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Associations with resuscitation choice: Do not resuscitate, full code or undecided

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ABSTRACT

Objective: To examine associations of individual exposure and knowledge of resuscitation mechanics and prognosis with specific decision: Do Not Resuscitate (DNR), Full Code (FC) or Undecided (UD). *Methods*: Cross-sectional questionnaire at 3 sites: geriatric assessment center, internal medicine resident clinic, and inpatient palliative care service.

Results: 407 completed the questionnaire: 27% identified as DNR, 24% as FC and 49% as UD. Few (11.8%) respondents reported discussion of DNR status with their primary care doctor. DNR choice was associated with knowledge of DNR mechanics, OR = 2.30 (95%CI: 1.23–4.30), physician discussion, OR = 5.58 (95%CI: 2.39–13.04) and confidence in understanding own health problems, OR = 2.89 (95%CI: 1.04–8.04). FC choice was associated with knowledge of FC mechanics, OR = 2.01 (95%CI: 1.03–3.93) and media code exposure, OR = 3.80 (95%CI: 1.46–9.92). Knowledge of resuscitation prognosis was negatively associated with FC, OR = 0.48 (95%CI: 0.23–0.98).

Conclusion: Many individuals lack knowledge or understanding of resuscitation procedure, its risks, and prognosis. Educational efforts, for both patients and healthcare professionals, are needed to improve individual knowledge needed for informed decision.

Practice Implications: Scheduled time for physician-patient discussion remains important for education about individual health conditions and risk/benefits related to resuscitation.

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1. Introduction

Numerous medical papers and legal decisions have addressed "Do Not Resuscitate" (DNR) orders since the first implementation of cardiopulmonary resuscitation (CPR) in 1960. Currently, in the United States, all patients must be informed of their rights to execute advance directives, which include wishes for resuscitative treatment at end-of-life (EOL). The 2014 Institute of Medicine (IOM) report, "Dying in America", describes advance care planning (ACP) as "a process for setting goals and plans with respect to medical treatments and other clinical considerations" and

involve family members and clinicians. This report noted that large numbers of adult hospitalized patients are incapable of making treatment decisions in their final days of life secondary to medical or cognitive state. [1]

In the United States, a shared-decision making model is used

recommends that ACP start at any age and state of health and

prior to withholding CPR treatment. Several states have legislated that "every patient is presumed to have consented to CPR" and that patient (or surrogate) consent must be obtained prior to physician placement of a "Do Not Resuscitate" or DNR order. [2] Specifically, Ohio law states that a person, in consultation with a physician, certified nurse practitioner, clinical nurse specialist or physician assistant may seek one of two types of DNR orders: (1) "DNR Comfort Care," or 2) "DNR Comfort Care-Arrest." With a "DNR Comfort Care" order, no life-prolonging or sustaining interventions will be initiated except those with the aim of easing symptoms. Patients with a "DNR Comfort Care-Arrest" order will receive standard medical care in addition to life prolonging resuscitative

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efforts (including intubation, fluids, and medications) if necessary until the time that he/she experiences a cardiac or respiratory arrest, at which time they will be allowed a natural death without intervention. [3] If an individual does not wish to undergo resuscitation at EOL, a "Do Not Resuscitate" (DNR) order must be written and signed by a physician, even if patient preference for care at EOL is established in a Living Will. In absence of a DNR order, the individual by default is "full resuscitation", often termed "full code" (FC), and will undergo endotracheal intubation, assisted ventilation, chest compressions, defibrillation, and cardiotonic drugs when appropriate.

Individual preference or decision to undergo full resuscitation or request DNR orders has been linked to several factors including personal health condition, socioeconomic status, educational level, spirituality, and ethnicity [4–6]. Few studies have examined individual knowledge of resuscitation mechanics and prognosis, and impact of this knowledge on specific code status decision. [7–9] We aimed to assess individual knowledge about CPR procedure and DNR orders and determine if knowledge is related to an individual's reported decision, whether DNR or Full Code (FC) resuscitation, or undecided (UD). We also examined the relationship between self-reported decision and exposure to resuscitation, whether personal, via media, or from discussion with friends and family or healthcare providers. Finally, we asked about individual preference for education on this topic.

2. Methods

2.1. Questionnaire development

A questionnaire was administered over an 18 month period from 2012 to 2013 which focused on: demographics, quality of life/health perceptions, comorbid conditions (including depression), religiosity/spirituality, knowledge of code mechanics and prognosis, exposure to resuscitation efforts, communication about EOL decision with friends/family or with health professionals, and educational/learning preferences regarding code preference and EOL care.

Much of the previous literature used qualitative interviews or hypothetical scenarios to determine patient preferences about resuscitation procedures [10–12]. After extensive literature review failed to reveal a validated questionnaire that addressed knowledge and learning preferences, these aspects were created de novo. Questions on resuscitation mechanics, risk, prognosis, religion and spirituality were adapted from existing literature [7,10,13–15] while validated assessments of depression [16] and quality of life [17,18] were incorporated into our questionnaire (see Appendix 1 in Supplementary material).

A team that included 2 attending teaching physicians with specialty certification in geriatrics and palliative care, 3 medicine residents in 3rd year of training who had completed palliative medicine and critical care rotations, and a biostatistician with a doctorate degree in social work submitted questions that each felt pertinent to this topic. Terminology was carefully reviewed for language and understanding, and content was revised on 6 separate occasions to help establish face validity and content validity.

The study was deemed exempt by the Institutional Review Board.

2.2. Participants

A convenience sample recruited participants from 3 separate locations: a geriatric assessment center, an internal medicine

resident clinic, and an inpatient palliative care service. We chose 3 sites to include a broad range of older participants who were interacting with the healthcare system. The geriatric center is staffed by an attending physician only, while the palliative medicine service and outpatient resident clinic are staffed by attending physicians and residents. Inclusion criteria included: English literate patients and/or caregivers/family/friends accompanying patients age 55 years or older who were capable of reading the study explanation, give consent, and complete the questionnaire.

The questionnaire was distributed by social workers at the geriatric center, by a nurse study coordinator at the resident clinic, and by a team nurse or social worker at the Palliative Medicine site. Participation was voluntary and individuals were instructed to complete the questionnaire independently.

2.3. Dependent variables

Code status was defined by the multiple choice question "Have you already made a decision about your code status?" Individuals could respond: (1) Do Not Resuscitate-Comfort Care only, (2) Do Not Resuscitate-Comfort Care if Arrest (DNRCCA), (3) Full Code, (4) I am not sure, and (5) No, I have not made a decision about my code status. For our study, those selecting response 1 or 2 were classified DNR, those selecting response 3 as FC, and those selecting response 4 or 5 were classified as UD (see Appendix 1 in Supplementary material).

2.4. Independent variables

Knowledge of FC mechanics was defined as correct identification of three components: chest compressions, airway intubation, and electrical shock (defibrillation). Knowledge of DNR mechanics was defined as correct identification that none of these aspects were part of care provision.

Knowledge of FC prognosis was defined by (1) identification that risks and complications are associated with resuscitation procedure (yes/no question) and (2) answers that were consistent with "25 or less" people (choices included either "25" or "Less than 10") to the question, "Of 100 people like you, how many do you think would survive being resuscitated or "coded" and be discharged home". The number "25 or less" was used based on literature reporting outcomes of resuscitation in both in hospital [19–23] and out of hospital settings [24–27].

2.5. Statistical analysis

Descriptive information (means, standard deviations, proportions and 95% Cls) were tabulated first. Second, univariate analyses (chi-square and one-way ANOVA tests) were conducted to compare code status groups (DNR, FC and UD). Lastly, to examine factors most associated with participant decision, a multinomial regression using Odds Ratios (OR) and 95% Cls was conducted setting UD as the reference group.

In these models we controlled for demographics (age, gender, race/ethnicity, marital status, income and education), quality of life ratings, comorbid conditions, religiosity/spirituality ratings and survey location. To identify unique factors associated with reported UD status, a separate logistic regression was conducted that compared the UD group to the "decided" respondents (DNR/FC). Statistical significance was based on traditional two-sided tests with the alpha error set at 5%. Statistical analyses were conducted using IBM SPSS Statistics version 19.0 (Armonk, NY) and STATA version 12 (College Station, TX).

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