

**BRIEF REPORT****Aligning patient values and code status: Choice of Diction's Effect (CODE) study**

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**Abstract**

**Background:** Decisions regarding resuscitation after cardiac arrest are critical from ethical, patient satisfaction, outcome, and healthcare cost standpoints. Physician-reported discussion barriers include topic discomfort, fear of time commitment, and difficulty articulating end-of-life concepts. The influence of language used in these discussions has not been tested. This study explored whether utilizing the alternate term “allow (a) natural death” changed code status decisions in hospitalized patients versus “do not resuscitate” (DNR).

**Methods:** All patients age 65 and over admitted to a general medicine hospital teaching service were screened (English-speaking, not ICU-level care, no active psychiatric illness, no substance misuse, no active DNR). Participants were randomized to resuscitation discussions with either DNR or “allow natural death” as the “no code” phrasing. Outcomes included patient resuscitation decision, satisfaction with and duration of the conversation, and decision correlation with illness severity and predicted resuscitation success.

**Results:** 102 participants were randomized to the “allow natural death” ( $N = 49$ ) or DNR ( $N = 53$ ) arms. The overall “no code” rate for our sample of hospitalized general medicine inpatients age  $>65$  was 16.7%, with 13% in the DNR and 20.4% in the “allow natural death” arms ( $p = 0.35$ ). Discussion length was similar in the DNR and “allow natural death” arms ( $3.9 + 3.2$  vs.  $4.9 + 3.9$  minutes), and not significantly different ( $p = 0.53$ ). Over 90% of

Some results were presented at a mid-Atlantic American College of Physicians meeting.

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participants were highly satisfied with their code status decision, without difference between arms ( $p = 0.49$ ).

**Conclusions:** Participants' code status discussions did not differ in "no code" rate between "allow natural death" and DNR arms but were short in length and had high patient satisfaction. Previously reported code status discussion barriers were not encountered. It is appropriate to screen code status in all hospitalized patients regardless of phrasing used.

#### KEYWORDS

Allow a Natural Death, code status, CPR, resuscitation orders

## INTRODUCTION

The current healthcare system has failed to meet patients' end-of-life needs, resulting in clinically inappropriate interventions, worse family outcomes, and higher healthcare costs. People want supportive care and comfort near the end of life, as opposed to acute care services such as "heroic" resuscitation measures.<sup>1</sup> It is thus critical to have code status discussions that improve cardiopulmonary resuscitation (CPR) communication. Physician-noted barriers to code discussions include discomfort with the topic, time commitment, and difficulty adequately informing patients about code status.<sup>2</sup> Ethicists and palliative care practitioners have suggested that the specific language used in code discussions could improve patients' understanding and decision-making. One advocate, noting end-of-life discussions as "communication and semantic driven," described Do Not Resuscitate (DNR) as threatening, invoking coldness or cruelty; by contrast, "Allow Natural Death" was more comforting and reassuring to patients and families, despite using the word "death."<sup>3</sup> We explored code status discussions by conducting a prospective, randomized controlled pilot study of hospitalized adults over age 65 without documented code status, comparing two "no code" phrases: DNR versus "Allow Natural Death."

## METHODS

We recruited English-speaking adults aged 65+ admitted to the hospital teaching service at an urban academic medical center from August 2021 to August 2022. Patients were excluded for unstable psychiatric illness, intensive care unit-level care, or active substance misuse (all defined by the attending of record), or having an active DNR order (as code status discussions were likely already completed).

Patients were block-randomized into one of two study arms: CPR versus DNR; or CPR versus "Allow Natural Death." Participants were read a standardized code status stem (Supplementary [Methods](#)), and then had an

### Key points

- A 17% "no code" rate among general medicine hospital inpatients over age 65
- Code status discussions for general medicine inpatients were under 5 min and very well-received (>90% agreeing or strongly agreeing with satisfaction scale items)
- Allow a Natural Death does not lead to higher "no code" selection than Do Not Resuscitate in this pilot study

### Why does this paper matter?

Barriers to code status discussions from the physician's perspective include the time involved, fear of harming the patient/therapeutic alliance, and difficulty explaining a procedure, its technical details, and outcome in a way that corrects misconceptions and allows subjects to understand the decision they are making succinctly. This pilot study did not clearly establish Allow a Natural Death as a better alternative to Do Not Resuscitate in terms of patient self-report of feeling informed about the code status decision they were making but does provide evidence against two noted barriers by showing code status discussions (regardless of phrasing used) are both short and highly satisfactory to the patient.

unstructured code status conversation. Conversation length was timed, and participants completed the modified Satisfaction With Decision Scale (SWDS; Supplement).<sup>4</sup> Medical history was abstracted from the participant's medical chart and converted into the Charlson Comorbidity Index (CCI).<sup>5</sup> The Good Outcome Following Attempted Resuscitation (GO-FAR) score<sup>6</sup> was calculated via clinical factors such as age, presenting symptoms, medical history, and bloodwork.

TABLE 1 Demographics of study participants by intervention group.

	DNR group (N = 53)	AND group (N = 49)	Total (N = 102)
<b>Age</b>			
Mean (SD)	73.1 (6.8)	73.1 (6.8)	73.2 (6.7)
Median (IQR)	71 (68–77)	73 (66.5–79)	72.5 (68–78)
<b>Gender, N (%)</b>			
Male	28 (52.8)	26 (53.1)	54 (52.9)
Female	25 (47.2)	23 (46.9)	48 (47.1)
<b>Race<sup>a</sup>, N (%)</b>			
White	37 (69.8)	34 (69.4)	71 (69.6)
Black	6 (11.3)	9 (18.4)	15 (14.7)
Other	9 (17.0)	6 (12.2)	15 (14.7)
<b>Religion, N (%)</b>			
Catholic	15 (28.3)	18 (36.7)	33 (32.4)
Other	14 (26.4)	13 (26.5)	27 (26.5)
Other Christian	12 (22.6)	11 (22.4)	23 (22.6)
Jewish	12 (22.6)	7 (14.3)	19 (18.6)
<b>Education, N (%)</b>			
Up to HS diploma	16 (30.2)	10 (20.4)	26 (25.5)
Up to college degree	26 (49.1)	31 (63.3)	57 (55.9)
Graduate degree	11 (20.8)	8 (16.3)	19 (18.6)
<b>Household income, N (%)</b>			
<\$25,000	11 (20.8)	6 (12.2)	17 (16.7)
\$25,000–\$74,999	16 (30.2)	16 (32.7)	32 (31.4)
\$75,000–\$149,999	10 (18.9)	11 (22.4)	21 (20.6)
>\$150,000	8 (15.1)	8 (16.3)	16 (15.7)
Does not know or want to answer	8 (15.1)	8 (16.3)	16 (15.7)
<b>Has a living will</b>			
Yes	27 (50.9)	19 (38.8)	46 (45.1)
No/unsure	26 (49.1)	30 (61.2)	56 (54.9)
<b>Previous code status</b>			
Yes	15 (28.3)	13 (26.5)	28 (27.5)
No/unsure	38 (71.7)	36 (73.5)	74 (72.5)

Abbreviations: AND, allow natural death; DNR, do not resuscitate; HS, high school; IQR, interquartile range.

<sup>a</sup>There was one individual who did not volunteer their race and ethnicity during data collection.

TABLE 2 Code status outcomes by study group.

Chosen code status by clinical outcome	DNR arm	AND arm	p-Value
<b>Overall</b>			
Full code/CPR (%)	45 (86.5)	39 (79.6)	0.35
No code (%)	7 (13.5)	10 (20.4)	
Total	52 <sup>a</sup>	49	
<b>Good outcome following attempted resuscitation<sup>b</sup></b>			
Category 1 (above average chance of survival)			

(Continues)

TABLE 2 (Continued)

Chosen code status by clinical outcome	DNR arm	AND arm	<i>p</i> -Value
Full code/CPR	20 (95.2)	17 (81.0)	0.34
No code	1 (4.8)	4 (19.0)	
Total	21	21	
Category 2 (average) and 3 (low chance of survival)			0.84
Full code/CPR	25 (80.6)	22 (78.6)	
No code	6 (19.4)	6 (21.4)	
Total	31	28	
Charlson Comorbidity Index <sup>c</sup>			
Mild			
Full code/CPR	6 (85.7)	4 (80)	1.00
No code	1 (14.3)	1 (20)	
Total	7	5	
Moderate			
Full code/CPR	14 (87.5)	20 (80)	0.68
No code	2 (12.5)	5 (20)	
Total	16	25	
Severe			
Full code/CPR	25 (86.2)	15 (78.9)	0.70
No code	4 (13.8)	4 (21.1)	
Total	29	19	

Abbreviations: AND, allow natural death; DNR, do not resuscitate; CPR, cardiopulmonary resuscitation.

<sup>a</sup>One participant in the DNR arm was undecided after going through the study procedure.

<sup>b</sup>Good Outcome Following Attempted Resuscitation score ranges from −15 (27% chance of resuscitation with cerebral performance category scale 1) to 76 (0.9% chance).

<sup>c</sup>Charlson Comorbidity Index range is 0–33, with categories of mild (1, 2), moderate (3, 4), and severe (≥5).

Code status decision was assessed with chi-square testing. Length of code status discussion was assessed via one-way analysis of variance, while modified SWDS was assessed with Fisher's exact test. Exploratory analyses looked at GO-FAR scores and CCI categories using Fisher's exact test.  $p < 0.05$  was considered significant. The 95% confidence interval (CI) for event rate was calculated with the binomial test. Analyses were performed using IBM SPSS Statistics for Windows, v.29.0 (IBM Corp, Armonk, NY).

This study was approved by the Rutgers IRB (Pro2020002188) and registered on ClinicalTrials.gov (NCT04896411). Written informed consent was obtained.

## RESULTS

A total of 102 participants completed the initial stage of the study and had data analyzed (Figure S1). There were no statistically significant demographic differences between the randomization arms (Table 1). 17/102 (16.7%, 95% CI 10.0–25.3%) of the participants chose “no code” after discussion, with 13% in the DNR arm and

20.4% in the “Allow Natural Death” arm ( $p = 0.35$ ). An exploratory analysis found a higher but nonsignificant proportion of participants choosing “no code” in the “Allow Natural Death” group (19.0%) than choosing “no code” in the DNR group (4.1%) in the “above average survival” GO-FAR category (Table 2;  $p = 0.34$ ). There was no difference in “no code” selection among CCI illness severity categories between the study arms (Table 2). Over 90% of participants indicated high satisfaction (agree or strongly agree; Supplement), without statistically significant differences between the groups, including overall satisfaction with their decision for code status ( $p = 0.49$ ). On average, discussions did not last more than 5 min overall ( $4.4 \pm 3.6$  min) and had similar durations between groups ( $p = 0.53$ ).

## DISCUSSION

Our finding of 83.3% resuscitation preference (i.e., perform CPR) appears to be the first report for general inpatients over age 65. The closest to a general CPR

preference in older adults comes from a 1992 survey of an outpatient geriatric practice<sup>7</sup> and a 1994 study in four Hospital Elder Life Programs,<sup>8</sup> quoting 41% and 55% respectively.

The 16.7% “no code” decision rate in this study showed preference for “Allow Natural Death” (20.4%) versus DNR (13%). Patients expressed high satisfaction overall (Figure S2) in brief discussions. This should alleviate physician concerns that code status discussions undermine patient satisfaction.<sup>9,10</sup>

This study had some limitations, including small sample size (power), being a single site, and excluding non-English-speaking participants.

This study found using “Allow Natural Death” phrasing resulted in nonsignificantly higher rates of choosing “no code” among hospitalized patients, and overall discussions were short in length and had high patient satisfaction. As a result, we strongly encourage providers to ask code status in all hospitalized patients, regardless of phrasing used.

#### AUTHOR CONTRIBUTIONS

KJK, CC, RG, SN, PD, and MBS contributed to the design of the study. KJK, CC, RG, RB, AA, IL, JN, SN, PP, MP, SP, DS, CTR, and RS helped with participant recruitment and intervention. KJK, CC, JP, SJ, PD, and MBS contributed significantly to manuscript preparation.

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#### CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

#### SPONSOR'S ROLE

There was no external funding for the study.

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#### SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**Figure S1.** CONSORT flow diagram. Patients were deemed clinically inappropriate when their attending of record noted inability to communicate (e.g., stroke, delirium), concern for undiagnosed dementia, psychiatric illness (most commonly comorbid anxiety), or a new and severe illness that attendings were concerned left the patient too vulnerable to participate in a research study.

**Figure S2.** Satisfaction with decision scale by study arm. Questions asked of participants were as follows: I was

adequately informed about the different choices for cardiopulmonary resuscitation (CPR); the decision I made was the best decision possible for me personally; my decision was consistent with my personal values; I expect to successfully carry out (or continue to carry out) the decision I made; I had as much input as I wanted in my choice regarding CPR; I am satisfied with the decision that was made about my choice for CPR. Two participants in the Do Not Resuscitate arm did not complete the Satisfaction With Decision Scale.

**Supplementary Methods.** Exact phrasing of standardized code status stem showing language used in both arms of the trial.

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