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Advance Directives and Care Received by Older Nursing Home Residents

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Abstract

Background—Research shows variable success as to whether care provided aligns with individual patient preferences as reflected in their advance directives (AD).

Objective—We aimed to study AD status and subsequent care received in older nursing home (NH) residents deemed at risk for infections and care transitions: those with a urinary catheter (UC), feeding tube (FT) or both.

Design/subjects/measurements—A subgroup analysis of a prospective cohort of 90 residents with a UC and/or FT from 15 NHs in southeast Michigan. Outcomes assessed at enrollment and at 30-day intervals were hospitalizations and antibiotic use. ADs were divided as follows: 1) *comfort-oriented*: comfort measures only, no hospital transfer, 2) *palliative-oriented*: comfort focused, allowing hospital transfer (except ICU), antibiotic use, but no CPR, 3) *usual care*: full code, no limitations to care. We calculated incidences for these outcomes.

Results—Seventy-eight (87%) residents had ADs: 18 (23%) comfort-oriented, 32 (41%) palliative-oriented and 28 (36%) usual care. The groups did not differ regarding demographics, comorbidity, function, device presence or time in study. Using the usual care group as comparison, the comfort-oriented group was hospitalized at a similar rate (IR= 15.6/1000 follow-up-days versus IR=8.8/1000 follow-up-days, IRR 0.6 [95% CI, 0.3, 1.1], p-value 0.09) but received fewer antibiotics (IR=18.9/1000 follow-up-days versus IR=7.5/1000 follow-up-days, IRR 0.4 [95% CI, 0.2, 0.8], p-value 0.005).

Conclusion—NH residents with comfort-oriented ADs were hospitalized at a rate similar to those with usual care ADs but received fewer antibiotics, although the small sample size of this analysis suggests these findings deserve further study.

Keywords

nursing home; advance directives; older adults; urinary catheter; feeding tube; care processes

Author Disclosure Statement

No competing financial interests exist.

Introduction

Completing an advance directive (AD) such as a living will, a Physician Orders for Life-Sustaining Treatment (POLST), and/or assigning a durable power of attorney (DPOA) for health care decisions, are important steps in advance care planning (ACP), and meant to ensure that care reflects one's preferences.^{1, 2, 3} Overall, ADs are thought to influence the course of treatment provided near the end of life, however evidence is somewhat conflicting. Some studies provide evidence that having an AD may not substantially influence medical decision-making in seriously ill patients beyond naming a health care proxy^{4, 5} while others have found that having an AD is associated with care concordant with patient preferences, improved end of life care, and patient/family satisfaction.^{6, 7} Prior studies have shown that hospitalization of NH residents has the potential to be burdensome due to fragmentation of care, changes in management, diagnostic workup duplications and medical errors.⁸ In addition, it has been shown that chronically ill, functionally impaired nursing home NH residents carry a burden of multi-drug resistant gram negative organisms, more so if an indwelling device is present, often resulting in need for parenteral anti-infective therapy.^{9, 10}

Our aim was to describe aspects of care received by a population of multi-morbid, functionally impaired older NH residents and compare aspects of care received with care preferences as reflected by the residents' ADs. We chose a population of older nursing home residents with an indwelling device (urinary catheter (UC), feeding tube (FT) or both), anticipating these older adults will likely carry multiple comorbidities with associated functional impairments and increased rates of healthcare utilization.

Methods

Study design and population

We conducted a secondary data analysis of a prospective surveillance study involving 15 community-based NHs located in the southeast region of Michigan between October, 2005 and January, 2010. The University of Michigan and Veterans Affairs Ann Arbor Healthcare System Institutional Review Boards approved the project. The goal of the parent study was to quantify colonization with antimicrobial resistant organisms and infection attributable to indwelling devices in NH residents. Any NH resident in those facilities with or without a device (UC or FT or both) was eligible for the study. Written informed consent was obtained from all enrolled residents or from the individuals holding a durable power of attorney. Of the 483 NH residents with indwelling devices and their randomly selected no-device residents, 178 (37%) were enrolled in the parent study. Among those enrolled, 90 residents (51%) had an indwelling device. Seventy-eight (87%) of those residents had documented ADs. Some residents did not have a signed AD in their chart at the time of enrollment, and therefore their preferences were unknown. It is likely that these residents would have been considered "full code" as a default per facility policy until such time as a signed AD was obtained. In our analysis we included only those with an indwelling device and documented ADs. Of the 78 residents with devices, the majority (71.7%) had resided in the NH for less than 90 days at the time of the study enrollment while the rest had resided in the NH for 90 or more days at the time of study enrollment.

Baseline demographics

Clinical and demographic data were obtained performing primary data collection via chart abstraction by trained research assistants. Details for the parent study are published elsewhere.⁹ Age, gender, race, Charlson's comorbidity score, functional status using Lawton and Brody's Physical Self Maintenance Scale were obtained from the resident's chart.^{11,12} The Charlson Comorbidity Score is a method of categorizing comorbidities based on the International Classification of Diseases (ICD) diagnosis codes. Each comorbidity category has an associated weight, based on the adjusted risk of mortality or resource use, and the sum of all the weights results in a single comorbidity score for a patient. A score of zero indicates that no comorbidities were found. The higher the score, the more likely the predicted outcome will result in mortality or higher resource use. The Physical Self-Maintenance Scale (PSMS) was developed to gauge disability in an elderly population residing in the community or institution for use in planning and assessing treatment. The PSMS is a six item based on the ADL and then eight-items based on the IADL scale. A 5-point scale for responses ranges from total independence to total dependence. Device use in this study was defined as the presence of an indwelling UC and /or FT. Each resident was enrolled for up to one year or until he/she left the study for other reasons (discontinuation of device, voluntary self-removal, discharge from facility, or death). Follow-up days were equal to time in the study. Data at enrollment included looking at care retrospectively for 30 days prior to enrollment.

Advance directives

Trained research assistants obtained ADs via clinical chart review at the time of study enrollment. NHs participating in the study documented ADs using facility forms completed at the time of admission or a living will provided by the resident. For the purposes of our analysis we grouped ADs into 3 categories, depending on the care preferences noted in the admission AD documents: 1) *comfort-oriented*: comfort measures only, no hospital transfer, 2) *palliative-oriented*: focusing on comfort but allowing hospital transfer and antibiotic use, but no CPR and no ICU admission, 3) *usual care*: full code, allowing hospital transfer, ICU care, and full medical treatment.

Outcomes

At study enrollment and each subsequent 30-day follow-up visit, data on care received including hospital transfers and antibiotic use. Residents were considered hospitalized if they stayed at the hospital for at least one night. The use of any antibiotic was included in quantifying antibiotic administration. Mortality data was obtained via chart review.

Statistical analysis

We used Stata v.10 for our statistical analysis. Categorical variables were analyzed using the chi-squared or Fisher's exact test; continuous variables were analyzed using ANOVA. Incidence rates (IR) were defined as the number of hospital admissions and antibiotic use per 1000 follow-up-days. Incident rate ratios (IRR) were calculated as the incidence rate of each AD group divided by the incidence rate of the usual care group. A p-value of <0.05 was considered statistically significant.

Results

Baseline demographics and advance directive status

Seventy-eight (87%) of the 90 NH residents with an indwelling device had ADs recorded at enrollment. Figure 1 shows the distribution of the residents based on their ADs. Eighteen (23%) of these residents had comfort-oriented ADs, compared with 32 (41%) residents who had palliative-oriented ADs and 28 (36%) residents who requested usual care ADs. Forty-three (55%) of residents with an indwelling device were female and 71 (91%) were white (Table 1). The mean age was 79 years (SD 10.6), the mean co-morbidity score was 3.1 (SD 1.9), and the mean functional score was 21.1 (SD 5.1). Mean follow-up time in the study was 3.1 months, with 55 (71%) followed for less than 3 months, and 23 (29%) followed for more than 3 months. We found no significant differences between the three AD groups with regard to their demographics, device type and time in the study.

Device use

There were 43 (55%) residents with UCs, 25 (32%) with FTs and 10 (13%) with both present at baseline. See Table 1 for detailed description of the distribution of devices for each AD group.

Outcomes: hospital transfers

A total of 64 hospital transfers occurred among the three AD groups (Table 2). In the comfort-oriented AD group, 13 transfers occurred over 49 follow-up visits. In the palliative-oriented AD group 23 transfers occurred over 135 follow-up visits, while in the usual care AD group there were 28 transfers over 60 follow-up visits. Using the usual care AD group (IR= 15.6/1000 follow-up-days) as comparison, the incidence rate for hospital transfers was lower in the comfort-oriented AD group (IR=8.8/1000 follow-up-days, IRR 0.6 [95% CI, 0.3, 1.1], p-value 0.09) and significantly lower for the palliative-oriented AD group (IR=5.7/1000 follow-up-days, IRR 0.4 [95% CI, 0.2, 0.7], p-value <0.001).

Outcomes: antibiotic use

We found a total of 83 episodes of antibiotic use, divided as follows: in the comfort-oriented AD group 11 episodes over 49 follow-up visits, in the palliative-oriented AD group 38 episodes over 135 follow-up visits and in the usual AD group 34 episodes over 60 follow-up visits. As we expected, compared with the usual care AD group (IR=18.9/1000 follow-up-days) both the comfort-oriented AD group (IR=7.5/1000 follow-up-days, IRR 0.4 [95% CI, 0.2, 0.8], p-value 0.005) and the palliative-oriented AD group (IR=9.4/1000 follow-up-days, IRR 0.5 [95% CI, 0.3, 0.8], p-value 0.004) received significantly fewer antibiotics.

Mortality

Eight (44%) of the 18 residents in the comfort-oriented AD group were deceased by the end of the follow up period, seven of which died in the first 30 days after the enrollment. The mortality in the palliative-oriented AD group was four (13 %) and in the usual care AD group it was two (7%) by the end of the follow up period.

Discussion

Through our secondary analysis of this group of older NH residents with multiple co-morbid conditions, substantial functional impairment and an indwelling device (urinary catheter or a feeding tube), we are able to further describe important aspects of care received in the NH setting in light of resident care preferences as delineated in documented ADs. We note that although those residents with either comfort-oriented ADs or palliative-oriented ADs received fewer antibiotics when compared with the usual-care AD group, those with comfort-oriented ADs were still hospitalized at a rate not significantly different than the usual-care AD group. Additionally, we found that the vast majority (87%) of our prospective cohort of residents from 12 different nursing homes did have documented advance directives. Lastly, we found that the frequency of simultaneously having a UC and FT among our NH resident sample was highest in the comfort-oriented AD group.

Our finding that those in the comfort-oriented AD group were hospitalized at a rate that was not significantly different than the usual-care AD group is somewhat concerning. Although the small numbers in our study limits our analysis, this finding highlights that some residents with comfort-oriented ADs (which by our study definition included a “do not transfer to hospital” directive) were indeed transferred to the hospital. Our finding is consistent with recent studies of patients with advanced dementia showing that hospitalization in the last 90 days of life has increased in recent years and can be burdensome.^{8, 13} Others have shown that inappropriate hospital transfers of NH residents are common,¹⁴ although some regions have found that utilizing POLST advance directives have been effective in avoiding in-hospital death for people who wish for comfort.¹⁵ Other studies of long-term care residents have found inconsistencies between decisions to hospitalize and administer antibiotics and the care preferences delineated in discussions among family caregivers and physicians, possibly resulting in unwanted care.¹⁶ In long-term care nursing home residents, higher rates of do-not-resuscitate orders (as a measure of ACP) resulted in lower rates of terminal hospitalizations.¹⁷ Whether hospitalization of residents with comfort oriented ADs in our sample was in part due to change in goals for care or lack of ability to provide comfort care and symptom management within the NH is a plausible consideration, but from our study design and data we are not able to glean reasons for resident transfer to the hospital in enough granularity to report on this further.

Overall, our study residents in both comfort-oriented AD and palliative-oriented AD groups received significantly less antibiotics than the usual-care AD group. Although lower rates of antibiotic use in both of these groups are expected, it is also important to note that residents still received antibiotics in both these groups in which an emphasis on quality of life has been made the focus. While anti-infective therapy may be viewed as the standard of care for suspected infection, it can be inconsistent with particular care plans such as comfort-oriented care, and is not without risk.¹⁸ Moreover, the misperception that antibiotic use is benign in any circumstance is widespread, despite studies showing that chronically ill, functionally impaired long-term care residents are at high risk for colonization with multi-drug resistant gram-negative organisms¹⁰, frequently resulting in the use of parenteral anti-infective therapy at the end of life.^{19,20} Other studies including patients with malignancies at the end of their life have found high rates of antibiotic use.²¹ Data is limited and conflicting as to

whether such treatments result in improved level of comfort.^{22,23} Recently, POLST was found to lack impact on antibiotic administration in nursing home residents.²⁴ In that study, the rate of antibiotic use and the development of antimicrobial resistant organisms were similar among the comfort-focused and cure-focused groups.²⁴ Additional studies to explore the use of antibiotics with the intent to increase comfort are needed.

The large number of documented ADs in our study is comparable with recent literature reports about completion rates for ADs in NHs. In a recent study comparing consistency between treatments provided and orders on the POLST for nursing home residents, the completion rate for the POLST AD document was found to be 85%.²⁵

While we did not focus on the impact of the device on care received, we note NH residents in the comfort-oriented AD group had the highest frequency of simultaneously having both a UC and FT when compared to the palliative-oriented AD group and the usual-care AD group. Although at first glance, having comfort-oriented advance directives along with two indwelling devices may seem discordant with regard to aggressiveness of care, we also know that this scenario is not uncommon in everyday clinical practice. As we captured patients at various stages of their illness trajectories within the NH setting, this phenomenon may reflect those patients with advanced illness and substantial nursing needs, who are receiving comfort focused care. Although the bulk of literature on feeding tube use leading to potentially burdensome care has been most studied in those with advanced dementia (and the degree of cognitive impairment among our study participants is not known beyond a dementia diagnosis included in the Charlson's Comorbidity Score), we note that we studied a multi-morbid, functionally impaired group of NH residents who may not benefit from having an FT.^{26, 27,28} Recently POLST was found to have modest impact on FT use in nursing home residents who completed a "no feeding tube" order.²⁵ We do not have data to show if the FT was used in residents for whom comfort-focused care was preferred initially or if goals of care changed during the NH stay and the FT was left in place. The body of literature surrounding the use of UCs in patients with comfort-oriented care has been recently updated. Catheter placement is thought to add to one's comfort if the patient is incontinent and bed-bound.²⁹ In our study, in which all NH residents had an indwelling device, it is notable that the incidence rate of antibiotic use was lower in both the palliative-oriented AD group and the comfort-oriented AD group compared to the usual care AD group, reflecting that care with regard to antibiotic use was likely consistent with resident wishes.

We found the mortality in the comfort-oriented AD group was 44% and highest in the peri-enrollment period, which includes the 30 days prior to the enrollment in our study. This period may reflect transition from the acute care hospital to NH in most cases. Our findings extend what is already known about Medicare enrollees in the last 6 months of life.³⁰ While the mortality rates were lower in the palliative-oriented AD and the usual-care AD group, our data support the notion that older NH residents with an indwelling device may represent a group with substantial morbidity and care transitions that may particularly benefit from re-assessment and documentation of goals of care upon NH admission.

Limitations

While we report on a prospective analysis of the association between advance directives and aspects of care received by older NH residents, we acknowledge limitations of our study. First, our sample size limited our ability to perform a multivariate analysis to better inform our findings. Second, ADs were recorded only at the time of study enrollment; patients/surrogates could have changed their wishes during their time throughout study. We believe, however, that care preferences at the time of our study enrollment reflect residents' real-time AD status and subsequent clinical decision-making. Given the prospective nature of our study, our data accurately reflect subsequent care received in light of documented resident ADs. Third, the content of ADs was not verified with residents or his/her durable power of attorney, however careful and comprehensive chart review was done at study enrollment and at subsequent visits so that the care received was accurately recorded.

Conclusion

NH residents with comfort-oriented ADs were hospitalized at a rate similar to those with usual care ADs, suggesting that some in this group likely received care that was discordant with their stated preferences. On the other hand, those with comfort-oriented ADs received less antibiotics compared with NH residents with usual-care ADs. As NH residents include an important and growing post-acute care population, additional research is needed on larger sample sizes to further elucidate how ADs may shape the care of a population of older NH residents with multi-morbidity and functional impairment.

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Figure 1.

Description of advanced directives according to care preferred among SNF residents with indwelling device(s).

* Please see manuscript for missing data explanation.

Table 1

Baseline demographics, device use and follow up time for the entire population of NH residents and by advance directives.

Characteristics	NH residents	NH residents by Advance Directive Category		
	N=78	Comfort-Oriented N=18	Palliative-Oriented N=32	Usual-Care N=28
Demographics				
Sex, female, n (%)	43 (55)	10 (56)	18 (56)	15 (54)
Age, mean (SD)	79 (11)	80 (11)	80 (10)	77 (11)
White Race n (%)	71 (91)	15 (83)	31 (97)	25 (89)
Charlson's Comorbidity Score, mean (SD)	3.1 (1.9)	3.3 (2.4)	3.2 (1.7)	2.7 (1.9)
Functional Score (PSMS), mean (SD)	21.1 (5.1)	22.6 (4.5)	21.4 (4.8)	19.7 (5.5)
Device Use, n (%)		18 (100)	32 (100)	28 (100)
Urinary catheter	43 (55)	8 (44)	18 (56)	17 (61)
Feeding tube	25 (32)	6 (33)	10 (31)	9 (32)
Both urinary catheter and feeding tube	10 (13)	4 (22)	4 (12)	2 (7)
Time in the study				
Follow-up, months, mean (SD)	3.1 (3.5)	2.6 (3.2)	3.3 (4.4)	2.0 (2.8)
Total number of follow-up visits	244	49	135	60
Short follow-up time (<3 months), n (%)	55 (71)	14 (78)	21 (66)	23 (82)
Long follow-up time (≥ 3 months), n (%)	23 (29)	4 (22)	11 (34)	5 (18)

Table 2

Incidence rates for hospital transfers and antibiotic use for nursing home residents with indwelling device(s).

	Incidence	Incidence Rate/ 1000 follow-up- days	Incidence Rate Ratio (95% CI)	p- value
Hospital transfers				
Comfort-Oriented AD	13	8.8	0.6 (0.3, 1.1)	0.09
Palliative-Oriented AD	23	5.7	0.4 (0.2, 0.7) *	<0.001
Usual-Care AD	28	15.6	1	
Antibiotic Use				
Comfort-Oriented AD	11	7.5	0.4 (0.2, 0.8) *	0.005
Palliative-Oriented AD	38	9.4	0.5 (0.3, 0.8) *	0.004
Usual-Care AD	34	18.9	1	

* p-value < 0.05