

## Original Article

## Honoring Veterans' Preferences: The Association Between Comfort Care Goals and Care Received at the End of Life



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## Abstract

**Context.** As part of its Life-Sustaining Treatment (LST) Decisions Initiative, the Veterans Health Administration (VA) in January 2017 began requiring electronic documentation of goals of care and preferences for Veterans with serious illness and at high risk for life-threatening events.

**Objectives.** To evaluate whether goals of “to be comfortable” were associated with greater palliative care (PC) use and lesser acute care use.

**Methods.** We identified Veterans with VA inpatient or nursing home stays overlapping July 2018–January 2019, with LST templates documented by January 31, 2019, and who died by April 30, 2019 ( $N = 18,163$ ). From template documentation, we identified a “to be comfortable” goal. Using VA and Medicare data, we determined PC use (consultations and hospice) and hospital, intensive care unit, and emergency department use 7 and 30 days before death. Multivariate logistic regression examined the associations of interest.

**Results.** Sixty-four percent of the 18,163 Veterans had comfort-care goals; 80% with comfort care goals received hospice and 57% PC consultations (versus 57% and 46%, respectively, for decedents without comfort-care goals). In adjusted analyses, comfort care documented on the LST template prior to death was associated with significantly lower odds of hospital, intensive care unit, and emergency department use near the end of life. In the last 30 days of life, Veterans with a comfort care goal had 44% lower odds (adjusted odds ratio 0.57; 95% CI: 0.51, 0.63) of being hospitalized.

**Conclusion.** Findings support the VA's commitment to honoring of Veterans' preferences post introduction of its Life Sustaining Treatment Decisions Initiative. *J Pain Symptom Manage* 2021;61:743–754. Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine.

## Key Words

End-of-life, Care preferences, Veteran, Goal-Concordant Care

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## Key Message

This study examines the association between comfort care goals and care near the end of life for Veteran decedents cared for after the Veterans Health Administration's Introduction of its Life-Sustaining Treatment Decisions Initiative. Findings show Veteran decedents with comfort care goals received care that appears concordant with their preferences.

## Introduction

In 2017, the Veterans Health Administration's (VA) National Center for Ethics in Healthcare embarked on a program to improve care for seriously ill Veterans, the Life-Sustaining Treatment Decisions Initiative (LSTDI). It was designed to promote timely goals-of-care conversations (GoCCs) and related documentation. The LSTDI incorporated a multipronged approach including VA system-wide practice standards, clinician training in conducting and documenting GoCCs, and standardized electronic health record templates for recording patients' goals and LST preferences.<sup>1</sup> Practitioners across VA health-care settings are required to proactively initiate GoCC conversations with seriously ill patients at high risk for life-threatening events (or their surrogates) and to document conversations and decisions in an LST progress note and durable order set accessible across the national VA health-care system. Further guidance outlines triggering events for initiating new and subsequent GoCCs (e.g., hospital admissions, hospice referral, change in condition, and so forth).<sup>2</sup> By July 2018 (after an 18-month implementation phase), the standardized electronic LST template note and order set was implemented across the VA health-care system.<sup>1</sup> While early implementation of the LSTDI has been described,<sup>3</sup> little is known about the association between documented goals and preferences and the actual care received.

Study of goal-concordant care is considered an essential outcome of palliative care interventions, and feasible and validated approaches to measuring this care are needed.<sup>4</sup> Studies have examined the association between preferences and care received at the end of life (EOL) and have generally found an association.<sup>5–10</sup> For example, using data from the standardized Physician Orders for Life-Sustaining Treatment (POLST) researchers found a preference for comfort measures only was associated with lower rates of hospital death;<sup>6</sup> and for hospitalized persons, POLST documentation of "comfort measures only" or an order for "limited additional interventions" was associated with lower intensive care unit (ICU) use, compared to those with full-treatment POLSTs.<sup>11</sup> In contrast, Hickman and others<sup>12</sup> examined care at

the EOL for nursing home (NH) residents, and after controlling for residents' characteristics, did not find significant associations between hospitalizations and physician's orders for "comfort care" or "do not hospitalize." However, in mixed-method analyses, these investigators determined that 77% of the hospitalizations for residents with "comfort care" were unavoidable.<sup>13</sup>

This study used VA and Medicare claims data to identify whether Veterans' comfort care goals were associated with the care received at the EOL. Specifically, it compared the presence or absence of comfort care goals with receipt of palliative care consultations and/or hospice care, and with care in acute care hospitals, ICUs, and emergency departments (EDs) in the last 30 and 7 days of life. Findings from the evaluation provide insight into the extent to which Veterans' preferences are being honored following implementation of the LSTDI.

## Methods

This retrospective cohort study included Veterans with at least one-day stays in VA (acute-care) inpatient settings or VA-operated NHs (community living centers) overlapping July 2018–January 2019 who had LST templates documented by January 31, 2019, and who died by April 30, 2019 ( $N = 18,163$ ). Of the 273,163 Veterans with such stays, 66,293 (24%) had a completed LST template and 18,163 (27%) died by 30th April (Figure 1).

To construct the study cohort and generate the outcomes and covariates, we accessed VA data files, including from the VA's Corporate Data Warehouse, Assistant Deputy Under Secretary for Health enrollment files, Planning Systems Support Group enrollee files, Vital Status Files, and Medicare data files. Medicare access was consistent with the VA's data use agreement with the Centers for Medicare and Medicaid Services. The study was approved by the institutional review board at the VA Medical Center in Philadelphia, Pennsylvania.

## Documented Goals and Preferences

The VA's standardized LST template (see Appendix Table 1) requires four mandatory items to be documented (decision-making capacity; Veteran's goals of care; cardiopulmonary resuscitation status, and oral informed consent for LST plan). Our evaluation focuses on the goals of care items documented on the last LST template prior to death. Veterans were asked, "Given this (your current health) situation, what's most important to you?" If the Veteran did not have decision-making capacity, his/her designated proxy decision maker was asked "What would [the Veteran]

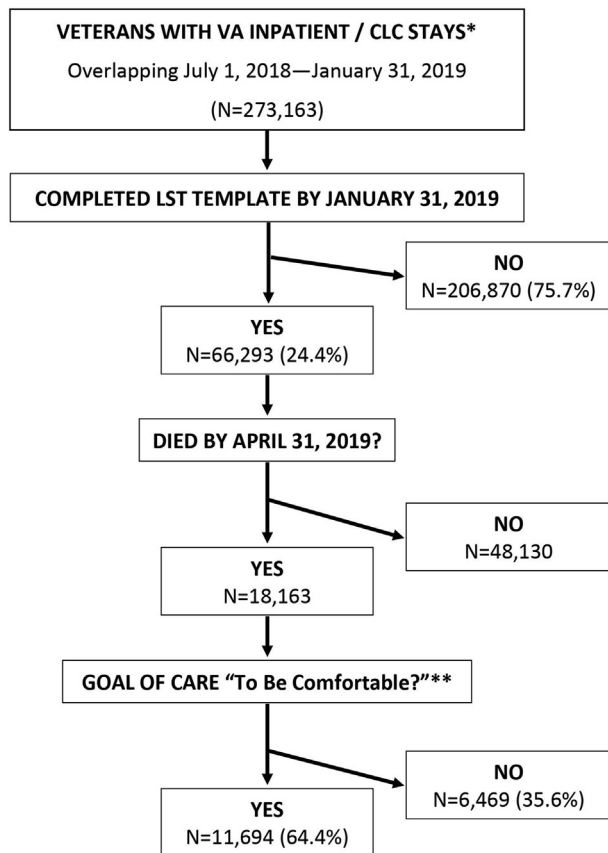


Fig. 1. Cohort selection. \*Stays of one day or more and excluding stays in Veterans Administration domiciliary and for substance abuse and psychiatric observation. \*\*Last LST template prior to death.

tell us was important to him/her now? Goal responses included: To be cured; To prolong life; To improve or maintain function, independence, quality of life; To be comfortable; To obtain support for family/care-giver; and To achieve life goals, including: [text box]. Veterans could choose more than one response. The independent variable—a comfort care goal—was considered to be “Yes” if “To be Comfortable” was documented on the LST template AND the goals “To be cured of” and/or “To prolong life” were not documented. Otherwise, comfort care was coded as “No.” Of note, 67% of Veterans in the cohort had only one template documented while 22% had two and 11% had three or more.

Also, we created two other preference variables. Under the template categories of “Limit life-sustaining treatments as specified” and “Transfers Between Levels of Care,” we coded a preference for limiting ICU transfers as Yes if “No transfers to the ICU except if needed for comfort” was checked, and similarly, a preference to limit hospital transfers was coded as “Yes” if “No transfers to the hospital except if needed for comfort” was checked. Each of these variables was coded “No” if the template item was not checked.

However, since documentation of these preferences was not mandatory, absence of documentation could reflect their absence and/or a failure to ask about them. Therefore, these variables were used as covariates rather than independent variables in this study. Only 735 (4%) of the cohort of 18,163 had a documented preference for limiting ICU transfers, and 570 (3%) for limiting hospital transfers.

To ensure preferences did not change during the observation period (i.e., the last 7 or 30 days of life) for the hospital, ICU and ED outcomes, we excluded from analyses Veterans whose last template was completed during the last 7 days of life (4469 [25%]) or 30 days of life (9819 [54%]). While these exclusions reduced the cohort numbers substantially, they were essential to the evaluation’s validity since they ensured the preferences observed were the closest to but not during the outcomes’ observation periods.<sup>14</sup> Also, to correctly control for Medicare enrollment, we excluded 4 Veterans whose enrollment began during the last 7 days of life, and 11 during the last 30 days of life. Additionally, multivariate analysis for the 7- and 30-day observation periods excluded 8 and 5 (respectively) Veterans with missing covariates, resulting in final N’s of 13,682 and 8327 (respectively).

### Outcomes

Our primary outcomes were hospital, ICU and ED use in the last 7 and 30 days of life. Each outcome was evaluated separately and coded yes (any use) versus no. For VA care, specialty codes, including ICU treatment codes, identified VA-provided acute care and ICU stays. Using the VA’s fee-basis file, hospitalizations reimbursed by the VA were identified, but VA-paid ICU stays in non-VA hospitals could not be identified. For Medicare-reimbursed care, we used Medicare inpatient claims to identify acute-care stays and ICU use. Using VA and Medicare claims, ED use overlapping the 30- or 7- day look back periods was also identified.

We also identified receipt of any VA provided, VA-paid or Medicare hospice care in the 180 days prior to their baseline LST template until their deaths. Veterans with VA-provided (inpatient) PC consultations between the baseline LST template and death were also identified; Medicare data to identify PC consultations are unavailable.

### Covariates

The outcomes were modeled adjusting for Veteran demographic and clinical characteristics, identified from the sources closest to the baseline LST template. Sociodemographic variables included age (entered as a continuous variable), Race/ethnicity (Veterans were classified by ethnicity and non-Hispanic subjects were

then classified by race categories), gender, and marital status.

To control for baseline functional status, we used the JEN Frailty Index.<sup>15</sup> The index uses all Medicare and VA inpatient and outpatient diagnoses one-year prior to the baseline LST template. Veterans with no diagnoses were given an imputed score of zero. The scores ranged from 0 to 12, and based on the observed distribution and model fits, we categorized the index as 0–3, 4–7 and 8–12 (most frail).

Another covariate was the Care Assessment Need score which is based on patient demographics, diagnoses, vital signs, utilization, pharmacy data, and laboratory values. This score's values range from increments of 5 for scores of 0–94 and then by increments of 1 for scores 95–99, and higher values are associated with greater risks of mortality and hospitalization.<sup>16,17</sup> We chose the score closest to the date of the baseline LST template, within 60 days prior to or 30 days after that date; 11% (2042 of 18,163) had a missing Care Assessment Need score. Scores were categorized as 0–89, 90–99 and missing.

Additionally, the Hierarchical Condition Category (HCC) risk score was included as it ranks individuals by their likely cost to the health-care system.<sup>18,19</sup> We calculated HCC scores using the same set of diagnoses extracted for the JEN Frailty Index score calculation, along with additional variables describing Veteran demographics and health insurance status. The score was categorized into quintiles, with the second and third quintiles combined for a total of four HCC categories.

Finally, we controlled for whether Veterans had a VA NH stay at baseline and for their Medicare enrollment status. Variables indicated whether a Veteran was enrolled in fee-for-service Medicare (for which inpatient and outpatient claims are available) or in Medicare Advantage (with VA-only enrollment being the reference group). A variable also controlled for the number of days between a Veteran's last documented LST template and death.

Additional variables characterizing the VA medical center (VAMC) affiliated with a Veteran's qualifying inpatient or NH stay were included. Specifically, we controlled for a VAMC's geographic region (based on the nine Census regions and nonstate territories), VAMC rurality, and for the complexity of care provided by the VAMC (higher versus lower). VA complexity levels of 1a, 1b, or 1c were combined to identify VAMCs with higher care complexity while levels 2 or 3 identified lower complexity.<sup>20</sup>

## Analyses

Descriptive statistics were calculated using SAS Enterprise Guide 7.1. The outcomes were modeled using StataMP 15. The multivariate logistic regression

models for the binary outcomes were created using the logit command. All models were run clustered on the Veteran's VAMC to adjust the standard errors. Using the margin command at the mean within Stata, model data were used to derive the (adjusted) predicted probabilities of outcomes for subgroups of interest.

## Results

### Cohort Characteristics

Based on the last LST template prior to death, 64% of the cohort (11,694/18,163) had a comfort care goal (Figure 1). Table 1 shows the distribution of Veterans with and without comfort care goals by their demographic and clinical characteristics for the entire cohort and for the (smaller) cohorts used for analyses of the hospital, ICU and ED outcomes (that excluded Veterans whose last LST template was during the last 7 or 30 days of life). Veterans with comfort goals were older and higher proportions of Veterans had comfort care goals when they also had a preference to limit hospital or ICU transfers or a baseline VA NH stay (versus hospital stay). Of interest, while 64% of Veterans had comfort care goals in the entire cohort, only 54% and 59% (respectively) of Veterans in the cohorts used to analyze outcomes for the 30- and 7-day look-back periods had comfort care goals (Table 1).

### End-of-Life Outcomes

Eighty percent of Veterans with a comfort care goal (on baseline LST template) received hospice care compared to 57% of those without a comfort care goal (Table 1). Palliative care consultations were provided to 57% of Veterans with a comfort care goal versus to 46% of Veterans without this goal (Table 1).

In the last 30 and 7 days of life, for Veterans with comfort care goals (and LST templates documented prior to 30 or 7 days before death) unadjusted rates of hospital, ICU and ED use were approximately half, compared to Veterans without comfort care goals. For example, 6% of Veterans with comfort care goals had ICU use in the last 7 days of life compared to 13% of those without such goals, and 18% were hospitalized in the last 7 days of life compared to 29% without comfort care goals. Of note, all unadjusted rates of acute care use were higher when we did not exclude Veterans who had their last LST template during each outcome's observation period (after the last 7 or 30 days of life; Table 1).

In adjusted analyses, having versus not having a comfort care goal was significantly associated with approximately 50% lower odds of hospital or ICU use in the last 7 or 30 days of life (Tables 2 and 3). Controlling for the presence of a comfort care goal and other variables, Veterans with a preference for

**Table 1**  
**Characteristics and Outcomes of Veterans With and Without a Goal of “To Be Comfortable” for Those With LST Templates Completed by or Before the 30- and 7-Day Look-Back Periods**

Preferences, Characteristics, and Outcomes of Interest	Entire Cohort (N = 18,163)		Cohort Used for Analyses of Hospital, ICU, and ER Use in the Last 30 Days of Life <sup>a</sup> (N = 8333)		Cohort Used for Analyses of Hospital, ICU, and ER Use in the Last 7 Days of Life <sup>b</sup> (13,690)	
	Comfort Care Yes (64.4%) N = 11,694	Comfort Care No (35.6%) (N = 6469)	Comfort Care Yes (54.2%) (N = 4517)	Comfort Care No (45.7%) (N = 3816)	Comfort Care Yes (59.6%) (N = 8163)	Comfort Care No (40.3%) (N = 5527)
Patient level preferences/variables						
Limit hospital transfers						
No	11,176 (95.6%)	6417 (99.2%)	4299 (95.2%)	3799 (99.6%)	7778 (95.3%)	5490 (99.3%)
Yes	518 (4.4%)	52 (0.8%)	218 (4.8%)	17 (0.4%)	385 (4.7%)	37 (0.7%)
Limit ICU transfer						
No	11,067 (94.6%)	6361 (98.3%)	4279 (94.7%)	3767 (98.7%)	7691 (94.2%)	5442 (98.5%)
Yes	627 (5.4%)	108 (1.7%)	238 (5.3%)	49 (1.3%)	472 (5.8%)	85 (1.5%)
Age						
Mean (SD)	76.5 (11.1)	74.6 (10.9)	77.8 (11.1)	74.6 (11.0)	77.3 (11.0)	74.7 (11.0)
Gender						
Male	11,385 (97.4%)	6339 (98.0%)	4390 (97.2%)	3732 (97.8%)	7946 (97.3%)	5409 (97.9%)
Female	309 (2.6%)	130 (2.0%)	127 (2.8%)	84 (2.2%)	217 (2.7%)	118 (2.1%)
Race/ethnicity						
White	8046 (68.8%)	4670 (72.2%)	3156 (69.9%)	2783 (72.9%)	5632 (69.0%)	4021 (72.8%)
African American	1967 (16.8%)	1128 (17.4%)	727 (16.1%)	634 (16.6%)	1365 (16.7%)	941 (17.0%)
Hispanic	893 (7.6%)	268 (4.1%)	336 (7.4%)	154 (4.0%)	622 (7.6%)	219 (4.0%)
American Indian/Alaskan Native	77 (0.7%)	65 (1.0%)	24 (0.5%)	44 (1.2%)	54 (0.7%)	60 (1.1%)
Asian	47 (0.4%)	25 (0.4%)	15 (0.3%)	19 (0.5%)	35 (0.4%)	23 (0.4%)
Native Hawaiian/Pacific Islander	79 (0.7%)	48 (0.7%)	32 (0.7%)	32 (0.8%)	53 (0.6%)	43 (0.8%)
Unknown/declined to state	585 (5.0%)	265 (4.1%)	227 (5.0%)	150 (3.9%)	402 (4.9%)	220 (4.0%)
Marital status						
Married	5249 (44.9%)	2926 (45.2%)	1961 (43.4%)	1691 (44.3%)	3623 (44.4%)	2498 (45.2%)
Divorced	2906 (24.9%)	1769 (27.3%)	1102 (24.4%)	1064 (27.9%)	2018 (24.7%)	1522 (27.5%)
Widowed	1695 (14.5%)	820 (12.7%)	773 (17.1%)	477 (12.5%)	1259 (15.4%)	702 (12.7%)
Never married	1190 (10.2%)	650 (10.0%)	461 (10.2%)	406 (10.6%)	830 (10.2%)	547 (9.9%)
Separated	390 (3.3%)	213 (3.3%)	144 (3.2%)	136 (3.6%)	255 (3.1%)	186 (3.4%)
Unknown	264 (2.3%)	91 (1.4%)	76 (1.7%)	42 (1.1%)	178 (2.2%)	72 (1.3%)
CAN score						
CAN score 0–89	1766 (15.1%)	1075 (16.6%)	642 (14.2%)	636 (16.7%)	1176 (14.4%)	906 (16.4%)
CAN score 90–99	8377 (71.6%)	4903 (75.8%)	3194 (70.7%)	2896 (75.9%)	5850 (71.7%)	4217 (76.3%)
Missing CAN score	1551 (13.3%)	491 (7.6%)	681 (15.1%)	284 (7.4%)	1137 (13.9%)	404 (7.3%)
HCC						
HCC score 1st quintile: 0.21–<2.87	2283 (19.5%)	1350 (20.9%)	1180 (26.1%)	929 (24.3%)	1823 (22.3%)	1222 (22.1%)
HCC score 2nd and 3rd quintiles: 2.87–<5.03	4661 (39.9%)	2602 (40.2%)	1906 (42.2%)	1608 (42.1%)	3429 (42.0%)	2299 (41.6%)
HCC score 4th quintile: 5.03–<6.46	2365 (20.2%)	1269 (19.6%)	768 (17.0%)	683 (17.9%)	1563 (19.1%)	1031 (18.7%)
HCC score 5th quintile: 6.46–16.39	2385 (20.4%)	1248 (19.3%)	663 (14.7%)	596 (15.6%)	1348 (16.5%)	975 (17.6%)
JFI						
JFI score 0–3	174 (1.5%)	139 (2.1%)	90 (2.0%)	96 (2.5%)	137 (1.7%)	129 (2.3%)
JFI score 4–7	4449 (38.0%)	2830 (43.7%)	1821 (40.3%)	1745 (45.7%)	3209 (39.3%)	2458 (44.5%)
JFI score 8–12	7071 (60.5%)	3500 (54.1%)	2606 (57.7%)	1975 (51.8%)	4817 (59.0%)	2940 (53.2%)

(Continued)

Table 1  
Continued

Preferences, Characteristics, and Outcomes of Interest	Entire Cohort (N = 18,163)		Cohort Used for Analyses of Hospital, ICU, and ER Use in the Last 30 Days of Life <sup>a</sup> (N = 8333)		Cohort Used for Analyses of Hospital, ICU, and ER Use in the Last 7 Days of Life <sup>b</sup> (13,690)	
	Comfort Care Yes (64.4%) (N = 11,694)	Comfort Care No (35.6%) (N = 6469)	Comfort Care Yes (54.2%) (N = 4517)	Comfort Care No (45.7%) (N = 3816)	Comfort Care Yes (59.6%) (N = 8163)	Comfort Care No (40.3%) (N = 5527)
NH stay (at baseline)						
No	9373 (80.2%)	5867 (90.7%)	3340 (73.9%)	3385 (88.7%)	6351 (77.8%)	4987 (90.2%)
Yes	2321 (19.8%)	602 (9.3%)	1177 (26.1%)	431 (11.3%)	1812 (22.2%)	540 (9.8%)
VA and Medicare enrollment category						
VA enrollment	1298 (11.1%)	768 (11.9%)	407 (9.0%)	418 (11.0%)	818 (10.0%)	640 (11.6%)
VA and Medicare enrollment, without advantage plan	8033 (68.7%)	4432 (68.5%)	3164 (70.0%)	2603 (68.2%)	5671 (69.5%)	3769 (68.2%)
VA and Medicare enrollment, with advantage plan	2363 (20.2%)	1269 (19.6%)	946 (20.9%)	795 (20.8%)	1674 (20.5%)	1118 (20.2%)
Days between LST template and death						
Mean (SD)	44.1 (64.4)	68.5 (70.9)	98.0 (76.6)	107.1 (69.3)	61.6 (70.1)	79.5 (71.0)
Outcomes						
Acute care outcomes						
ED visit, last 30 days	2624 (22.4%)	2603 (40.2%)	1158 (25.6%)	1520 (39.8%)	—	—
ED visit, last 7 days	1163 (9.9%)	1136 (17.6%)	—	—	662 (8.1%)	889 (16.1%)
ICU stay, last 30 days	2570 (22.0%)	1777 (27.5%)	417 (9.2%)	645 (16.9%)	—	—
ICU stay, last 7 days	1968 (16.8%)	1279 (19.8%)	—	—	492 (6.0%)	720 (13.0%)
Acute inpatient stay, last 30 days	6593 (56.4%)	3940 (60.9%)	1186 (26.3%)	1530 (40.1%)	—	—
Acute inpatient stay, last 7 days	4198 (35.9%)	2472 (38.2%)	—	—	1450 (17.8%)	1605 (29.0%)
Palliative care outcomes						
VA palliative care consult	6646 (56.8%)	2995 (46.3%)	—	—	—	—
Hospice	9327 (79.8%)	3669 (56.7%)	—	—	—	—

ED = emergency department, ICU = intensive care unit, CAN = Care Assessment Need, HCC = Hierarchical Condition Category, NH = nursing home, LST = life-sustaining treatment, VA = Veteran's Affairs, VAMC = Veteran's Administration Medical Center.

<sup>a</sup>Cohort excludes Veterans whose last LST template was completed during the last 30 days of life, and Veterans with Medicare enrollments during the last 30 days of life.

<sup>b</sup>Cohort excludes Veterans whose last LST template was completed during the last 7 days of life, and Veterans with Medicare enrollments during the last 7 days of life.

Table 2

**Multivariate Logistic Regression Results: Acute Care Use in the Last 30 Days of Life and a Life-Sustaining Treatment Goal of “To Be Comfortable” ( $N = 8327$ )<sup>a,b</sup>**

Variables of Interest	Acute Care Outcomes of Interest—30-Day Lookback		
	Acute Care Hospitalization AOR (95% CI)	Intensive Care Unit (ICU) Use AOR (95% CI)	Emergency Department Use AOR (95% CI)
Preference			
Comfort care goal	0.57 (0.51, 0.64)***	0.54 (0.48, 0.61)***	0.54 (0.49, 0.60)
Limit hospital transfer	0.35 (0.20, 0.64)***	—	—
Limit ICU transfer	—	0.56 (0.37, 0.87)**	—
Veteran characteristics			
NH stay (at baseline)	0.47 (0.40, 0.57)***	0.48 (0.37, 0.63)***	0.47 (0.39, 0.58)***
CAN score			
0–89 (reference)	—	—	—
90–99	0.95 (0.83, 1.09)	0.85 (0.70, 1.02)	1.17 (1.00, 1.30)*
Missing	0.87 (0.71, 1.06)	0.83 (0.62, 1.22)	0.92 (0.74, 1.14)
HCC score			
0.21–<2.87 (reference)	—	—	—
2.87–<5.03	1.06 (0.91, 1.23)	1.07 (0.87, 1.30)	1.02 (0.89, 1.17)
5.03–<6.46	1.24 (1.06, 1.44)**	1.28 (1.03, 1.58)*	1.05 (0.90, 1.20)
6.46–<16.39	1.39 (1.16, 1.67)***	1.75 (1.39, 2.20)***	1.01 (0.86, 1.19)
VA/Medicare enrollment			
VA only (reference)	—	—	—
VA and Medicare fee-for-service	1.89 (1.53, 2.35)***	3.98 (2.72, 5.83)***	2.18 (1.76, 2.70)***
VA and Medicare advantage	0.95 (0.74, 1.21)	1.43 (0.97, 2.11)	1.15 (0.92, 1.44)
Days between LST template and death (per day)	0.998 (0.997, 0.998)***	1.00 (1.00, 1.00)	1.00 (0.999, 1.001)

AOR = adjusted odds ratio, CAN = Care Assessment Need, HCC = Hierarchical Condition Category, NH = nursing home, VA = Veteran's Affairs, LST = Life-Sustaining Treatment.

\* =  $P \leq 0.05$ ; \*\* =  $P \leq 0.01$ ; \*\*\* =  $P \leq 0.001$ .<sup>a</sup>Controlling for age, gender, ethnicity/race, marital status, the JEN Frailty Index score, and for the affiliated VA medical Center's geographic region, rural versus urban status and its level of complexity of care.<sup>b</sup>Cohort excludes Veterans whose last LST template was completed during the last 30 days of life, and Veterans with Medicare enrollments during the last 30 days of life.

Table 3

**Multivariate Logistic Regression Results: Acute Care Use in the Last 7 Days of Life and a Life-Sustaining Treatment Goal of “To Be Comfortable” (N = 13,682)<sup>a,b</sup>**

Variables of Interest	Acute Care Outcomes of Interest—7-Day Lookback		
	Acute Care Hospitalization AOR (95% CI)	Intensive Care Unit Use AOR (95% CI)	Emergency Department Use AOR (95% CI)
Preference			
Comfort care goal	0.55 (0.50, 0.60)***	0.46 (0.41, 0.52)***	0.49 (0.43, 0.55)***
Limit hospital transfer	0.21 (0.13, 0.34)***	—	—
Limit ICU transfer	—	0.44 (0.27, 0.72)***	—
Veteran characteristics			
NH stay (at baseline)	0.41 (0.34, 0.48)***	0.42 (0.32, 0.55)***	0.61 (0.51, 0.73)***
CAN score			
0–89 (reference)	—	—	—
90–99	0.84 (0.74, 0.94)**	0.76 (0.64, 0.90)***	1.09 (0.92, 1.29)
Missing	1.09 (0.88, 1.35)	0.90 (0.69, 1.18)	0.97 (0.75, 1.26)
HCC score			
0.21–<2.87 (reference)	—	—	—
2.87–<5.03	1.18 (1.05, 1.32)**	1.14 (0.96, 1.34)	1.06 (0.90, 1.25)
5.03–<6.46	1.44 (1.23, 1.69)***	1.48 (1.20, 1.83)***	1.13 (0.93, 1.37)
6.46–<16.39	1.75 (1.48, 2.07)***	1.92 (1.55, 2.38)***	0.97 (0.80, 1.18)
VA/Medicare enrollment			
VA only (reference)	—	—	—
VA and Medicare fee-for-service	1.40 (1.21, 1.63)***	2.81 (2.17, 3.64)***	1.95 (1.51, 2.52)***
VA and Medicare advantage	0.88 (0.74, 1.05)	1.21 (0.92, 1.60)	1.09 (0.83, 1.42)**
Days between LST template and death (per day)	0.997 (0.996, 0.997)***	0.999 (0.998, 0.9997)*	1.001 (1.000, 1.002)**

AOR = adjusted odds ratio, ICU = intensive care unit, CLC = Community Living Center, CAN = Care Assessment Need, HCC = Hierarchical Condition Category, NH = nursing home, VA = Veteran's Affairs, LST = Life-Sustaining Treatment.

\* =  $P \leq 0.05$ ; \*\* =  $P \leq 0.01$ ; \*\*\* =  $P \leq 0.001$ .

<sup>a</sup>Controlling for age, gender, ethnicity/race, marital status, the JEN Frailty Index score, and for the affiliated VA medical Center's geographic region, rural versus urban status and its level of complexity of care.

<sup>b</sup>Cohort excludes Veterans whose last LST template was completed during the last 7 days of life, and Veterans with Medicare enrollments during the last 7 days of life.

limiting hospital or ICU transfers had significantly lower odds of hospital and ICU use. Also, Veterans with baseline stays in VA-operated NHs (versus hospitals) had approximately half the odds of EOL hospital or ICU use, while those with VA and Medicare fee-for-service enrollment (compared to VA enrollment only) had greater odds of hospital and ICU use (Tables 2 and 3). Additionally, the odds of hospital or ICU use increased in a linear fashion when HCC scores were higher. Finally, while findings were mixed, there were significantly lower odds of hospital use when there were more days between the last LST documentation and death (Tables 2 and 3).

The adjusted odds of ED use at both 30 and 7 days prior to death were approximately half for Veterans having versus not having comfort care goals. Similar to hospital and ICU use, the odds of ED use were also approximately half when Veterans' baseline stays were in NHs, and approximately double if they had VA and Medicare fee-for-service enrollment (compared to VA enrollment only; Tables 2 and 3).

Figure 2 illustrates the predicted probabilities (with 95% confidence intervals) of hospitalization and ICU use in the last 7 days of life. For the entire cohort, these probabilities are very similar to the unadjusted rates discussed previously. For example, 5% of Veterans with comfort care and 11% of Veterans without comfort care used ICUs. Veterans with comfort care goals and with preferences to limit hospital transfers had an only 3.2% (95% CI 1.7, 4.7) probability of hospitalization. Also, Veterans with baseline NH stays, with or without comfort care goals, had low probabilities of hospitalization while Veterans with the highest HCC scores had high probabilities (Figure 2a). The predicted probabilities for ICU use show similar patterns (Figure 2b).

## Discussion

In this population-based retrospective cohort study of Veteran decedents who had standardized documentation of goals of care and LST preferences prior to the primary outcomes of interest, Veterans with comfort care goals (compared to Veterans without these goals) had approximately half the rate of hospital, ICU and ED use at the EOL, and in adjusted analyses, an approximate 50% lower likelihood of use. Also, the subset of Veterans with specific documented preferences for limiting hospital or ICU transfers coupled with a comfort care goal had the lowest predicted probabilities of hospital and ICU use in the last 7 days of life (3.2% and 2.2%, respectively). Furthermore, higher proportions of Veterans with versus without comfort care goals used hospice (80% versus 57%) and had PC consultations (57% versus 46%). Together, findings demonstrate high levels of concordance between

documentation of a comfort care goal and care received at the EOL. Study findings suggest that Veterans' documented goals and preferences through the LSTDI implementation are associated with goal-concordant acute care use for seriously ill Veterans.

The significant lower likelihood of hospital, ICU, and ED care when a comfort care goal is documented and available in the health-care record is in agreement with other research.<sup>5–11</sup> However, unlike Hickman and colleagues<sup>12</sup> who did not find a statistically significant association between comfort care and EOL hospitalizations for NH residents, we did find such an association for Veterans with baseline VA-NH stays.

In addition to the effect of having a comfort care goal, we found Veterans whose baseline stays were in VA-operated NHs (compared to VA hospitals) had approximately half the odds of hospital, ICU, or ED care at the EOL. This is possibly because many Veterans in VA-operated NHs are there for long-term care. Therefore, they have longer-term relationships with staff who are likely to identify and manage symptoms earlier, perhaps preventing the need for care in hospitals, ICUs, or EDs.

Consistent with the literature,<sup>18,19</sup> higher HCC scores were associated with higher likelihood of EOL hospital and ICU use. Also, findings show that Veterans enrolled in fee-for-service Medicare had greater odds of EOL hospital, ICU, and ED use (compared to VA enrollees only). Compared to VA enrollees only, the adjusted probabilities of hospital and ICU use in the last 7 days of life (Figures 2a and b) show fee-for-service Medicare enrollees with and without comfort care goals have higher probabilities of hospital and ICU use. Improved health record connectivity between VA and non-VA providers could potentially decrease hospital and ICU use for fee-for-service Medicare enrollees with comfort care orders; but, since the VA is a federal agency, in non-VA settings template orders need to be translated to analogous state authorized portable orders such as POLST. Also, for comparable Veterans without comfort care orders, the higher observed probabilities may reflect the differing propensity for such care by Veterans who use non-VA providers and/or differing care patterns of non-VA providers. In fact, in 2015, 53.9% of Medicare fee-for-service beneficiaries were hospitalized in the last 30 days of life and 29.0% used an ICU,<sup>21</sup> while we observed these rates to be 40.1% and 16.9% (respectively) for Veterans without comfort care goals.

Many studies examining goal-concordant care are limited by the lack of standardized practices for documenting goals and preferences, and changes in goals and preferences;<sup>14</sup> however, the standardized practices implemented in conjunction with the VA's LSTDI facilitated the conduct of this study. Since we were able to exclude Veterans whose goals and LST preferences were documented during our outcome

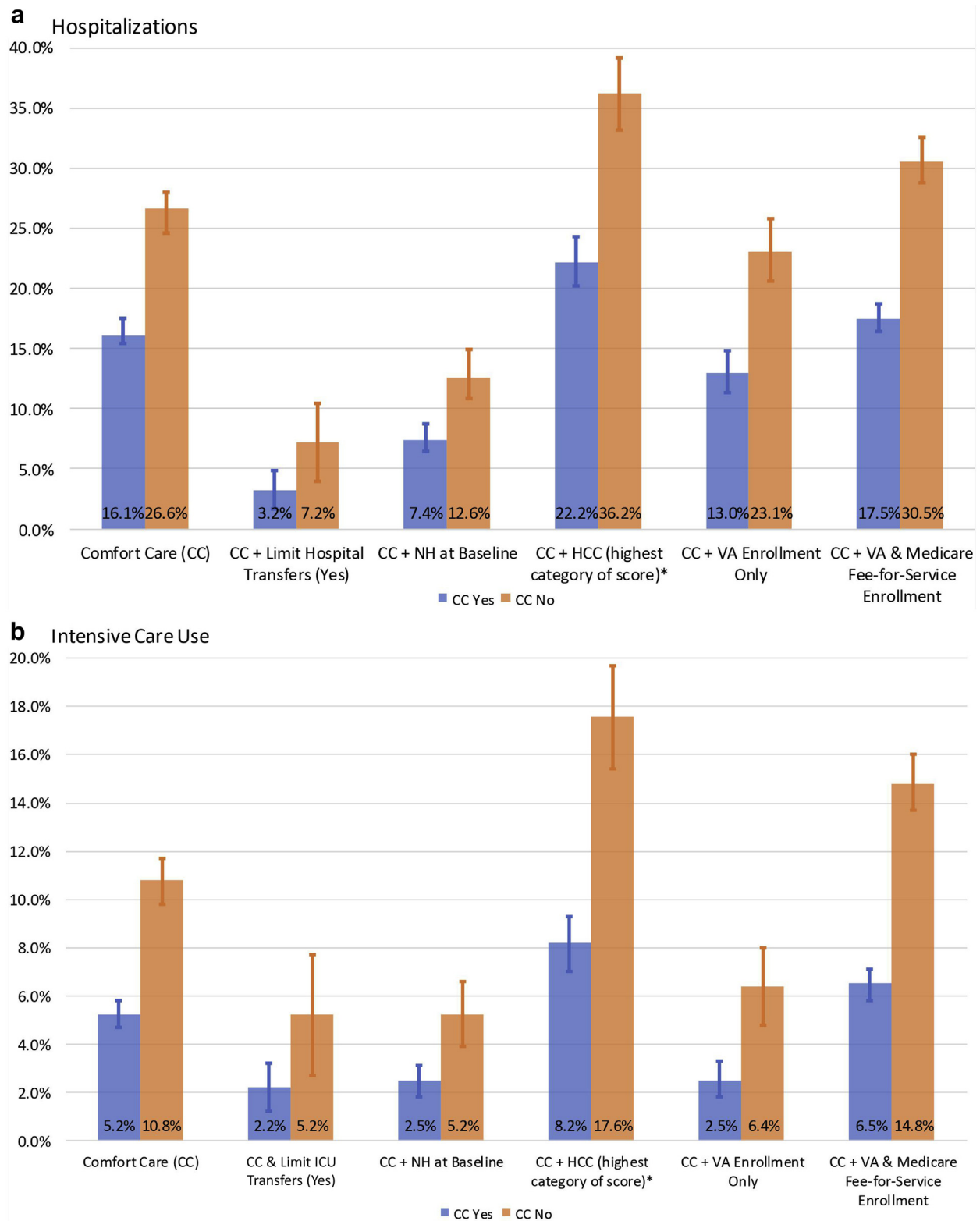


Fig. 2. Predicted probabilities of acute care use in the last 7 days of life by subgroups of interest, and by whether or not veterans within these subgroups had a comfort care goal. a) Medicare-reimbursed and Veterans Administration provided and reimbursed hospitalizations in the last seven days of life. b) Medicare-reimbursed and Veterans Administration provided intensive care units stays in the last seven days of life. \*6.46 – <16.39.

measurement period, the discrepancies that often occur when the observed goals and preference are not documented prior to the measurement of outcomes were minimized.<sup>14,20</sup> For example, Table 1 shows the rates of hospital and ICU use are much higher for the entire cohort than for the cohorts excluding Veterans with LST templates completed during outcome measurement (i.e., the last 7 or 30 days of life). These differences highlight the impact that changes in Veterans' goals have on care received at the EOL and emphasize the need for goals of care conversations to be ongoing. Future research is needed to gain a more thorough understanding of how the timing of goals-of-care conversations is associated with goal-concordant care.

Some study limitations should be noted. First, the study was conducted in the VA which serves a very specific patient population. Nonetheless, it represents the largest integrated health-care system of the country with over 9 million enrollees. Second, although the LSTDI facilitated review and updating of Veterans' LST preferences, some patients in our sample may have been misclassified if changes to their preferences were not reflected in a current LST template. Third, while our findings show concordance between Veterans' comfort care goals and the care received for our cohort as a whole, a comfort care goal may not be inconsistent with hospitalization or ED use and we did not examine through chart reviews and/or interviews the circumstances surrounding the use of the observed acute care. Such analysis is an important avenue for future research. Finally, we could not identify fee-basis ICU use (within hospital stays), and this may have resulted in somewhat higher odds of ICU use for fee-for-service Medicare enrollees (for whom all ICU could be identified), compared to VA enrollees only.

In conclusion, this study shows Veteran decedents with and without comfort care goals documented on the LST template received care that appears concordant with their preferences. Compared to Veterans without comfort care goals, those with these goals received less acute care in the last weeks of life and more PC consultations and hospice. Findings provide strong support for the Department of Veterans Affairs commitment to honoring of Veterans' preferences as a direct consequence of the VA's LSTDI implementation. The LSTDI serves as a model that can be adapted and implemented in community health-care organizations and health management organizations nationally to potentially provide a pathway for improving goal-concordant care for all seriously ill patients.

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## Appendix

Appendix Table 1  
Life-Sustaining Treatment (LST) Template and Orders

1. Does the patient have capacity to make decisions about life-sustaining treatments? <sup>a</sup>	<input type="checkbox"/> The patient has capacity to make decisions about life-sustaining treatments <input type="checkbox"/> The patient lacks capacity to make decisions about life-sustaining treatments and has a surrogate. <input type="checkbox"/> The patient lacks capacity to make decisions about life-sustaining treatments and has no surrogate.
2. Who is the person authorized under VA policy to make decisions for the patient if/when the patient loses decision-making capacity?	<input type="checkbox"/> Authorized surrogate if/when the patient loses decision-making capacity: ] [text box] <input type="checkbox"/> The patient has no surrogate authorized to make health care decisions if/when the patient loses decision-making capacity.
3. Have you reviewed available documents that reflect the patient's wishes regarding life-sustaining treatments? Examples: advance directives, state-authorized portable orders (e.g., POLST, MOST), life-sustaining treatment templates/orders.	<input type="checkbox"/> No advance directive, state-authorized portable orders, or life – sustaining treatment templates/orders were available in the record or presented by the patient (or surrogate) [optional text box] <input type="checkbox"/> I reviewed with the patient (or surrogate) all active advance directives (s), state-authorized portable orders, or life-sustaining treatment templates/orders available in the record and/or presented by the patient (or surrogate)
4. Does the patient (or surrogate) have sufficient understanding of the patient's medical condition to make informed decisions about life-sustaining treatments?	<input type="checkbox"/> Yes. The patient's (or surrogate's) understanding is consistent with the medical facts. <input type="checkbox"/> Other (e.g., the patient lacks decision-making capacity and has no surrogate) [text box]
5. What are the patient's goals of care? (Select all that apply. Do not attempt to rank the goals of care here) <sup>a</sup>	<input type="checkbox"/> Patient's goals of care in their own words, or as stated by the surrogate: <input type="checkbox"/> To be cured of: <input type="checkbox"/> To prolong life <input type="checkbox"/> To improve or maintain function, independence, quality of life <input type="checkbox"/> To be comfortable <input type="checkbox"/> To obtain support for family/caregiver <input type="checkbox"/> To achieve life goals, including: <input type="checkbox"/> FULL SCOPE OF TREATMENT in circumstances OTHER than cardiopulmonary arrest. <input type="checkbox"/> LIMIT LIFE-SUSTAINING TREATMENT, as follows: <i>Artificial Nutrition</i> <input type="checkbox"/> No artificial nutrition (enteral or parenteral) <input type="checkbox"/> Limit artificial nutrition as follows: [text box] <i>Artificial Hydration</i> <input type="checkbox"/> No artificial hydration (enteral, IV, or subcutaneous) except if needed for comfort <input type="checkbox"/> Limit artificial hydration as follows: [text box] <i>Mechanical Ventilation</i> <input type="checkbox"/> No invasive mechanical ventilation (e.g., endotracheal or tracheostomy tube) <input type="checkbox"/> No noninvasive mechanical ventilation (e.g., CPAP, BiPAP) <input type="checkbox"/> Limit mechanical ventilation as follows: [text box] <i>Transfers between Levels of Care</i> <input type="checkbox"/> No transfers to the ICU except if needed for comfort <input type="checkbox"/> No transfers to the hospital except if needed for comfort <input type="checkbox"/> Limit transfers as follows (e.g. patient wishes to remain at home if possible): [text box] <i>Limit Other Life-Sustaining Treatment as follows (e.g., blood products, dialysis):</i> [text box] <input type="checkbox"/> NO LIFE-SUSTAINING TREATMENT in circumstances OTHER than cardiopulmonary arrest.
6. What is the current plan for use of life-sustaining treatments?	<b>CARDIOPULMONARY RESUSCITATION (CPR)<sup>a</sup></b> <input type="checkbox"/> <b>Full Code: Attempt CPR</b> <input type="checkbox"/> <b>DNAR/DNR: Do not attempt CPR</b> <input type="checkbox"/> <b>DNAR/DNR with exception: ONLY attempt CPR during the following procedure:</b> [text box] <input type="checkbox"/> Document participants and other relevant information: [text box] <input type="checkbox"/> The patient has given oral informed consent for the life-sustaining treatment plan. <input type="checkbox"/> The surrogate has given oral informed consent for the life-sustaining treatment plan. Name of the surrogate providing consent: <input type="checkbox"/> The patient lacks decision-making capacity and has no surrogate. <input type="checkbox"/> The LST plan has been approved through the multidisciplinary committee review process.
7. Who participated in this discussion?	
8. Who has given oral informed consent for the life-sustaining treatment plan outlined above? <sup>a</sup>	

<sup>a</sup>Items in bold are required.