

The POLST Program: A Retrospective Review of the Demographics of Use and Outcomes in One Community Where Advance Directives Are Prevalent

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Abstract

Objectives: Determine the use and utility of the Physician Orders for Life-Sustaining Treatment (POLST) program in a community where powers of attorney for health care (POAHCs) are prevalent.

Methods: A retrospective review of medical record and death certificate data of 400 adults who died between September 1, 2007, and March 31, 2008, in the La Crosse County, Wisconsin community.

Demographic and cause-of-death data were collected from death certificates. Information about POAHC, POLST forms, and medical treatments provided in the last 30 days of life were abstracted from decedents' medical records.

Results: Sixty-seven percent of decedents had a POLST form, whereas 22% had POAHC alone. In comparison with decedents with POAHC alone, decedents with a POLST form were significantly older (83 versus 77 years, $p < 0.001$), more likely to die in a nursing home than in a hospital ($p < 0.001$), and more likely to die from a terminal or chronic illnesses (97%). Decedents with POLST orders for higher levels of medical treatment received more treatment, and in only two cases was there evidence that treatment was discrepant with POLST orders. In 31% of all POLST forms, the person appointed in the POAHC consented to the POLST orders.

Conclusions: POLST can be a highly effective program to ensure that patient preferences are known and honored in all settings. POAHCs are valuable because they identify appropriate surrogates when patients are incapacitated.

Introduction

THE PHYSICIAN ORDERS FOR LIFE-SUSTAINING TREATMENT (POLST) program is designed to provide standardized medical orders that will be honored across health care settings for patients who are frail or have advanced, progressive illnesses. The POLST program originated in Oregon in the early 1990s, and its use is rapidly spreading in the United States.¹ The POLST program is intended to be used in all community settings, including long-term care, home health, hospice, and assisted living facilities. Moreover, it is designed to guide treatment as a person moves from one setting of care to another—for example, from home to an ambulance, to an emergency department, to a hospital.

Previous studies have examined the use of POLST within specific types of care settings. In an early study of eight Oregon nursing homes, 180 residents were prospectively followed for 1 year. The POLST orders of these residents indicated that they did not want cardiopulmonary resuscitation (CPR) attempted, and that the primary goal of care was comfort.² None of the residents had CPR attempted, were admitted to an intensive care unit (ICU), or had ventilator support, and of those who were sent to the hospital, the majority had comfort as the goal of care. In a smaller, retrospective study of 54 frail elderly adults enrolled in a capitated senior health program, only 39% (21 of 54) had their POLST orders followed consistently.³ A study of hospice patients found a high rate of consistency between treatments provided

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and POLST orders.⁴ A recent retrospective study⁵ compared the use of POLST with the standard approach of writing medical orders for 1711 long-term care residents in three states. Looking only at POLST use in these nursing homes, this study determined that residents with POLST forms had significantly more medical orders regarding life-sustaining treatment than residents without POLST forms. Additionally, POLST orders limiting the use of life-sustaining treatment were associated with a lower use of such treatments. The use of advance directives (ADs) was not evaluated.

These findings, although strongly supportive of the clinical value of the POLST program, do not tell us how well POLST works in other settings, such as the emergency department, hospital, or home. They also do not tell us how effective POLST is when patients move from one setting to another, especially when POLST orders reflect that some type of treatment should be provided. Moreover, it is unclear what relationship POLST has to the use of ADs, such as a power of attorney for health care (POAHC), and whether POLST forms replace or supplement such documents.

The goals of this study are to determine (1) the demographics of individuals with a POLST form compared with those who have only a POAHC at the time of death; (2) the variety of orders that exist on the POLST form at the time of death; (3) the overall relationship between POLST orders and the use of medical treatment; (4) the rate of discrepancy between POLST orders and treatments provided; and (5) who is consenting to decisions when the POLST form is completed.

Methods

Study setting

Following approval of the research protocol by the Gunderson Clinic, Ltd. and Franciscan Skemp Healthcare institutional review boards, we conducted a retrospective review of the medical record and death certificate data of adults who died between September 1, 2007, and March 31, 2008, in La Crosse County, Wisconsin. La Crosse County, Wisconsin, has a mixed urban and rural population of approximately 110,000.⁶ All 12 health care organizations in the county participated in this study, including two nonuniversity, nonprofit teaching hospitals; seven nonprofit, Medicare-approved, long-term care facilities; two nonprofit home health agencies with hospice programs; and a county health management agency. All these organizations use the Respecting Choices® Advance Care Planning (ACP) system, an integrated, organized approach to ACP that utilizes standardized patient education materials and documents, medical records processes, policies and practices, and—in collaboration with treating doctors—trained nonphysician facilitators. These various components are designed to work in a coordinated manner to assist patients and their families to create informed advance plans (including POAHC and POLST forms), to document these plans in a uniform manner, to make sure that these plans are available to a treating physician when needed, and to ensure that treatment orders are written in a manner consistent with a patient's preferences. The system depends on measuring outcomes and quality to constantly improve each element of the system.^{7,8} This community has used Respecting Choices® as its system for ACP since 1993,^{9,10} and the POLST program was introduced into use in this community in 1997.

Population

The sample included adult decedents aged 18 years and older who resided in La Crosse County, Wisconsin, for at least 6 months prior to death and who were mentally capable at some point during the previous 15 years. Emergency department deaths, as well as deaths of adults in the community who were not admitted as patients to a health care organization, were reviewed to determine if adequate time had been available for health care professionals to review the patient's preferences prior to death. For example, decedents who were pronounced dead at the scene of an auto accident were excluded from the study.

Data collection

Research assistants traveled to each of the 12 participating health care organizations for data abstraction and used a standardized data collection form. The principal investigators (BH and BR) audited the data periodically for accuracy and consistency. Inconsistencies identified during data collection or entry triggered a second review of the data sources by the principal investigators; however, no formal reliability assessment was conducted. Questions about data interpretation were discussed and resolved in regular meetings between the research assistants and the principal investigators.

We sent a list of study decedent identifiers to the State of Wisconsin. In turn, the State provided us with a compact disc containing data from those decedents' death certificates, including date of birth, date of death, sex, location of death, marital status, zip code of residence, highest year of education completed, immediate cause of death, and any other relevant conditions. Cause of death was grouped into four categories: terminal, chronic, sudden, and no underlying disease.¹¹ Terminal causes were incurable conditions, such as advanced cancer, human immunodeficiency virus infection, and acquired immunodeficiency syndrome. Chronic causes included progressive illnesses that led to death over many months or years, such as chronic obstructive pulmonary disease, congestive heart disease, end-stage renal disease, and Alzheimer's disease. Sudden causes were cases in which no serious previously identified terminal or chronic disease existed, but newly diagnosed illness, such as stroke or myocardial infarction, led to death rapidly. The no underlying disease category included deaths from trauma or self-inflicted injury, including suicides and motor vehicle accidents.

Data collected from the medical records included information about the presence, date, type, and content of the ADs, as well as the presence of a POLST form, date, its respective orders, and who consented to the orders. Information was also recorded about key medical treatments (resuscitation efforts, intubation, antibiotics, feeding tubes, hospitalization, and ICU care) occurring within the last 30 days of life at the health care organization where the subject died, and the date of each treatment. Changes in code status within the last 30 days of life and code status at time of death were captured. A short narrative describing events leading up to the patient's death was also recorded on the data form. Treatments provided at the setting of death were reviewed to assess whether the treatments were consistent with POLST form orders (Fig. 1).

To evaluate discrepancies, we chose five scenarios in which inconsistencies seemed most concerning and easiest to

frequencies. To compare the demographics of decedents with a POLST with those with a POAHC but no POLST, we used two-sided *t* tests for age, χ^2 tests for sex and marital status, Fisher's exact tests for cause of death (COD) and location of death (LOD), and Wilcoxon rank sum tests for education level (where the maximum level of 17 represents 5 or more years of college). We also performed nested analyses with nesting within LOD (home/inpatient hospice; hospital/emergency department/observation/other; nursing home), and modeling was with binary response variables for marriage (married versus not married), COD (late chronic versus not), sex (men versus women), and education (level 0–12 versus over 12), whereas age was modeled as continuous. For the analysis of treatments ordered by treatments received per POLST section, we calculated adjusted odds ratios with 95% Wald confidence intervals along with *p* values using multivariate logistic regression; the adjustment factor was LOD (categories as in nested analyses); the No Preference Indicated groups were combined with Full Treatment groups. A *p* value <0.05 was considered significant. All analyses were performed using SAS version 9.2 (SAS Institute, Inc., Cary, NC).

Results

Demographics

A majority of the 400 decedents included in this study (268 or 67%) had a POLST form (Fig. 1)—or a POLST form and a

POAHC (58%)—at the time of death. One hundred sixteen decedents had some type of AD, but no POLST form; of these, 88 (76%) had a POAHC. Compared with decedents with only a POAHC, those with POLST forms were older on average (83 years versus 77 years; *p* < 0.001) (Table 1). They were also more likely to have died in long-term care (68% versus 3%; *p* < 0.001), and to have been widowed (53% versus 36%; *p* = 0.027). Most decedents with POLST forms died of chronic or terminal conditions (97%), but no significant relationship was found between the type of POLST orders written and cause of death.

Prevalence of treatment relative to orders

When the orders on the POLST forms were reviewed, it was found that the POLST form was used to create 35 unique combinations of medical orders (Table 2) that ranged from orders for full treatment in all sections (1%) to comfort measures in all sections (35%).

Relationship between POLST orders and amount of treatment received

Decedents with orders for higher levels of treatment in the Treatment Options and Antibiotics sections (sections B and C, respectively) of the POLST form were more likely to receive treatments than were decedents with orders for lower levels of treatment (Table 3). In the Treatment Options section

TABLE 1. DECEDENT DEMOGRAPHICS—OVERALL, AND BY ADVANCE DIRECTIVE AND POLST STATUS

Characteristic	All subjects N = 400 (100%)	POLST N = 268 (67%)	POAHC alone N = 88 (22%)	Other AD alone N = 28 (7%)	No AD/POLST N = 16 (4%)	P value ^a
Age, years						<0.001
Mean/median	80/84	83/85	77/80	74/80	64/64	
Range	36–108	45–108	40–97	48–96	36–84	
Men, %	45	39	49	71	69	0.096
Cause of death, %						<0.001
Late chronic	65	72	51	50	38	
Terminal	26.5	25	31	36	19	
Sudden	7	3	15	14	25	
Age >75 years	83	100	92	75	25	
Age <75 years	17	0	8	25	75	
No underlying disease	1.5	0	3	0	19	
Location of death, %						<0.001
Home	14.0	16	10	7	6	
Long-term care	46.3	68	3	0	0	
Hospital	27.5	11	59	57	75	
Inpatient hospice	9.5	4	19	36	0	
Emergency department	2.0	0	5	0	19	
Other (observation, other)	0.8	0	3	0	0	
Education, years						0.747
Mean/median	12/12	12/12	12/12	12/12	11/12	
Range	0–17	5–17	4–17	7–17	0–17	
Marital status, %						0.027
Divorced	10.8	10	9	14	19	
Married	38.8	33	49	57	44	
Single	4.3	3	6	7	6	
Widowed	46.3	53	36	21	31	

^aAll *p* values are for comparison of POLST versus POAHC alone. Per nested analysis within location of death, marital status, and cause of death become statistically insignificant.

POLST, Physician Orders for Life-Sustaining Treatment; POAHC, power of attorney for health care; AD, advance directive.

TABLE 2. COMBINATIONS OF POLST FORM ORDERS^a

	Section A resuscitation	Section B treatment options	Section C antibiotics	Section D artificially administered fluids and nutrition	N	%
1	DNR	Comfort Measures Only	Comfort Use Only	No Feeding Tube/IV Fluids	95	35
2	DNR	Comfort Measures Only	Comfort Use Only	Other (Fluids Only)	3	1
3	DNR	Comfort Measures Only	Comfort Use Only	Defined Trial Period	10	4
4	DNR	Comfort Measures Only	Comfort Use Only	Other (Discuss with MD)	1	<1
5	DNR	Comfort Measures Only	Comfort Use Only	Long-term Use	2	1
6	DNR	Comfort Measures Only	No IV/IM	No Feeding Tube/IV Fluids	20	7
7	DNR	Comfort Measures Only	No IV/IM	Other (Fluids Only)	1	<1
8	DNR	Comfort Measures Only	No IV/IM	Defined Trial Period	2	1
9	DNR	Comfort Measures Only	No IV/IM	Long-term Use	2	1
10	DNR	Comfort Measures Only	Other (Discuss with MD)	No Feeding Tube/IV Fluids	1	<1
11	DNR	Comfort Measures Only	Other (Discuss with MD)	Other (Discuss with MD)	2	1
12	DNR	Comfort Measures Only	Aggressive Treatment	No Feeding Tube/IV Fluids	11	4
13	DNR	Comfort Measures Only	Aggressive Treatment	Other (Fluids Only)	2	1
14	DNR	Comfort Measures Only	Aggressive Treatment	Defined Trial Period	6	2
15	DNR	Comfort Measures Only	Aggressive Treatment	Long-term Use	7	3
16	DNR	Limited Additional Interventions	Comfort Use Only	No Feeding Tube/IV Fluids	5	2
17	DNR	Limited Additional Interventions	Comfort Use Only	Other (Fluids Only)	1	<1
18	DNR	Limited Additional Interventions	Comfort Use Only	Defined Trial Period	1	<1
19	DNR	Limited Additional Interventions	No IV/IM	No Feeding Tube/IV Fluids	5	2
20	DNR	Limited Additional Interventions	No IV/IM	Other (Fluids Only)	1	<1
21	DNR	Limited Additional Interventions	No IV/IM	Defined Trial Period	4	1
22	DNR	Limited Additional Interventions	No IV/IM	Long-term Use	1	<1
23	DNR	Limited Additional Interventions	Other (Discuss with MD)	No Feeding Tube/IV Fluids	1	<1
24	DNR	Limited Additional Interventions	Other (Discuss with MD)	Other (Fluids Only)	1	<1
25	DNR	Limited Additional Interventions	Other (Discuss with MD)	Defined Trial Period	1	<1
26	DNR	Limited Additional Interventions	Aggressive Treatment	No Feeding Tube/IV Fluids	14	5
27	DNR	Limited Additional Interventions	Aggressive Treatment	Other (Fluids Only)	7	3
28	DNR	Limited Additional Interventions	Aggressive Treatment	Defined Trial Period	28	10
29	DNR	Limited Additional Interventions	Aggressive Treatment	Long-term Use	13	5
30	DNR	Aggressive Treatment	Comfort Use Only	No Feeding Tube/IV Fluids	1	<1
31	DNR	Aggressive Treatment	Aggressive Treatment	No Feeding Tube/IV Fluids	2	1
32	DNR	Aggressive Treatment	Aggressive Treatment	Defined Trial Period	3	1
33	DNR	Aggressive Treatment	Aggressive Treatment	Long-term Use	9	3
34	Resuscitate	Aggressive Treatment	Aggressive Treatment	Defined Trial Period	3	1
35	Resuscitate	Aggressive Treatment	Aggressive Treatment	Long-term Use	2	1

^aNote: On the POLST form studied, there are four sections to record orders with two checkboxes in Section A; three checkboxes in Section B; three checkboxes in Section C; and three checkboxes in Section D (see Fig. 1). Mathematically, there are 54 possible checkbox combinations. It is also possible to write in customization options for Sections B, C, and D as "other instructions." After removing combinations that would not make clinical sense (such as selecting "Attempt Resuscitation" in Section A and "Comfort Measures Only" in Section B), there are 36 clinically reasonable checkbox combinations in Sections A, B, C, and D to create medical orders on this POLST form. Of the 268 decedents with a POLST form, 205 (76%) specifically utilized only checkboxes; 19 of the 35 (54%) chosen combinations used only checkboxes; the remaining 63 (24%) forms comprised 16 of the 35 (46%) chosen combinations and were not in the set of 36 checkbox only combinations but included checkboxes in combination with customization options such as "Other—(Discuss with MD)" and/or left at least one section blank. For sections left blank, the POLST policy (as stated on the form) is to assume that full treatment in that section should be provided. In this table sections left blank are counted as full treatment for that section.

POLST, Physician Orders for Life-Sustaining Treatment; DNR, do not resuscitate; IV/IM, intravenous/intramuscular.

(Section B), decedents with orders for Limited Additional Interventions were 2.6 times more likely to receive treatment ($p=0.038$) than were decedents with orders for Comfort Measures Only, and those with orders for Aggressive Treatment were 11.6 times more likely to receive treatments ($p<0.001$). A similar pattern was found in the Antibiotics section (Section C), where in comparison with decedents with orders for Antibiotics for Comfort Only, those with orders for No IV/IM Antibiotics were 2.3 times more likely to receive antibiotics ($p=0.071$), and decedents with orders for Aggressive Treatment were 2.8 times more likely to receive antibiotics ($p=0.002$).

Discrepancy between medical orders and medical treatment provided

Sections A/B: Resuscitate/aggressive treatment.

Whereas none of the 255 decedents with a dated POLST form were resuscitated in the last 30 days of life, the five who requested that resuscitation be attempted also requested Aggressive Treatment in the Treatment Options section and received this approach to care until it was clear that such treatment would not reverse the acute illness. All five were hospitalized with admitting orders for full resuscitation, three were intubated, and two were cared for in an ICU (Table 3). Narrative data suggest that when it was

determined that further treatment was not indicated, the goals of care were re-discussed with the patient or health care agent (if appropriate), goals of care shifted to comfort, and hospital orders were rewritten to reflect the new plan of care. In each case, a new POLST was not completed because the person died in the hospital shortly after the change in goals of care.

Section B: Comfort measures only. None of the 157 decedents with POLST orders for Comfort Measures Only were intubated or received care in an ICU (Table 3). Although 15 were hospitalized, most (13 of 15) were hospitalized to enhance comfort. Only 2 of the 15 patients did not have their preferences to avoid hospitalization honored. Both of these patients were residents of a long-term care facility. One was transferred to the hospital for delirium and the other for pneumonia.

Section C: Antibiotics. Whereas most decedents had orders for Antibiotics for Comfort Only (45%), 31% of decedents had requested aggressive antibiotic use (Table 3). Antibiotic use was consistent with POLST orders. Twenty decedents with orders for Antibiotics for Comfort Only received antibiotics, but in all 20 cases, the decision maker authorized antibiotics use despite the order. Ten decedents with POLST orders for No IV/IM Antibiotics received antibiotics, but in all cases, the antibiotics were administered orally.

Section D: Artificially administered fluids and nutrition. We found a low use of artificially administered fluids and nutrition in this population. Most patients were able to take food and water by mouth until relatively close to death, and the majority (58%) did not wish to have a feeding tube to sustain life (Table 3). Of the four patients who had orders for long-term feeding tube use, two received feeding tubes; the other two did not because the treatment was not indicated.

Overall consistency

Of the 52 unique, potential discrepancies in treatment identified, orders to limit treatment were discrepant with the treatment provided in only two cases (4%), and in no cases were orders to provide treatment discrepant with the treatment provided.

Consent for the POLST orders

A majority of POLST forms (252 of 268; 94%) had documented evidence that the patient or a surrogate provided consent. Decedents were listed as the only person providing consent on the POLST form in 37% of cases (92 of 252), whereas a surrogate was listed as the only person providing consent in completing the POLST form in 41% of cases (103 of 252). These surrogates included health care agents ($n=79$), legal guardians ($n=15$), and next of kin/other ($n=9$). In 23% of cases (57 of 252), multiple persons provided consent—typically the decedent and one or more surrogates.

Discussion

The POLST program is designed to create a specific care plan documented as medical orders to guide decisions for

patients who are likely to die within the next 12 months, even as the patient transitions from care setting to care setting. This is the first study that provides data about the use of POLST in a range of treatment settings and in a community population. Decedents who had POLST forms were older on average (83 years), almost all had a chronic or terminal condition (97%), and most chose a medical treatment plan focused on comfort care rather than on sustaining life. Given all these characteristics, it is not surprising to find that a majority of these decedents (84%) died where they resided. Decedents who wanted full treatment received full support at a hospital until it was clear that such treatment failed and the patient or the patient's appointed surrogate consented to a change in the goals of treatment. It is also important to recognize that 65% of POLST forms had at least one order for more than comfort only level of intervention.

As others have reported,⁴ the amounts of treatment decedents received varied significantly depending on the orders indicated in the Treatment Options section (Section B) of the POLST form. In our study, however, patients with orders for Additional Limited Intervention and Aggressive Treatment were somewhat more likely to receive treatment, even though in our study we did not track chemotherapy, radiation treatments, or invasive diagnostic tests as life-sustaining treatments as was done in the previous study. Our study lends support to prior research by suggesting that the association between the type of order and amount of treatment persists, even when all community care settings are considered. However, in contrast to prior research, we found that antibiotic use differed based on orders in the Antibiotics section (Section C). This may be due to the fact that the present study focuses on decedents across the continuum of care rather than on long-term care residents alone. This is an area that requires further study.

Determining whether treatment provided is discrepant with the written orders is a complex undertaking. For example, the intent of a treatment is not always clear.¹² Sometimes new decisions are made, but POLST orders are not updated because the person died soon after the decision. In the 52 cases of potential discrepancy in this study, we found two cases of over-treatment and no cases of under-treatment. Patients who did not receive an ordered treatment (Resuscitation, Aggressive Treatment, or Artificially Administered Nutrition) usually did not receive it because either their illness did not require that treatment or the most appropriate decision maker decided to forgo treatment based on new medical information that the patient would die even if the treatment was attempted. In those cases in which treatment received appeared inconsistent with POLST orders, further review of the medical record usually revealed that either the treatment was not discrepant or that the appropriate decision maker agreed to the treatment. This decision to override the POLST order by a patient or surrogate happened in only 20 cases and, typically, involved deciding to treat a minor illness with a course of antibiotics in a long-term care facility. This finding is consistent with data suggesting that POLST orders are consistent with treatment 94% of the time.¹²

These data suggest that POAHC still plays an important role in decision making, even when POLST forms are prevalent. First, decedents with a POAHC but no POLST form were

younger and more likely to die of sudden or traumatic causes than were decedents with a POLST form, suggesting that these decedents may not have been good candidates for a POLST form. Second, in 31% of cases when decedents had a POLST form, the health care agent appointed by the decedents' POAHC served as the sole decision maker. In both cases, having a POAHC in place can be helpful because it determines who will make decisions for a person who has lost the ability to make his or her own decisions and when outcomes of further treatment would likely be unacceptable to the patient.

This study has a number of limitations. First, La Crosse County's population is largely white and Christian. Its health care delivery system is controlled to a great extent by two integrated health organizations. Thus, it is not clear whether these findings can be generalized to larger, more diverse populations with less integrated health care delivery systems. Our study is also limited in some instances by the challenge of retrospectively determining if a medical order was followed correctly. Determining whether the care a patient received was consistent or discrepant with the patient's wishes may be more precise if done prospectively. Further, we collected treatment data in the last 30 days of life only from the health care organization caring for the patient at the time of death, not from all sites of care during the last 30 days of life. Thus, of the 11% of patients with a POLST who died in a hospital, any treatments provided at a nursing home in the last 30 days prior to transfer to the hospital would have been missed. Finally, La Crosse is a community where the Respecting Choices® ACP facilitation by nonphysicians is well established and widely used for both basic ACP and for POLST decision making. It is difficult to separate the contribution of this approach from the POLST paradigm because the two are so tightly connected.

Despite these limitations, the data appear to strongly support use of the POLST paradigm in honoring a patient's care plan in all settings of care. Any lingering doubts about the value of the POLST paradigm as a clinical tool will be laid to rest only by a prospective, multisite trial to determine how the POLST program works when effectively implemented in more diverse communities and less integrated health systems.

Conclusion

These data suggest that the POLST program may serve as an effective approach to both document a patient's treatment plan and to honor this plan in a range of care settings. Although the POAHC plays an important role in creating POLST forms when a patient becomes unable to make his or her own decisions and for patients who become acutely ill before they might benefit from a POLST document, ADs by themselves are limited. In the ideal health system, then, we would have reliable, informed planning conversations to ensure that good planning is done first to create POAHC at a younger age and then create POLST forms when patients reach a point of health at which their death in the next 12 months would not be a surprise. Creating a system that promotes planning and decision making tailored to a patient's health status will help ensure that health care providers will be able to honor patient treatment preferences.

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Author Disclosure Statement

BJH and JDG are employees of Gundersen Lutheran Medical Foundation, which owns the copyrights to the materials associated with the Respecting Choices® program discussed in this article. BJH is a co-author of the Respecting Choices® professional training material and is entitled to some royalty from the sale of this material. BLR, SEH, and NJH have no competing financial interests. BJH is affiliated with the POLST program in La Crosse and serves on the National POLST Task Force Board.

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