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## Experience with a hospital policy on not offering cardiopulmonary resuscitation when believed more harmful than beneficial

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## ABSTRACT

**Purpose:** This study investigated the impact of age, race, and functional status on decisions not to offer cardiopulmonary resuscitation (CPR) despite patient or surrogate requests that CPR be performed.**Methods:** This was a retrospective cohort study of all ethics committee consultations between 2007 and 2013 at a large academic hospital with a not offering CPR policy.**Results:** There were 134 cases of disagreement over whether to provide CPR. In 45 cases (33.6%), the patient or surrogate agreed to a do-not-resuscitate (DNR) order after initial ethics consultation. In 67 (75.3%) of the remaining 89 cases, the ethics committee recommended not offering CPR. In the other 22 (24.7%) cases, the ethics committee recommended offering CPR. There was no significant relationship between age, race, or functional status and the recommendation not to offer CPR. Patients who were not offered CPR were more likely to be critically ill (61.2% vs 18.2%,  $P < .001$ ). The 90-day mortality rate among patients who were not offered CPR was 90.2%.**Conclusions:** There was no association between age, race, or functional status and the decision not to offer CPR made in consultation with an ethics committee. Orders to withhold CPR were more common among critically ill patients.

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## 1. Introduction

Clinicians sometimes believe that invasive life-sustaining treatments such as cardiopulmonary resuscitation (CPR) should not be used despite patient or surrogate demands [1]. Many institutions have unilateral do-not-resuscitate (DNR) policies, which allow clinicians to withhold CPR in the event of cardiopulmonary arrest against the wishes of patients or their surrogates [2]. Some of these policies allow physicians to discontinue CPR only if it is unsuccessful after several minutes [3]. Others allow unilateral DNR orders prior to cardiopulmonary arrest, often contingent on the involvement of an interdisciplinary ethics consultation team [4]. Hospitals and critical care societies have expressed growing interest in these policies as a mechanism for protecting critically ill patients on an irreversible trajectory from unnecessary harm [5,6].

These policies are based on the principle of nonmaleficence: if CPR will cause harm without bringing meaningful benefit in the context of

the patient's values and prognosis, physicians should not offer it [7-10]. Other justifications for unilateral DNR orders focus on preserving professional integrity despite inappropriate surrogate demands, maintaining the dignity of dying patients, and the injustice of consuming limited resources for those who will not benefit from them [11-14]. Some bioethicists, however, have suggested that allowing clinicians to decide what constitutes a meaningful benefit or a dignified death represents unwarranted medical paternalism [15-18]. Critics have also argued that, given the way that age, race, and disability may impact clinician decision making in other areas, unilateral DNR orders may be disproportionately applied to vulnerable populations [19-27].

There are few studies on the use of unilateral DNR orders that address this last concern. Two cohort studies from the 1980s found that DNR orders were made without patient or surrogate consent in 4.4% of the general hospital population and in 27.4% of the cases referred to an ethics committee but did not examine demographic characteristics associated with these orders [28,29]. In 1988, Brennan [29] found that patients with unilateral DNR orders were younger and sicker than those with DNR orders made with surrogate consent. He did not, however, compare cases in which a unilateral DNR order was considered and not implemented to cases in which it was implemented. In 1999, Casarett and Siegler [30] found that 7 (22.6%) of 31 ethics consultations

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involving conflict over DNR status resulted in a unilateral DNR order. They found no association between unilateral DNR orders and race or age, but the study was not powered to detect these differences. There are no other studies that address whether policies empowering physicians not to offer CPR are disproportionately used in the elderly, the disabled, or nonwhites. If, however, unilateral DNR orders are more common in these populations, an ethical presumption against their use should be considered.

In 2006, Massachusetts General Hospital (MGH) revised its Life Sustaining Treatment Policy to state that physicians “are not obligated to offer or provide life-sustaining treatments that have no clinical indication or have no reasonable likelihood of providing benefit to the patient in the context of his or her values and prognosis.” Specifically regarding CPR, “the physician is encouraged to consider protecting an imminently dying patient from the potential harms of cardiopulmonary resuscitation by suggesting this protection to the patient or surrogate or by not offering CPR if it is not deemed to be a reasonable treatment option.” (Table 1). In this way, the policy provided a mechanism for not offering CPR when physicians believed that it was not a reasonable treatment option. The policy recommended that the MGH clinical ethics committee, known as the Edwin H. Cassem Optimum Care Committee (OCC), be consulted to resolve conflict over whether to provide CPR. Using data from OCC consultation and patient medical records, we investigated whether age, race, or functional status predicted the ethics committee recommendation not to offer CPR.

## 2. Materials and methods

### 2.1. Consultation process

Any health professional, patient, or surrogate may consult the OCC. Members of the OCC are trained in accordance with the American Society of Bioethics and Humanities Education Guide and are mentored by senior members of the committee to complete specific core clinical ethics competency objectives. A team of 2 or 3 OCC members, led by a senior consultant, typically responds to consultation requests. When asked to resolve conflict over DNR status, consultants attempt to determine the following: patient's prognosis, values, treatment preferences, and understanding of his or her illness; the conflicts that led to OCC consultation; and, what, if any, goals of care have been identified and agreed upon. Consultants provide an ethical analysis and make recommendations that are entered into the medical record, including whether CPR should be offered in cases of persistent conflict. As part of this process, the ethics consultants meet with members of the health care team and may propose and attend a surrogate-team meeting. Some consultations, however, are provided to the team alone. In all cases in which the

**Table 1**  
Massachusetts General Hospital policies and procedures: life-sustaining treatment policy

#### Section 2.1.1

Physicians and other health care providers are not obligated to offer or provide life-sustaining treatments that have no clinical indication or have no reasonable likelihood of providing benefit to the patient, or more benefit than harm, in the context of his or her values, prognosis, and agreed-upon treatment goals.

#### Section 2.5.8

Doing no harm: the responsible physician always has an overriding responsibility to protect the patient from harm. The physician is encouraged to consider protecting an imminently dying patient from potential harms of CPR by suggesting this protection to the patient or surrogate or by not offering CPR if it is not deemed to be a responsible treatment option and by entering appropriate code status orders. The responsible physician may obtain a second opinion about not offering CPR from another senior or experienced physician or from the Optimal Care Committee [clinical ethics consultation committee] and may also request advice from the Office of General Counsel. If the responsible physician decides not to offer CPR, the patient or surrogate should be informed of this decision and its rationale and assured that the patient will continue to receive the highest possible quality of care.

OCC recommends not offering CPR, however, the patient/surrogate is informed of the decision and its rationale.

### 2.2. Optimum Care Committee consultation cohort

We reviewed all OCC consultations from 2007 to 2013 and included those involving disagreement between health care providers and patients or surrogates about whether to provide CPR in the event of cardiopulmonary arrest. We excluded cases in which consultation was for reasons other than conflict over DNR status and those in which the patient died before consultation was complete. When the OCC was consulted more than once for the same patient, we included only the consultation resulting in a final recommendation about offering CPR.

We obtained sociodemographic and clinical data from OCC consultation and MGH medical records. Sociodemographic variables including age, sex, race, insurance status, and primary language were self-reported by patients or surrogates upon admission to the hospital. Functional status prior to admission was categorized as complete independence, partial dependence, or complete dependence based on the patient's ability to carry all, some, or none of the basic activities of daily living [31]. Illness severity was defined by the patient's primary team at the time of consultation and was taken from the American Hospital Association categories of medical condition. These included good condition, vital signs are in normal limits and prognosis is excellent; fair condition, vital signs are stable and prognosis is favorable; serious condition, vital signs are unstable and prognosis is questionable; and critical condition, vital signs are significantly abnormal and prognosis is unfavorable. Decision-making capacity at the time of consultation was determined by the patient's primary team. The OCC consultants assessed level of alertness as alert or not alert.

One nonblinded author (E.R.) abstracted and coded all information about the content and outcomes of each consultation (Pearson correlation coefficient for intraobserver variability = 0.95). A second nonblinded author (A.C.) confirmed OCC recommendations and patient disposition. Study data were collected and managed using REDCap, an electronic data capture tool hosted at MGH. The institutional review board at MGH approved the study.

### 2.3. Statistical analysis

We used 2-tailed Student *t* tests and Fisher exact tests to compare continuous and categorical variables in 2 populations. First, we compared cases in which patients or surrogates did and did not agree with DNR status after initial OCC consultation. Second, we compared cases in which the OCC did and did not recommend withholding CPR.

## 3. Results

### 3.1. Study cohort characteristics

Between 2007 and 2013, there were 286 662 adult admissions to MGH. There were 315 OCC consultations during this time, of which 134 involved disagreement about whether to provide CPR in the event of cardiopulmonary arrest (Figure). The characteristics of the included patients are listed in Table 2. Their average age was  $67.4 \pm 18.8$  years, they were 38.8% nonwhite, and 79.1% were completely or partially dependent prior to admission. In 53.4% of cases, their health care providers judged them to be critically ill. In 92.5% of cases, the patient's surrogate requested that CPR be performed in the event of cardiopulmonary arrest. In 7.5% of cases, the patient made this request.

Compared with patients who were excluded from the final cohort ( $n = 181$ ), patients for whom there was conflict over DNR status were older ( $67.4 \pm 18.8$  years vs  $62.5 \pm 20.0$  years,  $P = .03$ ; Table 3). They were also more likely to be nonwhite (38.8% vs 22.6%,  $P = .003$ ) and to have been completely or partially dependent prior to admission (79.1% vs 60.8%,  $P < .001$ ).

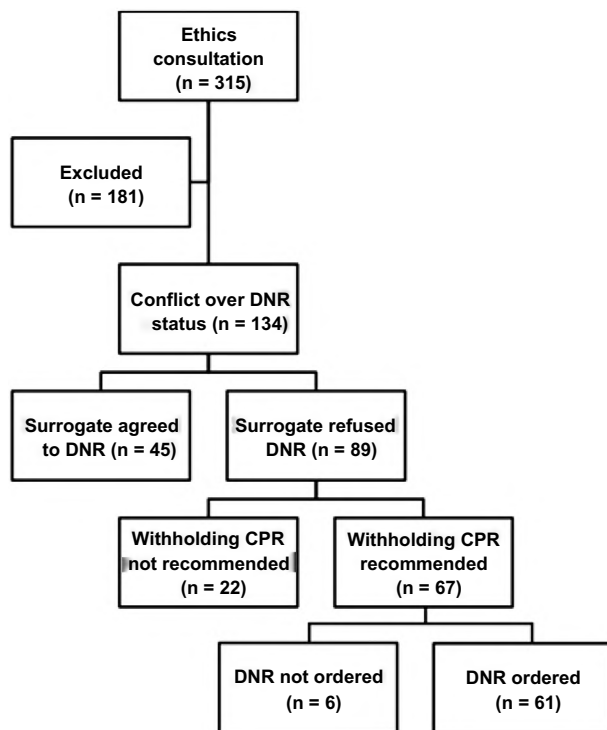


Figure. Flow diagram of the study cohort.

### 3.2. Do-not-resuscitate status after initial OCC consultation

In 45 (33.6%) cases, the patient or surrogate agreed to a DNR order after the initial OCC consultation. There were no significant differences in age, race, functional status, or severity of illness between patients/surrogates who did and who did not agree to a DNR order after initial OCC consultation (Table 4).

In the remaining 89 (66.4%) cases, there were 3 possible outcomes. First, in 22 (24.7%) cases, the OCC did not recommend that CPR be withheld and the patient remained full code. Second, in 61 (68.5%) cases, the OCC recommended not offering CPR and the patient was made DNR without patient/surrogate agreement. Third, in 6 (6.7%) cases, the OCC recommended not offering CPR, clinicians did not follow the recommendation, and the patient remained full code. There were no differences in age, race, or functional status between patients for whom the OCC did and did not recommend not offering CPR (Table 5). Patients for whom the OCC recommended not offering CPR were more likely to be critically ill (61.2% vs 18.2%,  $P < .001$ ).

### 3.3. Outcomes after OCC consultation

None of the 22 patients for whom the OCC recommended offering CPR died during their hospitalization, and none received CPR. Their 90-day mortality rate was 27.2%. In contrast, 72.1% of patients for whom the OCC recommended not offering CPR and for whom a DNR order was written died during their hospitalization. None of these patients received CPR. The only patient in this group who was discharged home returned after a cardiac arrest and had unsuccessful CPR performed in the emergency department. The other 15 patients in this group were transferred to a Skilled Nursing Facility or a Long Term Acute Care (LTAC) facility. The overall 90-day mortality rate among the patients for whom the OCC recommended not offering CPR and for whom a DNR order was written was 90.2%. Of the 5 longer survivors, 2 were in a persistent vegetative state and 3 were permanent residents of LTACs.

Among the 6 patients for whom the OCC recommended not offering CPR but for whom this recommendation was not followed, 2 died in the hospital after unsuccessful CPR. One patient was discharged home,

Table 2

Characteristics of patients consulted for disagreement about DNR status

Characteristic	Consultation for disagreement about DNR status (n = 134)
Age (y)	67.4 ± 18.8
Female sex	59 (44.0)
Race	
White	82 (61.2)
Black	27 (20.1)
Asian	11 (8.2)
Hispanic	11 (8.2)
Other	3 (2.2)
Primary language	
English	109 (81.3)
Spanish	7 (5.2)
Cantonese or Mandarin	5 (3.7)
Other	13 (9.7)
Functional status prior to admission	
Complete independence	28 (20.9)
Partial dependence	64 (47.8)
Complete dependence	42 (31.3)
Residence prior to admission	
Home	61 (45.5)
Hospital transfer	27 (20.1)
Nursing or rehabilitation facility	44 (32.8)
Other	2 (1.5)
Hospitalized in intensive care unit	77 (57.5)
Critically ill	71 (53.4)
Days hospitalized prior to consultation days	24.5 ± 33.2
Consulting service,	
Internal medicine	86 (64.2)
General surgery	20 (14.9)
Neurology/Neurosurgery	16 (11.9)
Other	12 (9.0)
Capacity at the time of consultation	
Alert with full capacity	20 (14.9)
Alert with fluctuating capacity	17 (12.7)
Alert with no capacity	32 (23.9)
Not alert with no capacity	65 (48.5)
Source of full code request	
Patient	10 (7.5)
Surrogate	124 (92.5)
Relationship to patient	
Adult child	48 (38.7)
Spouse	41 (33.1)
Sibling	16 (12.9)
Unrelated legal guardian	8 (6.5)
Parent	6 (4.8)
Friend	5 (4.0)
Advance care planning documents	
Formal health care proxy document	78 (58.2)
Living will	3 (2.2)
Medical orders for life sustaining treatment	2 (1.5)

Values are presented as n (%) or mean ± SD.

returned to the emergency department after a cardiac arrest, and received unsuccessful CPR. One patient was transferred to another hospital because of the conflict over DNR status and died shortly thereafter. One patient died in an LTAC, and 1 patient remains alive in a persistent vegetative state. Finally, communication with the MGH Office of Risk Management indicates no litigation to date directly related to the use of the revised policy.

## 4. Discussion

In reviewing the use of an ethics committee and hospital policy on not offering CPR, we found that, compared with other ethics committee cases, conflict over DNR status was more common among older, non-white patients with reduced functional status prior to admission who were critically ill. We did not, however, find that age, race, or functional status prior to admission was associated with the outcome of ethics committee consultation, in particular the recommendation not to offer CPR.

**Table 3**  
Comparison between OCC consultation for disagreement about DNR status versus other reasons for consultation

Variable	Consultation for other reason than DNR status (n = 181)	Consultation for disagreement about DNR status (n = 134)	P
Age(y)	62.5 ± 20.0	67.4 ± 18.8	.03
Nonwhite race	41 (22.7)	52 (38.8)	.003
Complete or partial dependence prior to admission	110 (60.8)	106 (79.1)	<.001
Critically ill	65 (35.9)	71 (53.0)	.003

Values are presented as n (%) or mean ± SD.

**Table 4**  
Relationship between age, race, functional status, and severity of illness at the time of consultation and acceptance of DNR status after initial ethics consultation

Variable	Accepted DNR status (n = 45)	Did not accept DNR status (n = 89)	P
Age(y)	67.6 ± 19.7	67.1 ± 17.2	.88
Nonwhite race	19 (42.2)	33 (37.1)	.58
Complete or partial dependence prior to admission	33 (73.3)	73 (82.0)	.27
Critically ill	28 (62.2)	44 (49.4)	.20

Values are presented as n (%) or mean ± SD.

**Table 5**  
Relationship between age, race, functional status, and severity of illness and OCC recommendation to withhold CPR

Variable	Withholding CPR not recommended (n = 22)	Withholding CPR recommended (n = 67)	P
Age(y)	67.5 ± 18.8	67.6 ± 20.1	.98
Nonwhite race	7 (31.8)	26 (38.8)	.62
Complete or partial dependence prior to admission	19 (86.3)	54 (80.6)	.75
Critically ill	4 (18.2)	41 (61.2)	<.001

Values are presented as n (%) or mean ± SD.

Similar to prior studies, in about a third of cases, initial ethics consultation resulted in all parties agreeing to the recommended DNR order [30]. In about 25% of cases of persistent conflict, the OCC recommended offering CPR, indicating that the ethics committee does not always support the views of health care providers, as some have argued [32]. Finally, in 75% of cases of persistent conflict, the OCC recommended not offering CPR. Among the variables we considered, only severity of illness was associated with this recommendation. This result differs from Curtis et al [33], who found that older age, nonwhite race, poor functional status, and increased severity of illness all predicted resident physician recommendation of DNR. One explanation for this difference is that ethics committee involvement mitigated the impact of age, race, and functional status on physician decision making about DNR status.

The in-hospital and 90-day mortality rates in our cohort were similar or higher than in other studies of interventions believed to be nonbeneficial. For example, Huynh et al [34] reported an 85% 6-month mortality rate among ICU patients receiving interventions that their clinicians perceived to be nonbeneficial. As in our cohort, they found that most patients who survived their hospitalization were discharged to LTACs or Skilled Nursing Facility in a severely debilitated state. Finally, although fear of litigation is often cited as a reason why physicians continue to offer CPR despite believing it will be nonbeneficial, we found no litigation to date directly related to the use our policy [35].

In contrast to other policies, the MGH policy does not use the term “unilateral DNR.” First, “unilateral” implies ignoring patients' values, whereas the policy aims to maximize respect for each patient through the ethics consultation process. Second, the laterality of unilateral DNR implies an adversarial relationship between clinicians and patients or surrogates that is neither desirable nor necessary. Third, describing an order as unilateral implies that there are always 2 sides in decision making about DNR status. In our view, however, there are times when CPR is not a reasonable treatment option and it is not appropriate to regard the

patient or surrogate as another side in decision making. For example, if a patient will die imminently from widespread, untreatable, metastatic cancer and resultant multiorgan system failure, and if exploration of the patient's values revealed no religious, cultural, or personal reason why CPR would be more beneficial than harmful in this situation, CPR would not be a reasonable treatment option. When there is a medical determination that CPR is not a reasonable treatment option in the context of the patient's values, a DNR order should be written [8].

As with other studies on treatment limitation at the end of life, our findings may reflect a self-fulfilling prophecy bias [36]. Clinician prediction of poor prognosis may have led the ethics committee to recommend withholding treatments such as CPR that might improve prognosis, thus making the original prognosis a self-fulfilling prophecy. However, in cases in which the OCC recommended DNR but physicians did not order it, CPR was unsuccessful in every patient for whom it was attempted. Such uniform failure provides support for clinicians' original beliefs that CPR would have been nonbeneficial.

Our study has several limitations. First, our cohort is from a single academic hospital with an ethics committee that has significant experience in mediating end of life conflict. Other hospitals with less experienced committees may have different thresholds for not offering CPR. Second, we do not know how often CPR is withheld without consultation from the ethics committee. Although likely small in number given the complexity of legal and ethical issues involved, we do not know if these cases vary significantly compared with our cohort. Third, given the number of patients, our study was not powered to detect small effect sizes and we could not meaningfully examine a broader number of sociodemographic or clinical predictors of not offering CPR. This is, however, the largest study to date of DNR orders written without patient or surrogate consent, and there were no clear trends toward significance in our analysis variables. Finally, in this article, we did not explore in detail why clinicians initially recommended DNR status. Further research is

needed to understand whether concerns about perceived physiologic futility of CPR, low likelihood of CPR success, or quality of life drove this recommendation and the role of the OCC in addressing these worries.

## 5. Conclusions

There has been a longstanding concern that policies empowering physicians not to offer CPR may be biased in their application, particularly with regard to race, age, and functional status. We found no evidence to support this concern over 7 years of use of a policy designed to protect seriously ill patients from harm at the end of their lives.

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