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Specialty Palliative Care Consultations for Nursing Home Residents with Dementia

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Abstract

Context—U.S. nursing home (NH) residents with dementia have limited access to specialty palliative care beyond Medicare hospice.

Objectives—To examine the value of expanded palliative care access for NH residents with moderate to very severe dementia.

Methods—We merged palliative care consultation data in 31 NHs in two states to Medicare data to identify residents with consultations, moderate to very severe dementia, and deaths in 2006–2010. Initial palliative consultations were identified as occurring later and earlier (1–30 days and 31–180 days before death, respectively). Three controls for each consultation recipient were selected using propensity-score matching. Weighted multivariate analyses evaluated the effect of consultations on hospital or acute care use 7 and 30 days before death, and on (potentially) burdensome transitions (i.e., hospital or hospice admission 3 days before death or two plus acute care transitions 30 days before death).

Results—With earlier consultation (versus no consultation), hospitalization rates in the 7 days before death were on average 13.2 percentage points lower (95% confidence interval (CI): −21.8%, −4.7%); and, with later consultation 5.9 percentage points lower (95% CI: −13.7%, +4.9%). For earlier consultations (versus no consultations), rates were 18.4 percentage points

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lower (95% CI: −28.5%, −8.4%) for hospitalizations and 11.9 lower (95% CI: −20.7%, −3.1%) for emergency room visits 30 days before death; they were 20.2 percentage points lower (95% CI: −28.5%, −12.0%) for burdensome transitions.

Conclusion—Consultations appear to reduce acute care use and (potentially) burdensome transitions for dying residents with dementia. Reductions were greater when consultations were earlier.

Keywords

palliative care; consultations; hospice; NH; hospitalizations; burdensome transitions

Introduction

Half of United States (U.S.) nursing home (NH) residents have dementia diagnoses,(1) as do half of persons who die in NHs.(2) To provide specialty palliative care to these residents and their families, palliative care beyond Medicare's hospice benefit has been advocated.(3, 4) The Institute of Medicine(5) defines palliative care as that which ". . . provides relief from pain and other symptoms, supports quality of life, and is focused on patients with serious advanced illness and their families,"(5) and it recommends access to specialty palliative care across care settings for persons with serious advanced illness such as residents with dementia.

Access to comprehensive palliative care provided through the Medicare hospice benefit has increased substantially over time for NH residents with dementia.(6) Still, over half of Medicare beneficiaries with dementia in NHs do not access hospice prior to death.(6) Also, of beneficiaries with dementia accessing hospice, 25 percent do so in the last eight days of life and 10 percent enroll over a year before death.(7) This pattern of care emanates in part from the Medicare hospice benefit's eligibility criterion of a six-month physician-certified terminal prognosis (if the disease runs its normal course) and its required forfeiture of Medicare Part A benefits (including hospital and skilled nursing facility care). These requirements are particularly problematic for dementia residents given the known inaccuracy in estimating dementia prognoses,(8) and the high proportion of dementia residents who receive Medicare skilled nursing facility care after (re)hospitalizations and near death.(9, 10) Therefore, the provision of nonhospice specialty palliative care could fill the need for palliative care for NH residents with dementia when Medicare hospice is not allowable or desired.

Research focusing primarily on persons with advanced cancer has shown access to palliative care specialists in hospital or outpatient settings is associated with better symptom management, less use of hospitals, and less intensive care within hospitals.(11–15) In NHs, research has shown hospice palliative care is associated with better care processes, outcomes and fewer end-of-life hospitalizations for persons with dementia,(6, 9) and palliative care intervention studies focusing on persons with advanced dementia have shown improvements in care processes.(16–18) Our recent observational study of the effect of specialty palliative care consultations (i.e., consultations by external specialists, primarily nurse practitioners with palliative care expertise) for a population of NH residents, showed residents with

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consultations, compared to propensity-score (pscore) matched controls with no consultations, had lower end-of-life use of hospitals and emergency rooms, and fewer (potentially) burdensome end-of-life transitions.(19)

Given that our previous study's intent(20) was to examine the effect of access to palliative care consultations for a study population of NH decedents and that the use of separate pscore matching and estimation models are preferred to examine effects for subgroups of interest, the current study focuses on the important NH population of decedents with moderate to very severe (advanced) dementia. This analysis is especially important for this population because of the known risks associated with hospitalization for persons with dementia,(21, 22) and the limited benefit of interventions that often occur when persons with advanced dementia are hospitalized.(23) This retrospective cohort study includes residents who died in study NHs in 2006–2010 and uses pscore matched analyses to test if dementia residents with consultations (compared to their matched controls with dementia) had lower end-of-life use of hospitals and emergency rooms and lower (potentially) burdensome transitions, and whether the observed effects differed when initial consultations were further from death. Also, we compare Medicare expenditures for time periods prior to death and after initial palliative care consultations.

Methods

We used NH consultation data from two palliative care organizations in two U.S. states (North Carolina (NC) and Rhode Island (RI)). The NHs in which these consultations were provided were located in eight counties (two in NC and six in RI) where the organizations in the study years were the exclusive providers of specialty palliative care consultations. Collaboration with the providers was necessary since there is no Medicare payment stream for specialty palliative care consultations and thus no Medicare payment code(s) to validly identify consultation recipients. Prior to study commencement, we obtained a data use agreement (DUA) from the Centers for Medicare & Medicaid Services (CMS) and Health Insurance Portability and Accountability Act (HIPAA) waiver approvals from the two organizations sharing 2005–2010 NH consultation data. This study was approved by Brown University's Institutional Review Board.

Palliative care provider data were linked to Medicare enrollment and Part A claims data, as well as NH resident assessment Minimum Data Set (MDS) data.(24) The enrollment file contains data on vital status, Medicare eligibility, and Medicare Advantage enrollment. Part A claims data provides information including dates of service and diagnoses on hospital, skilled nursing facility (SNF), emergency room (ER), home health care and hospice use. Nursing home level aggregated resident characteristics from the MDS and data from the Online Survey, Certification and Reporting (OSCAR) provided information on NH characteristics.

As described in further detail elsewhere,(19) we began with a sample of 508 NH decedents with initial palliative care consultations in the last six months of life who were Medicare-eligible and not enrolled in Medicare Advantage in the last year of life, and who had a MDS assessment within 180 days prior to their initial consultation (index MDS). In this study, we

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include only those of the 508 residents who had moderate to very severe dementia at baseline. Residents identified as having a dementia diagnoses had a baseline MDS with a coded or identified ("checked") dementia diagnosis or any dementia diagnosis on a Part A claim in the last year of life (identified from ICD-9 diagnosis codes 290.XX, 291.2, 292.82, 294.1, 294.8, 294.10, 294.11, 331, 331.0, 331.00, 331.1, 331.11, 331.19, 331.2, and 331.82). We determined the level of cognitive impairment by using the Cognitive Performance Scale (CPS) score(25) derived from the baseline MDS. We included residents with dementia diagnoses and with a CPS score of 3 or greater, indicating moderate to very severe (advanced) cognitive impairment (217 decedents in 31 NHs).

To control for potential differences in preferences for life-sustaining treatments and sociodemographic and clinical characteristics, we chose pscore matched controls. Decedents, eligible to serve as controls came from the same NHs and timeframes, met the same inclusion criteria as residents with consults, and also had MDS assessments in time periods comparable to consultation recipients' baseline assessments. We first stratified the treatment sample into two treatment groups by days between the initial consultation and death to enable examination of the timing of palliative care: earlier initial consultations (31–180 days prior to death) and later initial consultations (1–30 days prior to death). Variables for pscore model inclusion were largely based on an earlier related research.(12, 13, 26–28) Thirteen consultation recipients were dropped from the sample due to either missing information on the covariates used for matching (n=9) or a lack of potential matches within their particular NH (n=4). Using propensity score matching with replacement, we identified three matched controls for 203 of the remaining 204 (99.5%) consultation decedents for a total of 429 propensity-matched controls. (See also Supplemental file.)

Variables of Interest

The treatment of interest was initial exposure to any specialty palliative care consultation in the last six months of life. Like other consultations, these consults are ordered by physicians often at the request of NH staff or families; unlike hospice, no enrollment is required.(29) Palliative care consultation visits at both study organizations are made by nurse practitioner palliative care specialists, under the supervision of certified palliative care physicians. While interdisciplinary palliative care team members visit residents when needs exist, such visits are not routinely provided or integral to this model. At both study sites, initial consultations typically include a review of diagnoses and prognoses and address symptom control needs. To ensure treatment consistent with preferences, specialists also review advance directives, if available, and discuss goals of care. Family meetings are a key component of many consultations. Similar to other studies,(11, 13, 14, 26, 30, 31) we considered hospice enrollment (after initial consultation) to be within the treatment pathway.

Study Outcomes

Outcomes were measured using Medicare claims. For both residents with earlier or later initial consultations the outcomes were any hospitalization in the last 7 days of life and any (potentially) burdensome end-of-life transition. A resident was considered to have had a burdensome transition if s/he had a hospitalization or hospice admission within three days of

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death or more than one hospitalization or ER visit in the last 30 days of life. For those with earlier initial consultations, outcomes also included any hospitalization or any ER visit (without subsequent hospitalization) in the last 30 days of life. We also compared total Medicare Part A expenditures (inpatient, outpatient, hospice, and SNF) standardized to 2007 dollars. As with our other outcomes, because we were interested in post-consultation time periods only, we compared expenditures in the last 7 days of life for both groups and expenditures in the last 30 days for residents with earlier initial consultations.

Covariates for Propensity-score Matching and Multivariate Models

Resident-level covariates were derived from the baseline MDS unless otherwise noted. Sociodemographic variables included age, gender, marital status (married vs. other), and race (non-white vs. white). Whether a NH stay was short or long (≥ 90 days) and preference variables indicating the presence or absence of do-not-resuscitate (DNR) and do-not-hospitalize (DNH) orders were also included. Functional impairment was represented by the activities of daily living (ADL) scale, ranging from 0 to 28 (higher values indicating greater impairment). The CPS reflected cognitive impairment, with scores for this study ranging from 3 to 6 indicating moderate (3), moderate severe (4), severe (5) and very severe (6) impairment. In addition, a variable denoting unstable, deteriorating, or declining cognitive or functional status was included as were variables to reflect the days between the baseline MDS and death. Cancer was defined using both the baseline MDS and Part A Medicare claims in the last year of life, as were congestive heart failure and chronic obstructive pulmonary disease which we included only when evaluating outcomes for residents receiving consultations later. Finally, we controlled for previous acute care use as defined by whether a resident had any hospitalizations 90 days prior to the baseline MDS.

Using aggregated MDS data, we created continuous variables reflecting a NH's percentage of non-white residents and its case mix severity, based on Medicare's Resource Utilization Groups (RUGS). Dichotomous (yes/no) NH-level variables from the OSCAR database included chain affiliation, for-profit status, the presence of an Alzheimer's unit, whether a NH's proportion of residents with dementia was above the median of all study NHs (in a given year), and whether it employed any nurse practitioner/physician assistant. Continuous OSCAR measures included the proportion of residents with Medicaid or Medicare as primary payer. Finally, a continuous variable represented the distance from the NH to the nearest hospital and state (RI or NC) and resident's year of death were represented by indicator variables.

Analyses

Propensity scores were derived from logistic regression models. Using Stata 14.2, pscore matching with replacement resulted in 112 consultation decedents and 259 (unduplicated) controls in the *later* consultation group and 91 decedents and 170 (unduplicated) controls in the *earlier* consultation group. Covariate balance was achieved by examining standardized differences and Kernal Density plots before and after matching (see Supplemental file).(32, 33)

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To evaluate outcomes, we controlled for any remaining confounding(34) by using weighted multivariate logistic regressions with most of the same variables used for matching, as appropriate to the modeled outcome. The weights were normalized weights generated by the pscore matching process, and the Wald X^2 test was used to assess fit of the weighted models. *Using Stata's margins command we determined average individual risk differences (average marginal effects).* To evaluate Medicare expenditures given the skewed nature of such data, we used generalized linear modeling with gamma distribution and a log link function in Stata.

Results

Decedents with palliative care consultations in the last 180 days of life were very different from the population of decedents considered to be potential matches (Table 1). Compared to their potential matches, residents with later initial consultations were older, more likely to be women, and 40.2% compared to 25.1% of potential matches had short NH stays (<90 days). Residents with earlier consultations, compared to their potential matches, were younger and less cognitively impaired; 84.6% with consultations versus 69.3% of potential matches had cognitive/ADL change (worsening or decline). At baseline, DNH orders were significantly less frequent for both groups of consultation recipients. Last, compared to potential matches, both groups of consultation recipients had higher rates of any hospitalization in the 90 days before their baseline MDS (Table 1).

After pscore matching, decedents with consultations were very similar to their matched controls (see Supplemental file). Among those with later initial consultations, the mean standardized difference between consultation residents and matched controls was 2.6 compared to a standardized difference of 17.1 before matching; and, among those with earlier consultations these standardized differences were 4.1 versus 25.7, respectively. (see Supplemental file).

Residents with consultations compared to their matched controls had lower adjusted rates of end-of-life hospitalizations, with the lowest rates and biggest differences between consultations recipients and controls when initial consultations were earlier (Table 2). With earlier consultation (versus no consultation), the individual risk of hospitalization in the 7 days before death was on average 13.2 percentage points lower (95% CI: −21.8%, −4.7%) while it was only 5.9 percentage points lower when consults were later (95% CI: −13.7%, +4.9%).

Adjusted hospitalization rates in the last 30 days of life were also lower for residents with earlier initial consultations (Table 2). Similarly, in the last 30 days of life adjusted ER admission rates were lower for residents with earlier consultations compared to matched controls (Table 2). Adjusted burdensome transition rates were also among residents with earlier consultations (compared to matched controls), with the average individual rate with consultation (versus no consultation) being 20.2 percentage points lower (95% CI: −28.5%, −12.0%). These average rates did not differ significantly when consultations were later (compared to no consult).

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Descriptive comparisons of Medicare Part A expenditures for residents with palliative care consultations compared to matched controls are shown on Tables 3 and 4. Unadjusted Medicare inpatient expenditures in the last 7 days of life were lower for consultation recipients compared to matched controls regardless of the timing of initial consultations. Also, for those with earlier initial consultations, Medicare hospice expenditures were higher in the last 7 and 30 days of life, compared to their matched controls.

In our adjusted analyses, (data not shown) we found residents with earlier initial consultations had lower total Medicare Part A expenditures in the last 7 days of life compared to matched controls, $2,938 (95% CI $2,768, $3,108) versus $3,399 (95% CI $3,203, $3,595); however, expenditures in the last 30 days of life were not significantly different. For residents with later consultations, total Medicare Part A expenditures in the last 7 days of life did not differ significantly from expenditures observed for matched controls.

Discussion

This study found NH residents with moderate to advanced dementia had lower acute care use and (potentially) burdensome transitions near the end-of-life when they received specialized palliative care consultations, compared to matched controls without consultations. Similar to results from the pscore matched analysis of a population of NH decedents, pscore matched analysis of residents with moderate to advanced dementia showed earlier initial palliative care consultations (31 to 180 days versus ≤30 days before death) were associated with greater reductions in acute care use. However, rate differences for residents with dementia and earlier consultations (compared to controls) were higher than observed in the previous study;(19) rates of (undesirable) outcomes were three times greater for controls compared to consultation recipients while they were two times greater when a population of NH decedents was studied. As with previous research, there was essentially no additional overall cost to Medicare associated with the receipt of specialized consultations. To our knowledge, this is the first study examining the effect of palliative care consultations for residents with moderate to advanced dementia. For this important and prevalent NH population, study findings suggest access to specialty palliative care consultations reduces residents' exposure to physically and emotionally stressful and (potentially) burdensome transitions without additional Medicare spending; and, this reduction is greater when initial consultations are earlier.

Experts recommend prudent decision making concerning hospital transfers of persons with dementia, and decision making that considers goals of care and stages of dementia;(22) and, studies document the risks and limited benefits of hospitalizing persons with advanced dementia.(21, 23) Our inclusion of only residents with moderate to very severe dementia together with the observed robust effects of receipt of specialty palliative care consultations suggest that the goals of care discussions and symptom management that occurs in conjunction with these consultations is effective in limiting acute care use for a wide range of residents dying with dementia. This is likely the case since goals of care conversations are not routinely conducted in many NHs;(35) however, documented treatment preferences often emanate from these conversations and NH knowledge of these preferences is associated with

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a lower likelihood of hospitalization.(36) Additionally, the palliative care expertise accessible with NH consultations may assist NHs to treat conditions which might otherwise lead to hospitalizations.(37) Still, we cannot discount the possibility that the receipt of specialty palliative care consultations is a marker of changes in preferences by residents/families or in physicians' approaches to care (prior to consultation receipt).

Specialty consultations appear to have expanded palliative care expertise to NH residents who either did not qualify for Medicare hospice using the eligibility guidelines(38) or who were receiving Medicare SNF care at the time of initial consultation. In fact, 58% of residents with later consultations (1–30 days before death) and 36% with earlier consultations (31–180 days before death) were receiving SNF care at the time of the initial consultation. At present there is not a NH palliative care consultation benefit under Medicare. However, given this study's findings such a benefit could prove of value to residents and Medicare, and such a benefit may motivate more providers to engage in NH consultation provision. Currently, consultations are billed as NH visits (through Medicare Part B) and these visit payments are reported to be insufficient to cover the personnel and administrative costs of consultation provision.(3, 29, 39)

The Medicare SNF barrier to hospice enrollment could be addressed by allowing Medicare beneficiaries to enroll in hospice and SNF simultaneously; and, a U.S. CMS ongoing demonstration study allows such dual enrollment.(40) Unfortunately, NH residents and persons with advanced dementia are not a focus of this study and enrollment requires a physician-certified six-month prognosis. Still, if this demonstration is successful, it is hoped CMS would consider expanding the benefit to NH residents who meet the eligibility requirements. Alternatively, to improve care for patients with advanced illness, legislation has been submitted to the U.S. Congress to allow Medicare payment for room and board for hospice enrollees who cannot remain in their homes and are not in inpatient hospice.(41) If enacted, this legislation could eliminate dementia residents' use of (perhaps contraindicated) Medicare SNF rehabilitation care solely because room and board is covered with Medicare SNF care. Neither of these efforts addresses the need for specialty palliative care prior to hospice eligibility and the associated difficulty in estimating dementia prognoses (often resulting in late hospice referrals).

As an observational study rather than a randomized controlled trial, this study cannot definitively make attributions regarding the cause/effect relationship between palliative care consultations and acute care use. However, the methods used were rigorous. Pscore caliper-matching corrected for the imbalance in characteristics of residents with and without consultations, and the characteristics of the NHs in which they resided, and residual potential confounding was controlled for in multivariate analyses.(34) Still, we did not match on NHs per se and unmeasured NH practices could potentially confound results; however, all study NHs were similar in that they all offered specialty palliative care consultations to residents. Also, while this study had a retrospective cohort design it compared outcomes across PC consultations and matched controls during a similar time period before death and examined outcomes only during the last 30 days of life, thus minimizing the bias that is a concern with such retrospective studies.(42) Additionally, we did not have data on "the dose" of palliative care (i.e., number of visits). However, initial

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consultation visits at both study sites were comparable and included goals of care discussions. Last, these findings are not necessarily generalizable beyond the population of nursing home residents studied.

In conclusion, findings suggest specialty palliative care consultations provided to NH residents with moderate to very severe dementia substantially reduced acute care use and (potentially) burdensome end-of-life transitions, and this reduction was dramatically larger when initial consultations were earlier. Given the potential risks and limited benefits of hospital use for NH residents with dementia, this model of palliative care is likely to enhance the quality of life of residents with moderate to advanced dementia without additional financial expenditures. Further study of this model through demonstration studies or practical clinical trials in the U.S. is recommended.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Baseline Characteristics: Residents with Later Initial Palliative Care (PC) Consultations (30 Days before death) and Earlier Initial PC Consultations (31 to 180 Days before Death), and Their Potential Matched Controls

	Timing of Initial Palliative Care Consultations			
	Later Consultations		Earlier Consultations	
Characteristics	**Potential Matches[a] (n=1586)**	**Palliative Care Consultations (n=112)**	**Potential Matches (n=1170)**	**Palliative Care Consultations (n=91)**
Age at baseline				
40 to 74	6.1%	4.5%	5.6%	15.4%
75 to 79	9.6%	16.1%	8.6%	11.0%
79 to 84	18.6%	25.0%	19.2%	27.5%
85 to 89	26.4%	17.0%	27.0%	23.1%
90 to 94	26.0%	28.6%	25.7%	16.5%
95 and older	13.2%	8.9%	13.9%	6.6%
Male	33.2%	42.9%*	29.2%	33.0%
Non-White	3.4%	6.3%	3.6%	7.7%
Married	23.6%	31.3%	21.7%	20.9%
Do-Not-Resuscitate Order	80.0%	80.4%	81.3%	76.9%
Do-Not-Hospitalize Order	16.1%	8.0%*	12.6%	4.4%*
Cancer	16.6%	19.6%	14.7%	9.9%
Cognitive Performance Scale				
Moderate/Moderate Severe Impairment (3–4)	58.3%	66.1%	67.4%	80.2%
Severe Impairment (5)	20.0%	21.4%	15.6%	11.0%
Very Severe Impairment (6)	21.8%	12.5%	16.9%	8.8%
ADL score[c]	21.82	20.98	20.42	19.27
Short NH Stay (<90 days)	25.1%	40.2%	13.6%	11.0%
Cognitive/ADL change[d]	73.9%	78.6%	69.3 %	84.6%
Any hospitalizations in 90 day prior to baseline	31.4%	51.8%	28.1%	52.8%

Abbreviations: ADL, activities of daily living; MDS, minimum data set; NH, nursing home; NP, nurse practitioners; PA, physician assistants

[a] Residents who died in the same study years and NHs and had the requisite Minimum Data Set assessment

[b] ADL score ranges from 0–28 where 0=independent and 28=totally dependent.

[c] Cognitive/ADL change represents unstable, worsening, or declining status.

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Table 2

Adjusted Rates and Average Individual Rate Differences with Receipt of Palliative Care Consultations: Residents with Later and Earlier Initial Palliative Care (PC) Consultations (1–30 and 31–180 Days before Death, Respectively) Compared to (3 to 1) Matched Controls

Outcomes	Rates with PC Consultations	Rates without PC Consultation	Average Individual Rate Differences[a,b] with PC Consultations (95% CI)
Hospitalization in *last 7 days* of life (%)			
Later Consultations[c]	11.6%	20.5%	−5.9% (−13.7%, +1.9%)
Earlier Consultations[d–h]	4.4%	18.3%	−13.2% (−21.8%, −4.7%)
Hospitalization in *last 30 days* of life (%)			
Earlier Consultations[d–f]	7.7%	24.5%	−18.4% (−28.5%, −8.4%)
ER visits in last 30 days of life (%)			
Earlier Consultations[d,e]	5.5%	17.6%	−11.9% (−20.7%, −3.1%)
Burdensome Transitions (%)			
Later Consultations[c]	25.9%	24.6%	−0.5% (−8.6%, +9.5%)
Earlier Consultations[d–f]	11.0%	31.5%	−20.2% (−28.5%, −12.0%)

[a] Derived from on multivariate models controlling for the following variables, unless otherwise noted: For Residents: at baseline, age (categorized), male, marital status (married vs other), non-White, do-not-resuscitate order, do-not-hospitalize order, cancer diagnoses, activities of daily living impairment (with quadratic term), cognitive impairment, stability of cognition and functioning; days between baseline assessment and death; any hospitalizations in the 90 days prior to baseline assessment, short stay status (fewer than 90 days), and year of death. For NHs: resident casemix, chain affiliation, profit status, employment of any nurse practitioner and/or physician assistant, proportion of residents on Medicare or Medicaid as primary payer, distance between NH and nearest hospital, indicator that the percent with dementia in the facility is greater than the median in a given year, and, location of NH (Rhode Island or North Carolina).

[b] Reflects the average of each individual's risk difference with and without a PC consultation (average marginal effects)

[c] Later consultations, n=112 for those with consults with 3 to 1 matched controls (with replacement)

[d] Earlier consultations, n=91 for those with consults with 3 to 1 matched controls (with replacement)

[e] In model the last 2 categories of age were collapsed as the last category perfectly predicted the outcome.

[f] In model removed DNH from the model as it perfectly predicted the outcome.

[g] *I* In model includes the proportion non-White and presence of an Alzheimer's unit at the NH level but does not include a person-level quadratic term for activities of daily living.

[h] egression analyses also controlled for the presence of congestive heart disease and chronic obstructive pulmonary disease.

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Table 3

Unadjusted Medicare Expenditures in the Last Seven Days of Life: By Residents with Later or Earlier Palliative Care (PC) Consultations (1–30 and 31–180 Days before Death, Respectively), and Their Matched Controls

Outcomes	With PC Consultation Expenditures, (95% CI)	Without PC Consultation Expenditures, (95% CI)
Total Expenditures in *last 7 days* of life ($)		
Later Consultations	4017 (3411, 4623)	4661 (4105, 5217)
Earlier Consultations	2773 (2247, 3299)	3465 (2974, 3957)
Inpatient Expenditures in *last 7 days* of life ($)		
Later Consultations	853 (429, 1276)	1850 (1372, 2328)
Earlier Consultations	374 (8, 739)	1383 (931, 1835)
Hospice Expenditures in *last 7 days* of life ($)		
Later Consultations	869 (627, 1112)	940 (764,1116)
Earlier Consultations	1695 (1352, 2038)	1071 (842, 1301)
Skilled Nursing Facility Expenditures in *last 7 days* of life ($)		
Later Consultations	2236 (1714, 2758)	1728 (1388, 2069)
Earlier Consultations	639 (318, 960)	842 (584, 1100)

* $p < .05$

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Table 4

Unadjusted Medicare Expenditures in the Last 30 Days of Life: For Residents with Earlier Initial Palliative Care Consultations (31–180 Days before Death), and Their Matched Controls

Outcomes	With PC Consultation Expenditures, (95% CI)	Without PC Consultation Expenditures, (95% CI)
Total Expenditures in *last 30 days* of life ($)	6,462 (5,272, 7,653)	6,372 (5,507, 7,236)
Inpatient Expenditures in *last 30 days* of life ($)	1,559 (682, 2,436)	2,224 (1,591, 2,857)
Hospice Expenditures in *last 30 days* of life ($)	2,800 (2,265, 3,335)	1,814 (1,433, 2,196)
Skilled Nursing Facility Expenditures in *last 30 days* of life ($)	1,920 (1,214, 2,626)	2,058 (1,511, 2,605)

* $p < .05$