

# Effectiveness of a Nurse-Led Multidisciplinary Intervention vs Usual Care on Advance Care Planning for Vulnerable Older Adults in an Accountable Care Organization

## A Randomized Clinical Trial

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**IMPORTANCE** Advance care planning (ACP), especially among vulnerable older adults, remains underused in primary care. Additionally, many ACP initiatives fail to integrate directly into the electronic health record (EHR), resulting in infrequent and disorganized documentation.

**OBJECTIVE** To determine whether a nurse navigator–led ACP pathway combined with a health care professional–facing EHR interface improves the occurrence of ACP discussions and their documentation within the EHR.

**DESIGN, SETTING, AND PARTICIPANTS** This was a randomized effectiveness trial using the Zelen design, in which patients are randomized prior to informed consent, with only those randomized to the intervention subsequently approached to provide informed consent. Randomization began November 1, 2018, and follow-up concluded November 1, 2019. The study population included patients 65 years or older with multimorbidity combined with either cognitive or physical impairments, and/or frailty, assessed from 8 primary care practices in North Carolina.

**INTERVENTIONS** Participants were randomized to either a nurse navigator–led ACP pathway (n = 379) or usual care (n = 380).

**MAIN OUTCOMES AND MEASURES** The primary outcome was documentation of a new ACP discussion within the EHR. Secondary outcomes included the usage of ACP billing codes, designation of a surrogate decision maker, and ACP legal form documentation. Exploratory outcomes included incident health care use.

**RESULTS** Among 759 randomized patients (mean age 77.7 years, 455 women [59.9%]), the nurse navigator–led ACP pathway resulted in a higher rate of ACP documentation (42.2% vs 3.7%,  $P < .001$ ) as compared with usual care. The ACP billing codes were used more frequently for patients randomized to the nurse navigator–led ACP pathway (25.3% vs 1.3%,  $P < .001$ ). Patients randomized to the nurse navigator–led ACP pathway more frequently designated a surrogate decision maker (64% vs 35%,  $P < .001$ ) and completed ACP legal forms (24.3% vs 10.0%,  $P < .001$ ). During follow-up, the incidence of emergency department visits and inpatient hospitalizations was similar between the randomized groups (hazard ratio, 1.17; 95% CI, 0.92-1.50).

**CONCLUSIONS AND RELEVANCE** A nurse navigator–led ACP pathway integrated with a health care professional–facing EHR interface increased the frequency of ACP discussions and their documentation. Additional research will be required to evaluate whether increased EHR documentation leads to improvements in goal-concordant care.

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Advance care planning (ACP) is increasingly recognized as a crucial step to ensure patients receive goal-concordant medical care.<sup>1,2</sup> A number of studies have shown that ACP leads to decreased hospitalization and in-hospital death, decreased health care costs, and increased receipt of goal-concordant care.<sup>3-10</sup> However, due to a number of patient and health care professional barriers, ACP discussions continue to be underused, especially within primary care settings.<sup>11,12</sup> Fewer than 3% of Medicare beneficiaries are billed for ACP on an annual basis, which is problematic given the dynamic nature of goals and preferences with changing health status.<sup>13,14</sup> Recent progress has been made with interventions designed to both promote ACP discussions and facilitate their documentation. Examples include the combination of easy-to-read advance directives with an interactive ACP website (<https://prepareforyourcare.org/>)<sup>15,16</sup> or the combination of a conversational guide with interactive skills-based training evaluated by the Serious Illness Care Program in patients with cancer.<sup>17</sup> Despite these advances, patients and their loved ones continue to feel unprepared for ACP discussions, especially in outpatient contexts, and there remains continued need for health care professional-facing tools to help improve documentation of ACP discussions in the electronic health record (EHR) to affect clinical care.<sup>13,18-21</sup>

Another limitation of existing ACP interventions is that they are not typically targeted toward vulnerable older adults, that is, those with multimorbidity plus additional impairments in either physical function (eg, mobility) or cognition (eg, dementia), and/or those with frailty. Such patients have a high risk for disability and mortality,<sup>22-27</sup> and often experience burdensome care that does not meet their health care goals.<sup>11,28</sup> Driven by a focus on disease-based treatments, vulnerable older adults often experience lengthy and recurrent hospital stays as well as higher health care cost through the end of life.<sup>29-32</sup> There is a critical need for ACP interventions targeted toward vulnerable older adults to address the lack of preparedness of patients and their loved ones to engage in ACP and produce centralized, structured documentation within the EHR so as to provide a mechanism to support goal-concordant care.<sup>33-36</sup> The objective of this study was to pragmatically determine whether an ACP pathway, combining nurse navigators embedded within a Medicare Accountable Care Organization (ACO) with a health care professional-facing EHR discussion and documentation interface during the Medicare annual wellness visit, improved ACP documentation within the EHR for vulnerable older adults within the outpatient primary care setting.

## Methods

### Population

This study was approved by the Wake Forest Institutional Review Board. The trial protocol has been published previously, and is available in [Supplement 1](#).<sup>37</sup> An automated EHR query was created to identify potentially eligible patients, including patients from 8 primary care practices in the Piedmont area of North Carolina across 5 different counties (4 practices were located in rural counties). Patients were eligible for this study if

### Key Points

**Question** Can a nurse navigator-led pathway plus an integrated health care professional-facing electronic health record (EHR) discussion documentation interface increase advance care planning (ACP) documentation among vulnerable older adults compared with usual care?

**Findings** In this pragmatic, randomized effectiveness trial of 759 vulnerable older adults from 8 primary care clinics, a nurse navigator-led pathway plus an integrated health care professional-facing EHR interface resulted in higher rates of ACP documentation (42.2% vs 3.7%,  $P < .001$ ) vs usual care.

**Meaning** Use of a nurse navigator-led pathway and the health care professional-facing EHR interface may facilitate greater use of ACP for vulnerable older adults in outpatient primary care settings.

they were 65 years or older, if they were affiliated with an ACO, and if they had seen their primary care professional within the past 12 months. They were additionally required to have evidence of multimorbidity (Weighted Charlson Comorbidity Index  $\geq 3$ ),<sup>38</sup> and an indication of either cognitive or physical impairment, and/or frailty. Cognitive and physical impairments were defined on the basis of diagnosis codes derived from previous encounters and questions from the Medicare annual wellness visit. Frailty was based on an EHR-derived measure (electronic frailty index, eFI) based on the theory of deficit accumulation, with eFI greater than 0.21 taken to indicate frailty.<sup>37,39</sup> Patients were excluded if they had moderate to severe hearing loss (due to use of a phone intervention), if they were non-English speaking (not all of the nurse navigators spoke a second language), if no phone number was available, or if they had moderate to severe dementia based on the Short Portable Mental Status Questionnaire (SPMSQ).<sup>40,41</sup> Patients on hospice, in a long-term care facility, or who transferred care to a different primary care professional were also excluded from the study. Race and ethnicity data were collected directly from the EHR using fixed categories.

### EHR ACP Interface

We created an integrated ACP EHR interface, ACPWise, to allow primary care professionals to document ACP in a standardized manner using structured data elements within the EHR, while also allowing for free-text comments and responses. The ACPWise documentation program was directly integrated into the physician workflow within the EHR, documented ACP in a central location, and served as a conversational guide for health care professionals to ensure up-to-date ACP documentation at the point of care. We also created a telephone version of ACPWise for the nurse navigators. Everything documented by the nurse navigators autopopulated into the primary care professional's note to help facilitate discussion and documentation. In addition, an ACP order-set with embedded logic was created within the EHR to assist primary care professionals with ACP billing.

### Randomization

The goal of the present study was to evaluate the real-world effectiveness of the ACP pathway, which could be evaluated

pragmatically through a randomized study embedded within normal health system operations. However, we also wanted to study several aspects of the implementation of the ACP pathway, elements which necessitated informed consent. In order to balance these 2 goals, we used a somewhat uncommon design first proposed by the statistician Marvin Zelen.<sup>42,43</sup> In the Zelen design, all participants are randomized prior to informed consent, and then only patients randomized to the intervention are approached for consent, subsequently enrolled, and receive the intervention. The Zelen design permits a pragmatic test of effectiveness, as patients who decline the intervention still factor into overall estimates of effectiveness under an intent-to-treat paradigm, here facilitated by passive outcome follow-up via the EHR performed under an approved waiver of informed consent. Patients were randomized (n = 759) in a 1:1 allocation to either the nurse navigator-led ACP pathway (NN ACP pathway) or usual care, with the randomization stratified by primary care practice.<sup>37</sup> Participants randomized to the nurse navigator group were approached for verbal consent by telephone and subsequently enrolled. A copy of this consent was mailed to all enrolled participants in the nurse navigator group.

### Intervention: Nurse Navigator–Led ACP Pathway

#### Previsit ACP Planning

Full details are provided in the study protocol (Supplement 1).<sup>37</sup> Briefly, nurse navigators were trained in ACP using Respecting Choices, participated in a 1-hour training session to review the protocol and the telephone version of ACPWise, and observed a short roleplay example of a telephone previsit ACP discussion.<sup>44,45</sup> Patients who were randomized to the NN ACP pathway were approached by the nurse navigator via telephone and those who agreed to participate provided verbal consent. The nurse navigator then completed a brief previsit, telephone-based ACP planning discussion with the patient to help prime and engage them in the ACP process. This consisted of the nurse navigator discussing why ACP is important, and then reviewing a script covering health-related goals, things that bring meaning to the patient's life, preferred location of death, health-related concerns, and naming a surrogate decision maker. The nurse navigator rated the patient's level of engagement over the telephone as either precontemplative, contemplative, or action phase.<sup>46</sup> They then scheduled the patient for an in-person dyad visit with their surrogate decision maker or loved one and primary care professional in conjunction with their upcoming annual wellness visit. If the patient had recently completed their annual wellness visit, they were scheduled for an independent ACP visit. Nurse navigators used the telephone version of ACPWise to document these discussions and forwarded their note to the patient's primary care professional. After completion of the ACP telephone visit, patients were mailed an ACP packet which contained additional information about ACP and a copy of the North Carolina Advance Directive.

#### Dyad ACP Visits During the Annual Wellness Visit

After a patient completed their previsit ACP telephone visit with the nurse navigator, they were scheduled to complete a dyad

ACP visit with their primary care professional and, once completed, their primary care professional used the ACPWise documentation program to document and bill for their discussion. Additional topics incorporated into ACPWise that were not covered by the nurse navigators included disease understanding, prognosis, unacceptable states at the end of life related to their goals (eg, not being able to live without being hooked up to machines), reviewing and/or completing an advance directive, and whether to use or avoid 5 treatments: resuscitation, mechanical intubation, artificial feeding, intravenous fluids, and antibiotics. Patients were given the option if desired to opt out of the telephone previsit and only complete an in-person dyad visit or to complete only the telephone previsit. After the visit, patients were asked to complete a survey to assess quality of communication and engagement and primary care professionals were asked to complete a satisfaction survey about their experience.<sup>47</sup>

#### Usual Care

Patients who were randomized to usual care (control arm) received usual care, and were not approached by the research team. All primary care professionals had full access to the ACPWise documentation program.

#### Primary Outcome

The primary outcome was new documentation of ACP discussions within the EHR after randomization. This was identified through an initial manual review of the EHR by 2 independent reviewers blinded to the randomized assignment. For patients randomized to the NN ACP pathway, quality of ACP discussions was quantified through two measures. First, the quality of end-of-life communication (QOC)<sup>47</sup> survey was administered to assess the patient's perspective of the quality of the ACP discussion. The QOC is a 13-item instrument with 2 subscale scores for general communication skills and communication about end-of-life care.<sup>47</sup> Item scores range from 0 (poor) to 10 (perfect). As in previous analyses of the QOC, the ratings ranged from 0 to 11, with 0 imputed for items that were not completed or answered.<sup>48</sup> Second, we assessed how many ACP topics captured by the ACPWise documentation program were documented during the telephone and in-person ACP visits. Initially we planned on using a scoring system to measure the quality of discussion for nurse navigators and primary care professionals separately, but we were unable to do this because the nurse navigator notes autopopulated into the primary care professional's notes.

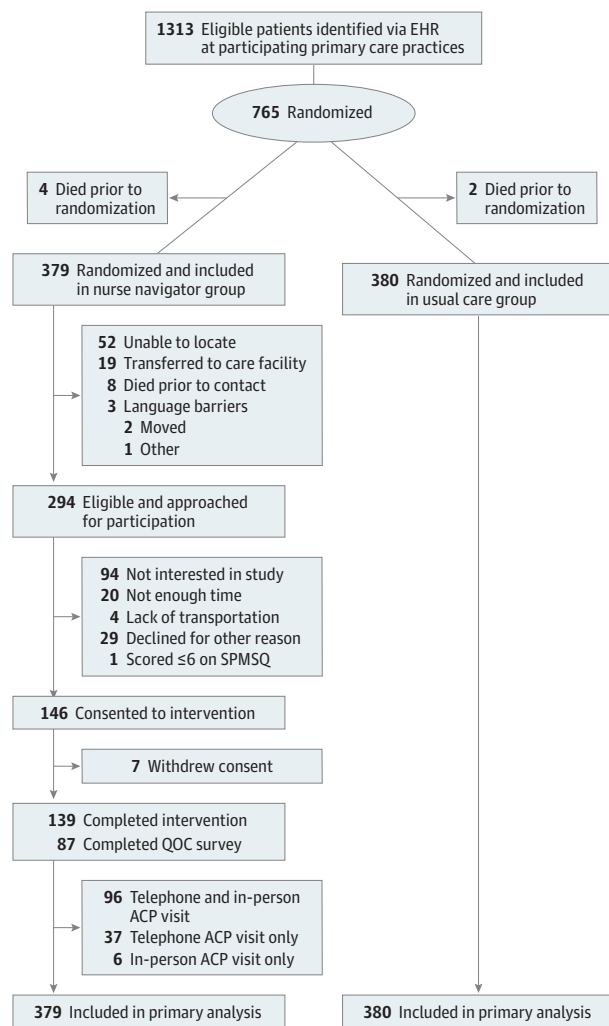
#### Secondary Outcomes

Secondary outcomes quantified auxiliary effects of the ACP process. They included use of ACP billing codes (99497, 99498), documentation of a designated surrogate decision maker, and completion and upload of new ACP legal forms (ie, advance directives, living wills, or powers of attorney) within the EHR.

#### Exploratory Outcomes

Our exploratory outcomes were Medical Orders for Scope of Treatment (MOST) completion rates and health care use. Health care use was obtained by extracting emergency department

Figure 1. Consort Flow Diagram



ACP indicates advanced care planning; EHR, electronic health record; QOC, quality of communication, SPSMQ, Short Portable Mental Status Questionnaire.

and inpatient hospitalization encounter information from the EHR. Encounter information was supplemented with admission, discharge, and transfer data from a transitional care network (PatientPing<sup>49</sup>) to ascertain encounters occurring outside of our health system.

### Sample Size and Power

Sample size estimates are fully described in the study protocol (Supplement 1).<sup>37</sup> Briefly, using results from a previous randomized trial of ACP strategies, we assumed 44% of patients randomized to the nurse navigator group would consent to participate.<sup>16</sup> Power calculations assumed 20% of patients in the nurse navigator group would be ineligible by the time they were contacted for consent, due to death or transition to a nursing home. We assumed that the incidence of documented goals of care in the EHR would be 70% or greater for patients who consented to participate, at most 25% for patients who did not consent to the study, 25% or fewer for patients randomized to

usual care, and 10% or fewer for patients who became ineligible prior to being approached for consent. Finally, we assumed a significance level of 0.05 and that loss to follow-up would be 10% over the 1-year follow-up period. These assumptions correspond to assuming that 135 individuals would consent to participate in the nurse navigator intervention, and that the overall rate of documented goals of care discussions in the EHR would be 38% or greater in the nurse navigator group, as compared with 25% or fewer in the usual care group. A total sample size of 765 individuals was estimated to detect such a difference with greater than 80% power.

### Statistical Analysis

We used generalized linear mixed models to compare the rate at which ACP discussions were documented within the EHR between the randomized groups, including a random effect for primary care practice. Analyses of secondary and exploratory outcomes (designation of a surrogate decision maker, completion of an Advanced Directive, living will, or power of attorney, completion of a MOST form, and use of ACP billing codes) were similarly based on generalized linear mixed models. Analyses of all-cause mortality were based on Cox proportional hazards regression models with the baseline hazard function stratified by primary care practice.<sup>50</sup> Marginal estimates of health care use (emergency department visits or inpatient hospitalizations) were based on the mean cumulative count estimator,<sup>51</sup> while randomized group comparisons were based on frailty model extensions of the Cox model as implemented in the R package frailtypack.<sup>52</sup> Both approaches accommodate recurrent events as well as the competing risk of death. Within the group of individuals randomized to the nurse navigator intervention, we also compared health care use between individuals who completed either a telephone or in-person ACP visit vs those who did not. We used inverse probability of treatment weights to account for nonrandom completion of an ACP visit,<sup>53</sup> with the weights computed using logistic regression including age, sex, race/ethnicity, Charlson Comorbidity Index, and the eFI score as model predictors (we used average treatment effect for the treated weights computed using the PSW R Package).<sup>39,54</sup> All analyses were conducted using SAS, version 9.4 (SAS institute), or the R Statistical Computing Environment.<sup>55</sup> All hypothesis tests were 2-sided and performed at the  $\alpha = .05$  level of significance.

## Results

### Study Participants

A total of 765 participants were randomized between November 2018 and April 2019 (Figure 1). A total of 6 patients died prior to randomization, leaving a final population of 759 participants. A total of 146 (49.6%) out of the 294 eligible participants randomized to the nurse navigator group consented to participate and 139 completed the intervention. Overall, the mean (SD) patient age was 77.7 years (7.4 years), with 18.7% participants being 85 years or older. Of all randomized patients, 455 (59.9%) were female and 71 (17.1%) were Black or African American. In the 2 years prior to randomization, patients had a median of 14 outpatient encounters and 71.4% had completed a Medicare annual

wellness visit. Based on the eFI, 82.2% were categorized as frail (eFI > 0.21), 23.7% had impaired physical function, and 22.0% had impaired cognitive function (Table 1).

Table 2 summarizes ACP outcomes by randomization group. The primary outcome of documented ACP within the EHR occurred in 160 patients randomized to the nurse navigator group (42.2%) as compared with 14 (3.7%) in the usual care group ( $P < .001$ ). There were similarly large increases for naming a surrogate decision maker; having an advanced directive, living will, or power of attorney; and completing a MOST form (all  $P < .001$ ). Use of billing codes for ACP visits occurred in 96 (25.3%) of 379 patients randomized to the nurse navigator group, as compared with 5 (1.3%) of 380 patients in the usual care group ( $P < .001$ ).

In terms of the quality of ACP discussions, 87 participants (85% response rate) in the nurse navigator group completed the QOC survey. Average ratings for the general communication subscale were very high (mean [SD] 10.2 [1.8]), whereas scores on the communication about the end-of-life subscale were somewhat lower (mean [SD] 7.9 [3.1]). Table 3 summarizes which ACP components were discussed and documented with the EHR, computed for participants in the nurse navigator group who completed a telephone visit with a nurse navigator and/or an in-person visit with their primary care professional. In general, the nurse navigators tended to discuss the majority of specified ACP components during the telephone visit, with 74 (55.2%) covering all 7 components. The majority of in-person ACP visits included a discussion of disease understanding (90.6%), prognosis (86.5%), and factors that would lead to a focus on comfort rather than longevity (51.0%). Other frequently addressed components were the discussion and completion of an advance directive (37.8%) or MOST form (47.8%).

Over a median follow-up time of 304 days, there were 31 deaths in the nurse navigator group and 34 deaths in the usual care group (hazard ratio [HR], 0.92; 95% CI, 0.56-1.49;  $P = .71$ ). Figure 2 displays the incidence of emergency department visits and/or inpatient hospitalizations during follow-up. During follow-up, there were 659 emergency department visits and/or inpatient hospitalizations; of those, 167 (25.3%) occurred at facilities outside the Wake Forest Baptist Health Network. At 1 year, the mean cumulative count estimate per 100 individuals was 101.4 events (95% CI, 83.8-120.8) for the nurse navigator group and 97.6 events (95% CI, 79.1-118.5) for the usual care group, with no significant between-group differences (HR, 1.17; 95% CI, 0.92-1.50;  $P = .20$ ). In exploratory analyses, we examined the incidence of these visits within populations of patients randomized to the nurse navigator group, comparing patients who completed a telephone or in-person ACP visit vs those who did not (eFigure in Supplement 2). At 1 year, the mean cumulative count estimate was 72.0 (95% CI, 51.3-94.7) per 100 individuals for patients who completed a telephone or in-person ACP visit, and 119.2 (95% CI, 94.0-144.5) per 100 individuals for patients who did not complete an ACP visit (HR, 0.59; 95% CI, 0.42-0.83;  $P = .003$ ).

## Discussion

A nurse navigator-led ACP pathway combined with a health care professional-facing EHR ACP interface was effective in im-

Table 1. Baseline Characteristics by Randomized Group

Characteristic	No. (%)	
	Nurse navigator (n = 379)	Usual care (n = 380)
Age, mean (SD), y	77.7 (7.5)	77.7 (7.4)
Age, y		
65-<75	149 (39.3)	156 (41.1)
75-<85	161 (42.5)	151 (39.7)
≥85	69 (18.2)	73 (19.2)
Female sex	226 (59.6)	229 (60.3)
Race/ethnicity		
White	300 (79.2)	317 (83.4)
Black or African American	71 (18.7)	59 (15.5)
Other	8 (2.1)	4 (1.1)
No. of outpatient encounters in prior 2 y, median (IQR)	14 (10-19.5)	14 (10-19)
Medicare annual wellness visit in prior 2 y	278 (73.4)	264 (69.5)
Weighted Charlson Comorbidity Index, median (IQR) <sup>a</sup>	4 (3-5)	4 (3-5)
eFI, median (IQR) <sup>b</sup>	0.25 (0.22-0.29)	0.25 (0.22-0.29)
eFI > 0.21	311 (82.1)	313 (82.4)
Diagnosis code for impaired physical function	95 (25.1)	85 (22.4)
Diagnosis code for impaired cognitive function	91 (24.0)	76 (20.0)
Charlson comorbidities		
Myocardial infarction	52 (13.7)	46 (12.1)
Chronic heart failure	94 (24.8)	95 (25.0)
Peripheral vascular disease	96 (25.3)	113 (29.7)
Cerebrovascular disease	126 (33.2)	118 (31.1)
Dementia	36 (9.5)	31 (8.2)
Pulmonary disease	184 (48.5)	172 (45.3)
Mild liver disease	15 (4.0)	21 (5.5)
Diabetes without complications	158 (41.7)	157 (41.3)
Diabetes with complications	189 (49.9)	198 (52.1)
Renal disease	209 (55.1)	203 (53.4)
Malignant tumor	101 (26.6)	103 (27.1)
Metastatic disease	13 (3.4)	5 (1.3)

Abbreviations: eFI, electronic frailty index; IQR, interquartile range.

<sup>a</sup> Scores range from 0 to 37 with higher scores indicating greater comorbidity.

<sup>b</sup> Scores range from 0 to 1 with higher scores indicating greater frailty.

proving ACP documentation within the EHR in an outpatient population of vulnerable older adults. The observed increase in this trial of ACP documentation within the EHR (42%) is clinically meaningful and encouraging, since documented ACP leads to greater congruence between proxies and patients in terms of end-of-life preferences,<sup>56</sup> a higher percentage of patients receiving their desired care at the end of their life,<sup>8,57</sup> and a reduction in unwanted care.<sup>58</sup>

Prior studies have highlighted that barriers to ACP for primary care professionals are related to uncertainty regarding when to discuss ACP, insufficient time, limited understanding of how to properly discuss ACP, and an inability to bill for

**Table 2. Advanced Care Planning Outcomes by Randomized Group**

Outcomes within the EHR	No. (%)		Odds ratio (95% CI)	P value
	Nurse navigator (n = 379)	Usual care (n = 380)		
Documented ACP/goals of care	160 (42.2)	14 (3.7)	20.7 (11.6-36.9)	<.001
Named surrogate decision maker	241 (63.6)	132 (34.7)	3.3 (2.5-4.5)	<.001
Advance directive/living will/power of attorney	92 (24.3)	38 (10)	3.0 (2.0-4.5)	<.001
Medical scope of treatment form	39 (10.3)	4 (1.1)	12.2 (4.2-34.9)	<.001
Use of advance care planning billing codes	96 (25.3)	5 (1.3)	28.3 (11.4-70.7)	<.001

Abbreviations: ACP, advanced care planning; EHR, electronic health record. Odds ratio based on generalized linear mixed model with random effect for primary care practice.

**Table 3. Quality of Completed Telephone and In-Person Advanced Care Planning Visits**

ACP components discussed and documented within the electronic health record	ACP visit, No. (%)			
	Completed (n = 96)		Completed telephone only (n = 37)	Completed in-person only (n = 6)
	Telephone	In-person		
Surrogate decision maker named	87 (98.9)	2 (2.0) <sup>a</sup>	44 (100)	5 (83.3)
Component discussed				
Health-related goals	77 (85.6)	11 (12.2) <sup>b</sup>	43 (97.7)	6 (100)
What brings meaning to patient's life	73 (81.1)	19 (21.1) <sup>b</sup>	44 (100)	5 (83.3)
What would be important should health worsen	90 (100)	4 (4.4) <sup>b</sup>	44 (100)	6 (100)
Preferred location at the end of life	90 (100)	9 (10.0) <sup>b</sup>	44 (100)	5 (100)
Health-related worries	90 (100)	14 (15.6) <sup>b</sup>	44 (100)	4 (100)
Level of engagement				
Contemplative phase	4 (4.4)	5 (5.6)	3 (6.8)	1 (16.7)
Action phase	79 (87.8)	4 (4.4)	38 (86.4)	5 (83.3)
Did not answer	7 (7.8)	81 (90.0)	3 (6.8)	0
Disease understanding discussed		82 (91.1) <sup>c</sup>		5 (83.3) <sup>c</sup>
Prognosis discussed		79 (87.8) <sup>c</sup>		4 (66.7) <sup>c</sup>
Unacceptable states at the end of life		43 (47.8) <sup>c</sup>		6 (100) <sup>c</sup>
Advance directive				
Discussed only		38 (42.2) <sup>c</sup>		3 (50.0) <sup>c</sup>
Completed		34 (37.8) <sup>c</sup>		4 (66.7) <sup>c</sup>
Medical scope of treatment				
Discussed only		20 (22.2) <sup>c</sup>		2 (33.3) <sup>c</sup>
Completed		43 (47.8) <sup>c</sup>		4 (100) <sup>c</sup>

Abbreviation: ACP, advanced care planning.

<sup>a</sup> If not discussed and documented during the telephone visit.

<sup>b</sup> Additional ACP documentation beyond what was documented during the telephone visit.

<sup>c</sup> These questions were not asked during the telephone previsit ACP visits and were only asked during the in-person ACP visit with their primary care professional.

ACP.<sup>59,60</sup> This study shows that some progress in combating these barriers can be made by expanding the team that guides ACP (nurse navigators), linking this team-based process to the Medicare annual wellness visit, and creating an EHR documentation interface to facilitate the workflow. Additionally, educating health care professionals about the ACP billing codes and creating order-sets within the EHR facilitates reimbursement. Even though ACP billing codes have been in existence since 2016, we found that many primary care professionals were not familiar with their use. Nurse navigators performing previsit planning with patients optimizes time spent with the primary care professional during the visit; the present study showed that primary care professionals required additional documentation of goals and values beyond those already noted by the nurse navigator in fewer than 20% of visits. As a result, primary care professionals were able to focus on disease

understanding, prognostic awareness, unacceptable patient states of being, and ACP form completion within the EHR. In addition, 26% of participants preferred to only discuss ACP with the nurse navigator and were not interested in further discussing ACP with their primary care professional.

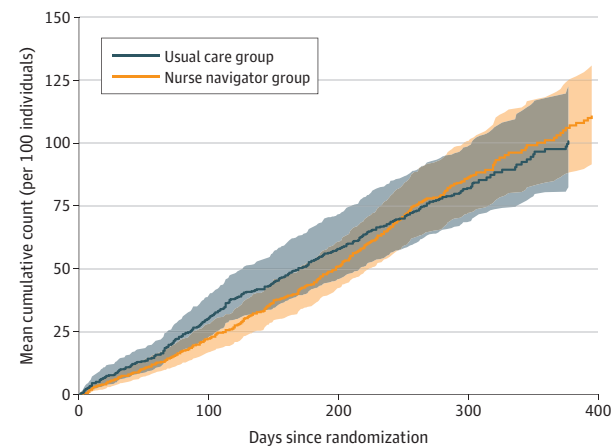
While the NN led ACP pathway did increase the completion of ACP forms, only 37% were completed during the initial in-person ACP visit; the remaining 63% were later scanned into the EHR. Health care professionals cited time limitations and lack of a notary or witness as the most significant barriers to completion of forms during the initial ACP visit. Another barrier to completion was the necessity of scanning forms into the EHR; for example, about 9% of the MOST forms that were completed were not scanned into the EHR, which highlights the need for universal electronic advance directives and MOST/Provider Orders for Life-Sustaining Treatment (POLST) forms.<sup>61</sup> We did

not observe differences between the randomized groups in emergency department visits or inpatient hospitalizations. Given the short follow-up period of this trial, and the fact that many patients did not agree to the intervention, this is not unexpected. It is also unclear to what extent improvements in goal-concordant care would necessarily lead to decreases for these types of health care encounters. Further research with longer follow-up will be required to examine how improvements in ACP documentation eventually impact use, especially at the end of life.

### Strengths and Limitations

The multiple strengths of this trial include its pragmatic design; automated identification of eligible patients from the EHR; integration of ACP documentation into the EHR to facilitate ACP discussions and enable centralized documentation; and supplementation of the ascertainment of health care use using admission, discharge, and transfer data to overcome the long delays associated with administrative claims. In addition, the use of nurse navigators embedded within an ACO, and not paid research nurses, is both a strength and limitation. On one hand, this demonstrates that the intervention can be integrated into existing clinical workflows without additional resources. However, implementation will naturally be more difficult in settings without existing nurse navigators or with other resource limitations. In addition, given the pragmatic design, we were limited by the depth of survey information we could collect from patients, with no contact with patients randomized to usual care. Generalizability may also be limited because participants were recruited from a single health system, all were within an ACO population, patients who were non-English speaking or residing within a long-term care facility were excluded, and the majority of randomized pa-

**Figure 2. Incidence of Emergency Department Visits and Inpatient Hospitalizations by Randomized Group**



tients were White. Finally, we could not assess the longitudinal effect of ACP discussions on care delivery, on the quality of medical decision making, nor on cost due to the short duration of this study.

### Conclusions

A nurse navigator led ACP pathway integrated with a health care professional-facing EHR interface substantially increases ACP discussion and documentation within the EHR. This trial suggests a promising new approach to ACP in the outpatient primary care setting and a potentially scalable approach to ACP for vulnerable older adults.

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