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## A Comparison of Methods to Communicate Treatment Preferences in Nursing Facilities: Traditional Practices versus the Physician Orders for Life-Sustaining Treatment (POLST) Program

Susan E. Hickman, PhD<sup>\*</sup>, Christine A. Nelson, PhD, RN<sup>†</sup>, Nancy A. Perrin, PhD<sup>‡</sup>, Alvin H. Moss, MD<sup>§</sup>, Bernard J. Hammes, PhD<sup>¶</sup>, and Susan W. Tolle, MD<sup>#</sup>

<sup>\*</sup> School of Nursing, Indiana University, Indianapolis, Indiana

<sup>†</sup> School of Nursing, Oregon Health & Science University, Portland, Oregon

<sup>‡</sup> Center for Health Research, Kaiser Permanente Northwest

<sup>§</sup> School of Medicine, West Virginia University, Morgantown, West Virginia

<sup>¶</sup> Gundersen Lutheran Medical Foundation, LaCrosse, Wisconsin

<sup>#</sup> School of Medicine, Oregon Health & Science University, Portland, Oregon

### Abstract

**Background**—Traditional methods to communicate life-sustaining treatment preferences are largely ineffective. The Physician Orders for Life-Sustaining Treatment (POLST) Program offers an alternative approach, but comparative data are lacking.

**Objectives**—To evaluate the relationship between communication methods (POLST versus traditional practices) and documentation of life-sustaining treatment orders, symptom assessment and management, and use of life-sustaining treatments.

**Design**—Retrospective observational cohort study conducted between June 2006 and April 2007.

**Setting**—A stratified, random sample of 90 Medicaid-eligible nursing facilities in Oregon, Wisconsin, and West Virginia.

**Subjects**—1711 living and deceased nursing facility residents aged 65 and older with a minimum 60-day stay.

**Measurements**—Life-sustaining treatment orders; pain, shortness of breath, and related treatments over a 7-day period; and use of life-sustaining treatments over a 60-day period.

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Corresponding Author: Susan E. Hickman, PhD, Indiana University School of Nursing, 1111 Middle Drive, 451F, Indianapolis, IN 46202, Phone: (317) 274-0032, Fax: (317) 274-2411, hickman@iupui.edu. Alternate Corresponding Author: Christine A. Nelson, PhD, RN, OHSU School of Nursing, SNORD, 3455 SW U.S. Veterans Hospital Road Portland, OR 97239, Phone: (503) 494-3858, Fax: (503) 418-0903, nelsonch@ohsu.edu.

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**Sponsors Role:** The sponsor had no role in the design, methods, and conduct of the study; in the collection, management, analysis, and interpretation of the data; and in the preparation, review, or approval of the manuscript.

**Results**—POLST users were more likely to have orders about life-sustaining treatment preferences beyond CPR than non-POLST users (98.0% vs. 16.1%,  $P<.001$ ). There were no differences between POLST users and non-users in symptom assessment or management. POLST users with orders for Comfort Measures Only were less likely to receive medical interventions (e.g., hospitalization) than residents with POLST Full Treatment orders ( $P=.004$ ), residents with Traditional DNR orders ( $P<.001$ ), or residents with Traditional Full Code orders ( $P<.001$ ).

**Conclusion**—POLST users were more likely to have treatment preferences documented as medical orders than non-POLST users but there were no differences in symptom management or assessment. POLST orders restricting medical interventions were associated with the lower use of life-sustaining treatments. Findings suggest the POLST program offers significant advantages over traditional methods to communicate preferences about life-sustaining treatments.

### Keywords

end-of-life; ethics; nursing facility; do not resuscitate; do not hospitalize

## INTRODUCTION

Life-sustaining treatment preferences are traditionally communicated using patient-generated advance directives or medical orders regarding cardiopulmonary resuscitation (CPR) status. Unfortunately, these traditional practices are largely ineffective at altering end-of-life treatments.<sup>1–4</sup> Patient-generated instructive advance directives (e.g., living wills) are generally unhelpful in the clinical setting because of vague instructions<sup>1,2,5</sup> and difficulty ascertaining when to act on the expressed preferences.<sup>6–8</sup> Medical orders regarding CPR status may appear potentially more useful but are only relevant for patients in cardiopulmonary arrest. Patients with do not resuscitate (DNR) orders are often assumed to prefer less aggressive care, resulting in limitations on treatment that may not necessarily reflect patient preferences.<sup>9–11</sup> Both advance directives and CPR status orders often fail to take into account a person's specific medical condition and lack an immediate effect on treatment.<sup>12</sup>

The Physician Orders for Life-Sustaining Treatment (POLST) Program was developed to overcome the limitations of traditional practices for communicating treatment preferences. It is designed for persons with progressive chronic illness or frailty. The POLST expands upon CPR status orders to include orders based on preferences about a range of life-sustaining treatments. The POLST Program was initially developed in Oregon but its use has spread in the past decade to states including West Virginia and parts of Wisconsin (see [www.polst.org](http://www.polst.org) for a current list of the over 30 states with active or developing programs). The name varies by state (e.g., Physician Orders for Scope of Treatment or POST in West Virginia) but the programs share key elements including a form with medical orders reflecting preferences about CPR status (Section A), medical interventions including hospitalization (Section B), antibiotics (Section C), and artificial nutrition (Section D) (see Figure 1—Oregon POLST form). These orders are recorded on a brightly colored, standardized medical order form that transfers across care settings. Research on the POLST Program confirms it facilitates documentation of a range of treatment preferences<sup>13,14</sup> and is associated with low rates of unwanted hospitalizations.<sup>14–16</sup> However, existing descriptive data come from convenience samples of POLST users that do not permit direct comparisons with traditional practices and limit generalizability.

A multi-state, retrospective observational cohort study was undertaken in order to evaluate the POLST Program in comparison to traditional practices in nursing facilities. Data were collected from Oregon, Wisconsin, and West Virginia to increase variability in the sample.

These states have highly similar versions of the POLST and use the POLST widely enough to generate an adequate sample for statistical comparisons but have different patterns of health care utilization in nursing facilities<sup>17</sup> and at the end of life.<sup>18</sup> The first goal of the study was to verify that POLST users are more likely to have orders reflecting life-sustaining treatment preferences than residents with traditional practices. The second goal was to evaluate whether there were any differences between residents with POLST versus those with traditional practices in the presence or management of two of the most common symptoms near the end of life: pain and shortness of breath.<sup>19</sup> Although research suggests that residents with POLST have higher than expected use of opioids,<sup>16</sup> it is also possible that the presence of a POLST form may negatively affect symptom management. The third goal was to evaluate the use of life-sustaining treatments for residents with POLST in comparison to residents with traditional practices.

## METHODS

This research was reviewed and approved by the institutional review boards for the protection of human subjects at Oregon Health & Science University, Gundersen Clinic, Ltd. (La Crosse, Wisconsin), and West Virginia University.

### Procedures

Every licensed nursing facility in each study state (N=685) was contacted by phone or mail to obtain an estimate of the number of residents with POLST forms (none, less than half, about half, more than half, nearly all or all). Chart reviews were conducted in nursing facilities in Oregon, Wisconsin, and West Virginia between June 2006 and April 2007. For the chart review, a systematic, stratified random sample of 30 Medicaid/Medicare certified nursing facilities was selected in each state for a total of 90 facilities. Telephone survey data were used to categorize POLST use by facilities as high (about half to all) or low (less than half or none). Facilities were stratified based on POLST use and location (rural vs. urban) based on the U.S. Department of Agriculture's continuum codes.<sup>20</sup> Facilities within these categories were also ranked according to the estimated percent of nonwhite residents based on facility-level Minimum Data Set (MDS) data obtained from the Centers for Medicare and Medicaid Services. Facilities with the highest proportion of nonwhite residents were targeted first for the chart review to help ensure a representative sample of nonwhite residents.

Twenty medical charts were randomly selected at each facility with the goal of obtaining equal numbers of charts for living and deceased residents, but additional charts of living residents were used when there were insufficient numbers of charts from eligible deceased residents. Research assistants worked with staff to identify nonwhite residents and these residents were then proportionally oversampled based on a predetermined sampling plan using random selection. Chart data were abstracted for the 60 days prior to the date of data collection for living residents and for the 60 days prior to the date of death for deceased residents. For symptom assessment and management data, data collection was restricted to a 7-day period. For living residents, this represented the week prior to data collection. For deceased residents, this represented the last week of life. For orders, preferences, and treatments, data were collected from all 60 days. Data were restricted to what was available in the nursing facility medical chart, which sometimes included hospital discharge reports.

### Subjects

The sample consisted of living and deceased nursing facility residents aged 65 and older. Living residents resided within the facility at the time of data collection with an original admission date of at least 60 days prior to the date of data collection. Deceased residents all

had died in that setting during the 6-month period prior to the date of data collection and had an original admission of at least 60 days prior to death.

### Data collection tools

Data collection focused on: 1) Demographics; 2) MDS assessments to identify hospice use and calculate cognitive status using the MDS Cognition Scale (MDS-COGS; range 0 = cognitive intact to 10 = severely impaired);<sup>21</sup> 3) Orders regarding CPR, hospitalization, antibiotics, and feeding tube use; 4) Symptoms, including the presence of pain (yes/no), the number of days with pain, shortness of breath (yes/no), and the number of days with shortness of breath; 5) Symptom management for pain including the use of any pain medication (yes/no), the use of non-opioids (yes/no), and the average amount of opioid pain medication per day in oral morphine equivalents; 6) Symptom management for shortness of breath including oxygen (yes/no), suctioning (yes/no), and medications such as inhalers or opioids specifically identified as being used to treat shortness of breath (yes/no); 7) The use of the life-sustaining treatments identified as likely to be used in this population, organized by the section of the POLST addressing each treatment: CPR (Section A); hospitalization/emergency department (ED) visits, IV fluids, dialysis, transfusion, surgery/invasive diagnostic tests, chemotherapy/radiation, and intubation/ventilator support (Section B); antibiotics (Section C); and feeding tubes (Section D).

### Inter-rater reliability

Inter-rater reliability was assessed throughout data collection. Within each state, research assistants performed 2 overlapping chart reviews at each site (1 living, 1 deceased), for a total of 60 charts per team. Across states, inter-rater reliability was assessed by having research assistants review anonymized charts (15 total) at regular intervals throughout the course of data collection.

### Data Analysis

Descriptive statistics were computed with SPSS 16.0 (SPSS Inc., Chicago, IL). Multilevel statistical modeling with HLM 6.0 (Scientific Software International, Inc., Lincolnwood, IL) was used to: 1) test for differences in descriptive characteristics between those with and without a POLST form, and 2) evaluate whether use of the POLST Program was associated with symptom assessment and management or the use of life-sustaining treatments. Multilevel modeling was selected because practice cultures may result in similar care delivery patterns within facilities, residents within the same facility may be more similar than residents in different facilities. If this 'nesting' of residents within facilities is not taken into account, standard errors are biased downward. Multilevel statistical modeling corrects the standard errors by taking the nesting of patients within facilities into account.

The first level of each model contained resident-level variables including covariates identified in preliminary analyses. Facilities formed the second level of the model. For brevity, residents with POLST forms in their charts are referred to as POLST users and residents with traditional practices (CPR status orders and/or living wills) are referred to as non-POLST users. Non-POLST users were grouped by code status orders based on evidence suggesting that that preferences for CPR are overgeneralized.<sup>9-11</sup> The symptom assessment and management analysis included residents with the same POLST orders in place for the 7-day review period and non-POLST users. POLST users were compared to non-POLST users on the variables of number of pain days, receipt of any pain medication, non-opioid pain medication, average daily morphine equivalents, number of days with shortness of breath, and any treatment for shortness of breath over a 7-day review period. In addition, multilevel models were performed on a subset of residents with the same orders in place for at least 60 days to assess the effect of orders on the use of relevant life-sustaining treatments. Life-

sustaining treatments were grouped together to reflect the scope of orders in each section of the POLST form (Sections A–D—see Figure 1). Logistic models were used for binary outcomes and Poisson models for count variables. An alpha level of  $P=.01$  was used for all analyses because of multiple comparisons with possibly related dependent variables.

## RESULTS

### Facility characteristics

A majority of all facilities (87%) provided data about use of the POLST Program and a majority of those approached (87%) agreed to participate in the chart reviews. There were no differences in facility participation in the telephone survey or chart review based on race, rural/urban setting, bed size, or proprietary status (non-profit/for-profit). Chart reviews occurred at 90 nursing facilities that were primarily urban (60%) and proprietary (67%) with an average bed size of 101 beds (range 41–473) and a median nonwhite resident population of 4.1% (range 0%–67%).

### Inter-rater reliability

The within state inter-rater agreement ranged between 89% (charts of deceased residents) and 95% (charts of living residents) with kappas for 10 key variables ranging between 0.91 to 1.00. Across states, the 6-way inter-rater agreement ranged between 90% (charts of deceased residents) to 95% (charts of living residents) with kappa for 10 key variables ranging between 0.94 to 1.00.

### Sample description

The sample of 1711 residents had an average age of 84.21 years ( $\pm$ SD, 8.25), MDS-COGS score of 4.94 ( $\pm$ SD, 2.93), and length of stay of 3.18 years ( $\pm$ SD, 3.49). The majority of the sample was female (69.7%) and white (87.7%). Nonwhite residents were 9.0% African American, 1.3% Asian, 1.3% Hispanic, 0.6% Native American, and 0.1% Native Hawaiian/Pacific Islander. Less than half (42.1%) of the residents in the sample were deceased and 11.0% of the overall sample were enrolled in hospice during at least part of the 60-day review. The residents were evenly distributed across Oregon (32.6%), Wisconsin (33.8%), and West Virginia (33.5%). POLST forms were found more frequently in the charts of residents who were white, in hospice, and deceased (Table 1). Although equal numbers of high POLST-using and low POLST-using facilities were visited in each state, there were differences in the number of residents in the sample who had POLST forms by state. In Oregon, 57.2% of the charts sampled had POLST forms; in West Virginia, 50.5% had POLST forms; in Wisconsin, where use is primarily regional, 35.9% had POLST forms. A resident or surrogate signature was found on 74.2% of forms. (Note: A resident or surrogate signature is mandatory in West Virginia but optional in Oregon or Wisconsin.)

### Orders reflecting preferences

By definition, 100% of residents with POLST forms had orders reflecting life-sustaining treatment preferences. Residents with POLST forms were more likely to have standing orders regarding any life-sustaining treatment than non-POLST users (100% vs. 87.0%,  $P<.001$ ). When CPR orders were excluded from the analysis, residents with POLST forms had significantly more standing orders reflecting life-sustaining treatment preferences than non-POLST users (98.0% vs. 16.1%,  $P<.001$ ). This pattern was consistent for orders reflected by each section of the POLST including: Section A – CPR status (100% vs. 85.7%,  $P<.001$ ); Section – B medical interventions such as hospitalization (97.4% vs. 13.9%,  $P<.001$ ); Section C – antibiotic use (95.7% vs. 3.2%,  $P<.001$ ); and Section D – feeding tubes (92.3% vs. 6.7%,  $P<.001$ ).

## Symptom management

POLST users and non-POLST users differed on race, life status (living vs. deceased), and hospice use, so these variables were included as resident level covariates in the multi-level modeling (see Table 1). Findings indicated there were no differences between POLST users (n=817) and non-POLST users (n=894) using the a priori P-value of  $P < .01$  on any of the symptom assessment or management measures. Wide standard deviations were noted for the average daily morphine equivalents so the medians were calculated (POLST = 26.2; non-POLST = 23.3). Additionally, a non-parametric test (Mann-Whitney U) was performed, but the difference between POLST and non-POLST users was still not significant ( $P = .345$ ). See Table 2 for more information.

## Life-sustaining treatments

The sample for these analyses eliminated POLST users with changes to their POLST forms during the 60 day review period (n=45 or 6%). For the analysis of each section of the POLST (Section A–D—see Figure 1), the sample is further restricted to include only residents with orders for that section and complete data for relevant covariates.

**Section A: Resuscitation**—CPR was provided to 1 POLST user (<0.1%) and 4 non-POLST users (0.2%). Cell sizes were too small to conduct multi-level modeling to evaluate the effect of orders on treatments.

**Section B: Medical Interventions**—The frequency of medical interventions for the POLST users with Section B orders and non-POLST users (n=1606) were as follows (# POLST users/# non-POLST users): hospitalization/ED visit (107/185); IV fluids (28/59); dialysis (4/12); transfusion (5/6); surgery/invasive diagnostic tests (1/8); chemotherapy/radiation (0/5); and intubation/ventilator support (0/1).

Multi-level modeling with associated odds ratios was performed to evaluate the relationship between orders and treatments for Section B. The model tested the effect of 5 types of orders on the use of medical interventions addressed by Section B of the POLST form using covariates identified in preliminary analyses: age, cognitive status, race, life status, and hospice (see Table 3). The five types of orders were POLST Comfort Care Only (as the reference group: n=300); POLST Limited Interventions (n=335); POLST Full Treatment (n=83); Traditional DNR (n=626); and Traditional Full Code (includes default full code orders: n=262). Results indicated that residents with POLST Comfort Care Only orders were 42% less likely to receive life-sustaining medical interventions than residents with POLST Limited Interventions ( $P = .03$ , ns), and 67% less likely to receive life-sustaining medical interventions than residents with POLST Full Treatment orders ( $P = .004$ ). Similarly, residents with POLST Comfort Care Only orders were 59% less likely to receive life-sustaining treatments than residents with Traditional DNR orders ( $P < .001$ ) and 71% less likely than those with Traditional Full Code orders ( $P < .001$ ) (see Table 4). Post-hoc analyses found no differences in the use of medical interventions for residents with POLST Full Treatment orders and Traditional Full Code orders (OR, 1.25, 95% CI, .61–2.28,  $P = .54$ ). Similarly, there were no differences in the use of medical interventions between those with Traditional DNR orders and Traditional Full Code orders (OR, 1.40, 95% CI, .91–2.14,  $P = .12$ ).

**Section C: Antibiotics**—Multi-level modeling with associated odds ratios was also performed to evaluate the relationship between orders and treatments for Section C. Antibiotics were provided to 250 POLST users with Section C orders (35%) and 349 non-POLST users (39%).

The model tested the effect of POLST Section C and traditional practices on the use of antibiotics: POLST No Antibiotics (n=28); POLST No Antibiotics Except for Comfort/No Invasive Antibiotics (n=227); POLST Full Treatment (as the reference group: n=454); Traditional DNR (n=626); and Traditional Full Code (n=259). Since the five groups differed on age, cognitive status, race, life status, and hospice, these variables were included as resident level covariates. Multi-level modeling found that there were no differences between these five groups in the use of antibiotics. The overall percentage of residents receiving antibiotics ranged from 32.1% to 41.7% regardless of the orders in Section C of the POLST or code status.

**Section D: Artificial Nutrition**—Feeding tubes were used for 25 POLST users (3.4%) and 62 non-POLST users (6.9%). Cell sizes were too small to conduct multi-level modeling to evaluate the effect of orders on treatments.

## DISCUSSION

Traditional practices for documenting and communicating end-of-life treatment preferences beyond CPR have generally not been found to be helpful in making treatment decisions at the bedside and do not alter care.<sup>4</sup> However, the findings from this multi-state chart review study suggest that the POLST Program may make a difference. Nursing facility residents with POLST forms have more immediately actionable medical orders reflecting treatment preferences about CPR and other interventions than residents without POLST forms, suggesting more consistency in the generation of such orders than is seen with traditional practices. POLST use alone did not affect symptom frequency or management, suggesting comparable attention to comfort in both groups. More importantly, residents with POLST forms reflecting preferences for Comfort Measures Only in Section B were significantly less likely to receive life sustaining medical interventions (13.7%) than residents with POLST Full Treatment orders (22.9%), Traditional DNR orders (25.9%), or Traditional Full Code orders (24.4%).

This is the first study to compare the use of the POLST Program with traditional practices. The POLST Program's association with the reduced use of unwanted life-sustaining treatments in a large, geographically disparate sample is unprecedented. Although a few studies suggest the systematic implementation of clinically designed advance care planning programs can result in end-of-life treatments that honor patient preferences in nursing facilities within the same community,<sup>22, 23</sup> most efforts undertaken to ensure that end-of-life treatments are consistent with patient preferences do not succeed.<sup>4, 24</sup> The POLST Program is built upon a coordinated system of care across treatment settings that includes emergency services, hospitals, primary care practices, hospices, and nursing facilities and relies upon standardized, specific orders for a range of treatments, which make the POLST Program unique and may explain its apparent success.<sup>2, 25</sup>

POLST orders were most highly associated with differences in the use of life-sustaining medical interventions addressed by Section B of the POLST form. In this sample, these medical interventions primarily consisted of hospitalization and ED visits. Research suggests that the unwanted and potentially non-beneficial hospitalization of nursing facility residents is a common but often preventable event which carries significant risks to these individuals, who are susceptible to hospital-acquired infections and other adverse outcomes.<sup>26</sup> Specific “do not hospitalize” orders, similar to the types of orders found on the POLST form, are associated with reductions in the hospitalization of nursing home residents but are rarely used.<sup>27–29</sup> Only 14% of non-POLST users in this sample had orders reflecting preferences about hospitalization, in comparison to 97% of POLST users, and most POLST forms reflected a preference to restrict hospitalization or decline ICU care. The POLST

offers an advantage over traditional “do not hospitalize” orders as it includes orders for hospitalization when comfort needs cannot be met in the current care setting and also allows for hospitalization while opting out of more aggressive ICU care. Residents with POLST forms who desired full treatment received the same level of treatment as residents without POLST forms.

In contrast, POLST orders were not associated with the use of antibiotics, despite specific orders addressing antibiotic use in Section C. These findings suggest that the use of standing orders to prospectively make decisions about antibiotics may be an ineffective strategy, perhaps because there is substantial variability in interpretation of when antibiotics should be used to enhance comfort.<sup>30</sup> Further research is needed to determine the value of standing orders regarding antibiotic use and factors that may influence decisions regarding the use of medications to treat infections near the end of life.

It is notable that there were differences in the use of POLST by non-white residents, a majority of whom were African American. Non-white residents were less likely to have a POLST form than white residents and the orders on these forms reflected a preference for more aggressive interventions in Section B. This is consistent with prior research that has found that healthcare providers engage in fewer discussions about possible treatment restrictions with non-white residents and family members than with white residents<sup>31</sup> and that non-white nursing home residents are less likely to have advance directives or DNR orders than white residents.<sup>32, 33</sup> Study findings also demonstrate the flexibility of POLST as a tool to facilitate preferences both to elect and decline life-sustaining treatments.

### Limitations

This sample consisted of long-term stay residents (60 days or more) with no changes in their POLST forms during the review period, so findings may not apply to residents with shorter lengths of stay or more frequently re-written POLST orders. Many factors may influence whether a facility uses the POLST Program or whether a specific resident has a POLST form, and not all these factors could be accounted for in the analysis. It is also possible that compliance with preferences to limit hospitalization is not as high as suggested by the findings, as residents discharged to the hospital without readmission were excluded from this sample and the chart abstraction method yielded limited information about treatments provided outside the nursing facility setting. The reliance on nursing facility records may also result in an under-representation of deceased residents with orders for more aggressive interventions who died after transfer to the hospital. Challenges in interpreting the wide variety of state and facility-specific advance directives led to a decision to group non-POLST users by CPR status only and forgo analysis by advance directive use. It is unclear if and to what extent advance directives guided treatment decisions in either group, though it is notable that the methodological challenges faced in using advance directives in the analyses mirrors criticisms of their clinical utility.<sup>1,2,5</sup> Finally, it was not possible to analyze the association between POLST orders and the use of CPR or feeding tubes due to their infrequent use in this sample.

### Directions for future research

Study findings raise several questions about the POLST Program that merit further investigation. First, while a majority of POLST forms contained either resident or surrogate signatures, additional data is needed to confirm that the orders on the POLST are reflective of resident treatment preferences as has been suggested by previous pilot research.<sup>34</sup> Second, it is unclear how the POLST is used outside of the nursing facility and hospice setting.<sup>14</sup> Future research should focus on tracking individuals with POLST forms



throughout the system of care, which would capture short-term/rehabilitation nursing facility residents as well as individuals within hospital and community settings.

## CONCLUSION

Residents with POLST forms were more likely to have treatment preferences documented as medical orders than residents with traditional practices, and POLST orders restricting medical interventions were associated with the lower use of life-sustaining treatments such as hospitalization and IV fluids. There was no relationship between symptoms or symptom management and use of the POLST. Study findings suggest use of the POLST Program offers significant advantages over traditional methods to communicate treatment preferences in the nursing facility setting.

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HHA PERMITS DISCLOSURE OF POLST TO OTHER HEALTH CARE PROFESSIONALS AS NECESSARY																			
<b>Physician Orders</b>																			
<b>for Life-Sustaining Treatment (POLST)</b>																			
<small>(See below for criteria, steps, correct completion or fill this as a Physician Order. Check each box on the primary medical condition and address the wishes for completed copies to the patient, the patient's representative, and to transfer with dignity and respect.)</small>	<small>Last Name</small>																		
<small>First Name</small>	<small>First Name Middle Initial</small>																		
<small>Sex of Birth</small>	<small>Date of Birth</small>																		
<small>For medical use only. Do not use for transfer of care.</small>																			
<b>A. COMPLEMENTARY RESPIRATORY CARE:</b> <small>Prevent falls or other risks to safe breathing.</small> <input type="checkbox"/> Resuscitate: CPR <input type="checkbox"/> Do Not Attempt Resuscitation (DNAR, no CPR) <small>When used, complementary respiratory interventions B, C, and D.</small>																			
<b>B. MEDICAL INTERVENTIONS:</b> <small>Prevent hypoxia and/or hypoxemia.</small> <input type="checkbox"/> Comfort Measures Only: <small>Use medication by any route, positioning, wound care and other measures to relieve pain and suffering. Use oxygen, nebulizer and manual respiration of airway interventions as needed for comfort. <b>Do not transfer</b> to hospital for life-sustaining treatment. <b>Transfer</b> if comfort needs cannot be met in current location.</small> <input type="checkbox"/> Limited Additional Interventions: <small>Includes care described above. Use medical treatment, IV fluids and/or other medical as indicated. Do not use mechanical airway support, intubation, or mechanical ventilation. <b>Transfer</b> to hospital if indicated. <b>Do not transfer</b> care.</small> <input type="checkbox"/> Full Treatment: <small>Includes care described above. Use intubation, advanced airway interventions, mechanical ventilation, and cardiopulmonary as indicated. <b>Transfer</b> to hospital if indicated. Includes intensive care. <b>Additional Orders:</b></small>																			
<b>C. ANTIBIOTICS:</b> <input type="checkbox"/> No antibiotics. Use other measures to relieve symptoms. <input type="checkbox"/> Discretion use or limitation of antibiotics when infection occurs. <input type="checkbox"/> Use antibiotics if life can be prolonged. <small>Additional Orders:</small>																			
<b>D. ARTIFICIALLY ADMINISTERED NUTRITION:</b> <small>Always offer food by mouth if feasible.</small> <input type="checkbox"/> No artificial nutrition by tube. <input type="checkbox"/> Definitive area period of artificial nutrition by tube. <input type="checkbox"/> Long-term artificial nutrition by tube. <small>Additional Orders:</small>																			
<b>E. SUMMARY OF MEDICAL CONDITION AND SIGNATURES</b> <table border="0"> <tr> <td><small>Diagnosed with:</small></td> <td><small>Summary of Medical Condition</small></td> </tr> <tr> <td><input type="checkbox"/> None</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Heart Failure</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Health Care Representative</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Chronic Respiratory Condition</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other:</td> <td></td> </tr> <tr> <td><small>First Physician / Nurse Practitioner Name</small></td> <td><small>MD/DO/PA/NP</small> <small>Official Use Only</small></td> </tr> <tr> <td><small>Physician / NP Signature (handwritten)</small></td> <td><small>Name</small></td> </tr> <tr> <td><small>Date</small></td> <td><small>Date</small></td> </tr> </table>		<small>Diagnosed with:</small>	<small>Summary of Medical Condition</small>	<input type="checkbox"/> None		<input type="checkbox"/> Heart Failure		<input type="checkbox"/> Health Care Representative		<input type="checkbox"/> Chronic Respiratory Condition		<input type="checkbox"/> Other:		<small>First Physician / Nurse Practitioner Name</small>	<small>MD/DO/PA/NP</small> <small>Official Use Only</small>	<small>Physician / NP Signature (handwritten)</small>	<small>Name</small>	<small>Date</small>	<small>Date</small>
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<small>Physician / NP Signature (handwritten)</small>	<small>Name</small>																		
<small>Date</small>	<small>Date</small>																		
<b>SEND FORM WITH PERSON WHENEVER TRANSFERRED OR DISCHARGED</b>																			
<small>© COVERED UNDER THE HEALTH CARE INFORMATION ACT AND IS A TRADE SECRET. 2011-2012. Oregon Health Division. 1001 NE Oregon Street, Portland, OR 97232-3001</small>																			

Figure 1. Oregon POLST Form.

**Table 1**

Characteristics of Residents With and Without POLST Forms.

Characteristic	POLST Users n=817	Non-POLST Users n=894	P-value
	Mean ( $\pm$ SD)	Mean ( $\pm$ SD)	
Age, y	84.54 ( $\pm$ 8.27)	83.90 ( $\pm$ 8.23)	.25
MDS-COGS*	4.90 ( $\pm$ 2.92)	4.97 ( $\pm$ 2.94)	.75
Length of stay, y	3.15 ( $\pm$ 3.18)	3.21 ( $\pm$ 3.75)	.56
	No. (%)	No. (%)	
Female sex	565 (69.2%)	627 (70.1%)	.69
White race	744 (91.1%)	757 (84.7%)	<.01
Deceased	372 (45.5%)	349 (39.0%)	<.01
Hospice use	113 (13.8%)	75 (8.4%)	<.001

\* MDS-Cognition Scale (MDS-COGS) ranges from 0 (cognitively intact) to 10 (very severe impairment).<sup>19</sup>

**Table 2**

Symptom Assessment and Management for Residents With and Without POLST Forms.

	POLST Users n=817 % or Mean ( $\pm$ SD)	Non-POLST Users n=894 % or Mean ( $\pm$ SD)	OR/regression coefficient 95% CI	P-value *
<b>SYMPTOMS</b>				
Pain Present (% yes) <sup>†</sup>	40.6%	35.9%	1.15 .88–1.50	.31
Mean # of Days of Pain <sup>‡</sup>	1.29 ( $\pm$ 2.07)	1.08 ( $\pm$ 1.89)	1.20 .97–1.49	.09
Shortness of Breath Present (% yes) <sup>†</sup>	20.6%	18.6%	0.67 0.47–0.97	.03
Mean # of Days of Shortness of Breath <sup>‡</sup>	0.47 ( $\pm$ 1.21)	0.41 ( $\pm$ 1.09)	0.96 .76–1.13	.70
<b>SYMPTOM MANAGEMENT</b>				
Any Pain Med (% yes) <sup>†</sup>	79.6%	80.9%	0.82 .59–1.13	.22
Any Non-Opioid Pain Med (% yes) <sup>†</sup>	61.4%	66.4%	1.23 .91–1.67	.17
Mean Daily Morphine Equivalent in mgs <sup>§</sup>	63.25 ( $\pm$ 164.49)	80.60 ( $\pm$ 220.43)	-16.14 -42.05–9.77	.23
Any Treatments for Shortness of Breath (% yes) <sup>†</sup>	52.0%	41.7%	0.79 .60–1.04	.09

Note: Race (white vs. non-white), Life Status (deceased vs. living), and Hospice Use (yes vs. no) were covariates in the analysis. Data reflects documentation of symptoms and symptom management over the last 7 days of life for deceased residents and over the last 7 days of available charting for living residents.

\* a priori P-value set at P<.01

<sup>†</sup> logistic model

<sup>‡</sup> Poisson model

<sup>§</sup> Normal distribution model. Average daily morphine equivalents calculated among those with opioid medication (n= 422 for POLST, n=406 for No POLST).

Table 3

Characteristics of Residents Based on Section B Orders for POLST Users and Non-POLST Users with Traditional Code Status Orders.

Characteristic	POLST Comfort Measures Only n=300		POLST Limited Additional Interventions n=335		POLST Full Treatment n=83		Traditional DNR n=626		Traditional Full Code n=262	
	Mean (±SD)	No. (%)	Mean (±SD)	No. (%)	Mean (±SD)	No. (%)	Mean (±SD)	No. (%)	Mean (±SD)	No. (%)
Age, y	86.0 (±8.2)		84.9 (±7.9)		79.0 (±8.6)*		84.8 (±7.8)		82.0 (±8.8)*	
MDS-COGS <sup>†</sup>	5.5 (±2.8)		4.6 (±2.97)*		3.4 (±2.6)*		5.2 (±2.9)		4.4 (±2.9)*	
Length of stay, y	3.3 (±3.4)		3.0 (±3.0)		2.6 (±2.5)		3.3 (±3.8)		2.9 (±3.4)	
		No. (%)		No. (%)		No. (%)		No. (%)		No. (%)
Female sex	210 (70.0%)		238 (71.0%)		55 (66.3%)		455 (72.7%)		170 (64.9%)	
White race	279 (93.0%)		316 (94.3%)		59 (71.1%)*		555 (88.7%)*		197 (75.2%)*	
Deceased	160 (53.3%)		127 (37.9%)*		12 (14.5%)*		280 (44.7%)		63 (24.0%)*	
Hospice use	56 (18.7%)		31 (9.3%)		2 (2.4%)*		65 (10.4%)*		10 (3.8%)*	

\* Significantly different from reference group (POLST Comfort Measures Only) at P<.01.

<sup>†</sup> MDS-Cognition Scale (MDS-COGS) ranges from 0 = cognitively intact to 10 = very severe impairment) 21

**Table 4**

A Comparison of Orders and Life-Sustaining Treatments Addressed by Section B of the POLST Form for POLST Users and POLST Non-Users with Traditional Code Status Orders.\*

	N 1606	% receiving life-sustaining treatment	OR 95% CI	P-value <sup>†</sup>
POLST Comfort Only	300	13.7%	1.00 Reference group	--
POLST Limited Interventions	335	18.8%	1.73 1.06–2.83	.03
POLST Full Treatment	83	22.9%	3.03 1.45–6.34	<.01
Traditional DNR	626	25.9%	2.44 1.56–3.79	<.001
Traditional Full Code	262	24.4%	3.40 1.98–5.85	<.001

Note: Age, Cognitive Status (MDS-COGS),<sup>21</sup> Race (white vs. non-white), Life Status (living vs. deceased), Hospice Use (hospice vs. no hospice) included as covariates in the analysis. Data reflects chart documentation of orders and the use of life-sustaining treatment in place for the last 60 days of life for deceased residents and for the last 60 days of available charting for living residents.

\* The following life-sustaining treatments are included in this analysis: hospitalization/ED visits, IV fluids; dialysis, transfusion, surgery/invasive diagnostic tests, chemotherapy/radiation, and intubation/ventilator support.

<sup>†</sup> a priori P-value set at P<.01.