

Does a palliative care consult decrease the cost of caring for hospitalized patients with dementia?

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ABSTRACT

Objective: Advanced dementia (AD) is a terminal disease. Palliative care is increasingly becoming of critical importance for patients afflicted with AD. The primary objective of this study was to compare pharmacy cost before and after a palliative care consultation (PCC) in patients with end-stage dementia. A secondary objective was to investigate the cost of particular types of medication before and after a PCC.

Method: This was a retrospective study of 60 hospitalized patients with end-stage dementia at a large academic tertiary care hospital from January 1, 2010 to October 1, 2011, in order to investigate pharmacy costs before and after a PCC. In addition to demographics, we carried out a comparison of the average daily pharmacy cost and comparison of the proportion of subjects taking each medication type (cardiac, analgesics, antibiotics, antipsychotics and antiemetics) before and after a PCC.

Results: There was a significant decrease in overall average daily pharmacy cost from before to after a PCC ($\$31.16 \pm 24.71$ vs. $\$20.83 \pm 19.56$; $p < 0.003$). There was also a significant difference in the proportion of subjects taking analgesics before and after PCC (55 vs. 73.3%; $p < 0.009$), with a significant average daily analgesic cost rise from pre- to post-PCC: $\$1.36 \pm 5.07$ (median = $\$0.05$) versus $\$2.35 \pm 5.35$ (median = $\$0.71$), respectively, $p < 0.011$; average daily antiemetics cost showed a moderate increase from pre- to post-PCC: $\$0.08 \pm 0.37$ (median = $\$0$) versus $\$0.23 \pm 0.75$ (median = $\$0$), respectively, $p < 0.047$.

Significance of results: Our findings indicate that PCC is associated with overall decreased medication cost in hospitalized AD patients. Additionally, receiving a PCC was related to greater use of pain medications in hospitalized dementia patients. Our study corroborates the benefits of palliative care team intervention in managing elderly hospitalized dementia patients.

KEYWORDS: Palliative Care Consult, End-of-life, Dementia, Pharmacy Costs

INTRODUCTION

Palliative care is increasingly becoming critically important for patients with advanced dementia (AD),

as this illness is common, devastating, and inevitably causes death. Worldwide estimates of dementia incidence are expected to increase from 35.6 million in 2010 to 115.4 million by 2050 (Prince & Jackson, 2009). One out of every three people over the age of 65 will die with dementia (Brayne et al., 2006). Despite these startling statistics, dementia is often not perceived as a fatal condition. As a result, many

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patients suffering from dementia do not receive appropriate end-of-life care but instead spend the last days of their lives in acute care settings (Ahronheim et al., 1996; McCarthy et al., 1997; Sampson et al., 2006).

Numerous studies have found that dementia patients often endure painful symptoms and treatments (Aminoff & Adunsky, 2005; Di Giulio et al., 2008; Franks et al., 2000; Mitchell et al., 2009; Shuster, 1998). In a study of 323 nursing home residents with AD, 46% developed dyspnea, 39% experienced pain, and 54.8% died within 18 months (Mitchell et al., 2009). Moreover, 40.7% of patients underwent at least one painful intervention such as parenteral therapy, tube feeding, or hospitalization during the last three months of life (Mitchell et al., 2009).

In a systematic literature review, Franks et al. (2000) revealed that 64% of dementia patients were in pain at the time of death. These findings were further supported by Aminoff and Adunsky (2005), who reported more than 63% of patients dying with a high level of suffering. They also reported that the experience of pain increased for patients with dementia as death approached.

In a study exploring the last month of life of patients with AD in long-term care institutions, 58% were physically restrained and approximately half had pressure sores (Di Giulio et al., 2008). Additionally, the researchers observed that, even during the last 48 hours of life, more than 20% were still tube-fed and 34% received medications intended to sustain life (Di Giulio et al., 2008).

Although AD is a terminal illness without a cure, palliative care for individuals suffering with the illness is consistently underutilized (Sachs et al., 2004; Sampson et al., 2005). Compared to cancer patients, those with advanced dementia receive interventions such as cardiopulmonary resuscitation much more frequently (45 vs. 15%), even though the likelihood of survival for these patients is very low (Herlitz et al., 2003; Mitchell et al., 2004). Ahronheim et al. (1996), for example, found that patients with dementia receive more enteral tube feeding than those with cancer. Feeding tubes are provided to more than a third of advanced dementia patients in nursing homes despite the lack of benefits stemming from such an intervention (Sorrell, 2010).

There are many reasons for this disparity: healthcare professionals do not perceive advanced dementia as a terminal illness; the level of awareness in patients with a six-month life expectancy is difficult to assess; and patients with dementia have limited ability to verbalize their preferences regarding end-of-life care (Michel et al., 2002; Sachs et al., 2004).

The costs associated with providing care for patients with dementia are approximately three

times higher than for those without the disease; in fact, the expense of healthcare costs for patients 65 and over in 2011 was estimated to be \$183 billion (Alzheimer's Association, 2012). These excessive costs can be partly attributed to the unnecessary interventions that AD patients often receive. Goldfeld and colleagues (2011) found that Medicare expenditures for nursing home residents with AD increased by as much as 65% during the last year of life due to the myriad aggressive interventions these patients have to endure despite poor survival expectations.

Numerous researchers have determined that providing a palliative care consult (PCC) can decrease such costs. Bendaly and coworkers (2008) found that the median charge for patients receiving a PCC was significantly less than for those who did not receive it (\$35,824 vs. 42,731, respectively). Morrison et al. (2008) determined that the net savings for patients discharged alive were \$1,696 in direct costs per admission and \$279 in direct costs per day for those who received palliative care when compared to those that received usual care; this included significant reductions in laboratory and intensive care unit costs. For patients within the group that died, the net savings were \$4,908 in costs per admission and \$374 in daily costs for patients who received palliative care compared to those that did not (Morrison et al., 2008). Smith et al. (2003) also found that costs were reduced when patients were transferred to a palliative care unit: daily charges and costs decreased by 66% overall and by 74% in medications, diagnostics and other expenditures. The study by Morrison et al. (2011) of Medicaid patients determined that palliative care consultations resulted in a \$6,900 decrease in hospital costs per admission. Patients that received a PCC spent less time in intensive care units and were less likely to die in them (Morrison et al., 2011).

Numerous investigators have called for more suitable care for AD patients, geared toward the relief of pain and suffering, as well as enhanced quality of life, comfort, and dignity (Sampson et al., 2011; Volicer, 2007). Palliative care consultations have shown promise in improving care for hospital patients, including those with dementia (Le & Watt, 2010; Manfredi et al., 2000). A recent study showed that early palliative care alongside cancer treatment provided patients with improved quality and length of life (Temel et al., 2010).

More research is required to gauge whether the benefits of palliative care can be generalized to AD patients. This population is particularly difficult to assess with regard to end-of-life preferences given compromised levels of awareness and their limited ability to communicate (Michel et al., 2002).

As the AD patient population continues to grow exponentially, it is imperative to identify what can be

done to improve care and decrease costs. Palliative care has been advocated as one solution for our disconnected and expensive healthcare system. There is a dearth of information examining the relationship between palliative care and costs in AD patients.

The primary objective of our study was to compare pharmacy cost before and after a PCC in patients with end-stage dementia. A secondary objective was to investigate the cost of commonly used medication classes, before and after the PCC, to gauge if more appropriate (pain-relieving) medication was provided to patients as a result of the PCC.

METHODS

This was a retrospective study of hospitalized patients with end-stage dementia at a large academic tertiary care hospital in the New York metropolitan area from January 1, 2010 to October 1, 2011. A chart review of approximately 200 patients was conducted to investigate the pharmacy cost before and after a PCC (pre- and post-PCC). Out of the 200 patients reviewed, only 60 had sufficient clinical documentation of dementia and the presence of a formal PCC in their records available for review. Since the PCC may have occurred at anytime during the morning or afternoon shift, the nursing medication pickup may have also occurred at any point during the day. Therefore, we did not include the actual day of PCC in the medication cost analysis. The variables collected included: age, gender, ethnicity, date of admission, date of PCC, date of discharge, discharge status, discharge disposition, pharmacy cost before and after PCC, and presence or absence of advance directives. Data were recorded for total cost and the cost of each medication class (i.e. cardiac, analgesics, antibiotics, antipsychotics, and antiemetics).

Comparison of the average daily pharmacy cost (overall and according to medication type) before and after a PCC was carried out using a signed rank test. Comparison of the proportion of subjects taking each medication type (cardiovascular, analgesics, antibiotics, antipsychotics and antiemetics) before and after PCC was carried out using McNemar's test. The pharmacy cost pre- and post-PCC was calculated as an average daily cost per medication class (i.e., total cost divided by number of days). The difference in average daily pharmacy cost (overall and according to medication type) between pre- and post-PCC was calculated as the difference of the average daily cost in each era period. The average daily cost in the pre-PCC period was calculated by dividing the total pharmacy cost by number of pre-PCC days. Similarly, the average daily cost in the post-PCC period was calculated by dividing the total pharmacy cost by number of post-PCC days.

We included only those hospitalized patients with advanced dementia at a large academic tertiary care hospital in the New York metropolitan area from January 1, 2010 to October 1, 2011 with available pharmacy cost records.

RESULTS

Out of the 60 patients in the study, 27.1% were male and 72.9% female (Table 1). The majority were white (54.2%), followed by black (20.3%), Asian (17%), and Hispanic (8.5%). Eighty-seven percent were discharged alive, and 13.3% died; 37.3% (19/51) of the discharged patients were transferred to skilled nursing facilities; 21.6% (11/51) went home with home care services and 17.7% (9/51) with home hospice. Most patients (66.7%) had a do-not-resuscitate (DNR) order, with 38.3% signing it after they received a PCC. As can be seen in Table 2, the mean (\pm SD) age at admission was 86.1 ± 6.9 years (median = 87 years; range 70–100), and the median time between admission and PCC was 3 days, with a range of 1–25.

Table 3 shows average daily pharmacy costs pre- and post-PCC. The average daily overall cost in the

Table 1. Patient demographics, DNR, comorbidities, and discharge disposition

	Percent	N = 60
Gender		
Male	27.1%	(16/59)
Female	72.9%	(43/59)
Ethnicity		
White	54.2%	(32/59)
Black	20.3%	(12/59)
Hispanic	8.5%	(5/59)
Asian	17.0%	(10/59)
DNR		
DNR not signed	33.3%	(20/60)
DNR signed post-PCC	38.3%	(23/60)
DNR signed pre-PCC	28.3%	(17/60)
Comorbidities		
Hypertension	71.2%	(42/59)
Congestive heart failure	8.5%	(5/59)
Chronic obstructive pulmonary disease	3.4%	(2/59)
Cerebrovascular accident	30.5%	(18/59)
Diabetes mellitus	45.8%	(27/59)
Depression	18.6%	(11/59)
Discharge disposition		
Home	2.0%	(1/51)
Home with home care	21.6%	(11/51)
Home with hospice	17.7%	(9/51)
Hospice inpatient	13.7%	(7/51)
Skilled nursing facility	37.3%	(19/51)
Rehabilitation	7.8%	(4/51)

Note: DNR refers to "do not resuscitate."

Table 2. Age, days to palliative care consult (PCC) and after PCC

	N	Mean \pm SD	Median	Minimum	Maximum
Age	59	86.1 \pm 6.9	87	70	100
Difference in number of days between post- and pre-PCC	60	0.9 \pm 6.2	1	-21	28
Days between admission and PCC	60	4.0 \pm 4.2	3	1	25
Days between PCC and discharge	60	4.9 \pm 4.8	4	-4	30

Note: PCC refers to palliative care consult.

Table 3. Average daily pharmacy costs pre- and post-palliative care consult (PCC)

	N	Pre-PCC Cost	Post-PCC Cost	p Value
Overall mean \pm SD	60	\$31.16 \pm 24.71	\$20.83 \pm 19.56	$p < 0.003$
Overall median	60	\$27.60	\$18.05	
Cardiac mean \pm SD	60	\$1.15 \pm 2.75	\$0.71 \pm \$1.36	$p = 0.689$
Cardiac median	60	\$0.15	\$0.16	
Analgesic mean \pm SD	60	\$1.36 \pm 5.07	\$2.35 \pm 5.35	$p < 0.011$
Analgesic median	60	\$0.05	\$0.71	
Antibiotic mean \pm SD	60	\$9.32 \pm 14.94	\$6.42 \pm 10.65	$p = 0.165$
Antibiotic median	60	\$3.10	\$2.06	
Antipsychotic mean \pm SD	60	\$3.04 \pm 5.49	\$3.15 \pm 5.68	$p = 0.489$
Antipsychotic median	60	\$0.29	\$0.38	
Antiemetic mean \pm SD	60	\$0.08 \pm 0.37	\$0.23 \pm 0.75	$p < 0.047$
Antiemetic median	60	\$0.00	\$0.00	

Note: p values refer to pre- versus post-PCC average daily medication costs and were considered significant at less than 0.05.

post-PCC period was significantly lower than the average daily overall cost in the pre-PCC period (mean \pm SD: \$31.16 \pm 24.71; median = \$27.60 vs. \$20.83 \pm 19.56; median = \$18.05; $p < 0.003$). There was a decrease (but not significant) in the average daily antibiotic class cost from pre- to post-PCC (\$9.32 \pm 14.94; median = \$3.10 vs. \$6.42 \pm 10.65; median = \$2.06; $p = 0.165$), respectively. There was a nonsignificant decrease in the average daily cardiac medication cost from pre- to post-PCC: \$1.15 \pm 2.75 (median = \$0.15) vs. \$0.71 \pm 1.36 (median = \$0.16), respectively; $p = 0.689$. There was a significant increase in average daily analgesic cost from pre- to post-PCC: \$1.36 \pm 5.07 (median = \$0.05) versus \$2.35 \pm 5.35 (median = \$0.71), respectively; $p < 0.011$. The average daily antipsychotic cost was \$3.04 \pm 5.49 (median = \$0.29) versus \$3.15 \pm 5.68 (median = \$0.38) pre- and post-PCC, respectively, $p = 0.489$. There was a moderate increase in average daily antiemetics cost from pre- to post-PCC: \$0.08 \pm 0.37 (median = \$0) versus \$0.23 \pm 0.75 (median = \$0), respectively; $p < 0.047$.

With regard to proportions of subjects taking particular medications before and after PCC, there was no significant difference between subjects taking antipsychotics (61.7 vs. 63.3%; $p < 0.71$), cardiac medications (60.0 vs. 63.3%; $p < 0.48$), antibiotics (68.3 vs.

68.3%; $p = 1.0$), and antiemetics (8.33 vs. 11.67%; $p < 0.32$), respectively. However, there was a significant difference in the proportion of subjects taking analgesics before and after the PCC (55.0 vs. 73.3%; $p = 0.009$), respectively.

DISCUSSION

The main purpose of our study was to investigate if a PCC was associated with lower pharmacy costs and to gauge which medications were utilized more or less frequently after a PCC in a sample of AD patients. Our findings demonstrate that a PCC is associated with lower overall pharmacy costs. However, there was a higher use of pain-alleviating medication.

The results of our study have major implications for healthcare providers given the exponential growth in the number of seniors and the current impetus for hospitals to cut costs while simultaneously improving quality of care. Previous research has demonstrated that AD patients are not provided with palliative care with the same frequency as other patients, such as those with cancer, but instead often undergo aggressive and expensive treatments that are nonetheless futile (Ahronheim et al., 1996; Hertz et al., 2003; Mitchell et al., 2004). The present

study demonstrates that a palliative care consult can lead to more appropriate treatment that alleviates distressing symptoms and at the same time decreases overall pharmacy costs. Additionally, 31.4% of patients in this study were discharged to home hospice and inpatient hospice, which further decreased costs related to readmission to acute care facilities.

Our study is not without limitations. The sample size for this study was determined based on the availability of charts and resources and not on formal power calculations. Additionally, the chart-review methodology we utilized can provide incomplete data due to missing charts or unrecorded information and does not allow for establishing cause-and-effect relationships (Pan et al., 2005). Conversely, chart-review methodology does allow for collection of rich and readily available data that may not be accessible and/or gathered ethically through other approaches (e.g., random assignment) (Gearing et al., 2006).

CONCLUSION

Palliative care consultation was found to be significantly associated with overall pharmacy cost reductions and increased use of pain-relieving medication. Given the large variability in medication costs of this population, larger, multisite samples should be utilized in future research. This study is the first to support the provision of PCC intervention to improve care and decrease pharmacy-related costs for patients with dementia.

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