affiliated hospitals should follow a collaborative multidisciplinary educational process. A starting point for program development should involve

engagement with critical care providers and nurses historically involved in transferring or accepting patients between institutions. This may include a segment of clinicians already skilled in tele-critical care.

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