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Differences in Level of Care at the End of Life According to Race

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Abstract

Background—Tailoring care for patients and their families at the end-of-life is an important goal. This study examined factors associated with patient choices for level of care at the end of life.

Methods—Demographic data and level of care (full code, do not resuscitate, or withdrawal of life support) were collected on 1072 patients who died from January 1998 to June 2006 on a cardiac care unit. Logistic regression was used to identify factors associated with level of care.

Results—Of 15,402 patients admitted during the study, 1072 died, comprising the study sample. Median age of blacks was 64 years (IQR, 50, 74) and whites, 70 years (IQR, 62, 78). At the time of death the level of care differed significantly in blacks versus whites. 41.8% (n = 112) of blacks versus 26.7% (n = 194) of whites chose full code (p <.0001); 37.3% (n = 96) of blacks versus 43.9% (n = 317) whites chose DNR (p = .026); and 20.9% (n=54) of blacks versus 29.3% (n=210) of whites chose withdrawal of life support (p = .005). After controlling for age, sex, diagnosis, length of intensive care stay, and length of hospital stay, blacks were more likely than whites to choose full code status at the time of death (OR 1.91 [95% CI, 2.63 – 1.39], p <0.0001).

Conclusions—Blacks are 1.9 times as likely as others to choose full code at time of death. These results suggest the need to acknowledge cultural differences when providing end of life care.

Keywords

End of life; disparities; race; withdrawal of life support; do not resuscitate; full code

Introduction

An estimated one in five American deaths now occurs in an intensive care unit (ICU).(1-4)
This shift in the last half-century to dying in-hospital contributes to the burgeoning cost of

healthcare, to sub-optimal family access to patients in the dying process, and to a growing need for providers to address not only critical patient care needs, but concomitant needs of families in crisis. Perhaps one of the greatest needs generated by this shift to dying-in-hospital is the need for nurses and other care providers to gain a better understanding of patient preferences for care at the end-of-life.

One particularly unique aspect of dying-in-hospital is the increased use of hospital-based technology at the end of life, and the concomitant need to withdraw it. Predictably, a steadily increasing number of ICU patients die after end-of-life decisions such as foregoing cardiopulmonary resuscitation (“do not resuscitate,” or DNR) and withholding or withdrawing care.(5-8) In current studies an estimated 90% of ICU deaths are preceded by recommendations to limit therapy,(7) with over half of those deaths ending in withholding of additional support or withdrawal of existing supportive care.(8) From 1988 to present, withdrawal of life support in the ICU has increased by up to 50%, depending on hospital and geographical region.(5;6;8)

Thus, the practices of withholding and withdrawing life support have become increasingly prevalent; yet our understanding of cultural differences in how or when patients choose when or if to withdraw support is limited. Not only do decisions about level of care at end-of-life have profound cultural and spiritual implications, they may also significantly influence, and be influenced by, cost. In the most recent major analysis of end-of-life spending trends, Lubitz and Riley found that 10-12% of the total U.S. healthcare budget and 27% of the annual Medicare budget was spent on care at the end of life.(9;10) If family members struggle to bear the burden of such costs, the implications for end-of-life care may differ.

Therefore, while recent research on end-of-life care in the ICU has assessed trends in increased rates and costs (2;3;5-8;11-18) of withholding and withdrawal of life support, the understanding of patient preferences associated with various levels of care at the end of life remains limited. As a result, factors associated with the level of care at the time of death, and in particular, culturally sensitive preferences for care, merit further investigation. Therefore, using an exploratory, retrospective review of 1072 deaths occurring over an 8-year period in a cardiac intensive care unit (CCU) of a large academic medical center in North Carolina, we sought to identify factors that might be associated with each of three levels of care at the time of death, full code, do not resuscitate and withdrawal of life support. The research question was, “what patient-level factors are associated with level of care preferences at the end of life?”

Methods

Unit-specific end of life process

On the Duke Cardiac Care Unit, when patients are identified as having a low likelihood of recovery the health care team evaluates each patient and family in an established, systematic manner. A nurse who is specifically responsible for addressing end-of-life care issues assists in guiding the communication between the health care team, patients and families. During each conference, the family’s understanding of the patient status is assessed and possible options for care are discussed. If the patient is unable to express his wishes for the goal of care at the end of life, aggressive versus comfort care, the surrogate decision maker is encouraged to speak for the patient. The risks and benefits of various treatment plans are weighed for both aggressive and comfort care. Additional conferences are held on subsequent days to evaluate the patient’s progress and the ongoing appropriateness of the treatment plan. This affords the family an opportunity to assimilate information over time. As part of this care continuum a discussion may take place regarding the option for DNR

status. When appropriate, a discussion of withdrawal of life support may be initiated by either the health care team or the family. The time frame between the first and final discussions varies according to the patient status and the needs of the family.

Patient population and data collection

Patients who died while in the Cardiac Care Unit (CCU) of Duke University Hospital from Jan 1, 1998 to June 30, 2006 were prospectively recorded in a registry that included all deaths. Descriptive data, including age, sex, self-described race, length of hospital and CCU stay, hospital and CCU admission diagnoses, cause of death, and level of care at time of death were recorded for 1072 subjects who died in the CCU. While our data collection included Asian, Black, Hispanic, Native American, White, other and unknown, the numbers in all categories other than black and white were too small to be statistically significant. For this reason we collapsed racial and ethnic categories into black, white and other. Level of care at the time of death was recorded as full code, referring to patients who received aggressive life-sustaining interventions; do not resuscitate (DNR) identifying those patients who received full aggressive ICU care interventions but did not desire cardiopulmonary resuscitative efforts, even if the alternative was death; and withdrawal of life support, denoting patients who had life-supporting therapies such as vasopressors and mechanical ventilation discontinued when survival without such therapy was unlikely and the expected outcome was death.

All registry entries were made as deaths occurred, either at the time of death or as close to the time of death as possible. Additional data were obtained if necessary from the medical record and through discussions with the care nurse, house officer and attending physician. The Institutional Review Board approved the project. All subjects included in the registry were deceased, risks were deemed minimal and consent was impractical, therefore a waiver of informed consent was obtained.

Analysis

We calculated descriptive statistics to assess the frequency and distribution of patient characteristics, including: sex, age (continuous), race (Asian, Black, Hispanic, Native American, Unknown or White), length of stay (continuous), diagnosis, ventilator status (on or off a ventilator), and level of care at the time of death (full code, DNR or withdrawal of life support). We evaluated differences in descriptive patient characteristics among the three groups of care, full code, DNR and withdrawal of life support, using ANOVA for normally distributed, continuous variables (age and length of stay) and chi-square for categorical variables. Univariable analyses were conducted to determine baseline characteristics that were associated with level of care at the time of death and those variables that were significant at an alpha of .05 were chosen to enter the multivariable model. We then conducted multivariable modeling using two-step sequential logistic regression to assess these variables in combination and their relationship to level of care at the end of life. First, a multivariable logistic regression model was used to examine the association of patient characteristics with a decision to undergo full code (yes or no). Then a second logistic regression model was used to evaluate predictors of the subsequent decision to choose withdrawal of life support as compared with DNR. The sequential approach was taken in order to obtain the most information on the contribution of individual variables (parameter weights) while accounting for interactions in the models and controlling for possible confounding variables. Timing of events was not a significant contributor in univariate analyses and therefore was not included in the multivariable models. An alpha of <0.05 was established for significance. Analyses were computed using SAS version 9.

Results

Characteristics of the Sample

Patient characteristics according to end-of-life resuscitation status are summarized in Table 1.a. Overall, patient age ranged from 17 – 101 years (median, 69.0 years), 47% were women, and 25% were black. The overall length of stay in the CCU ranged from 0 – 89 days (median 3.0 days). At the time of death, 50.2% of patients (n=525) were mechanically ventilated. The most common CCU admitting diagnoses were myocardial infarction (n=432), status post cardiac arrest (n=242), respiratory failure (n=64), sepsis (n=64), congestive heart failure (n=46), and arrhythmia (n=33). Of the total population, 32.4% were full code at the time of death, 40.9% were DNR and 26.7% of deaths were preceded by withdrawal of life support. Among all deaths, the number of days prior to death (length of stay) was shortest for patients who were full code status (median 1 day, IQR 0,3) and longest for patients who chose active withdrawal of life support (median 5 days, IQR 2,10) (Table 1.a.). Men and women had equal distributions of each of the three end-of-life categories (Table 1.a). There was no significant difference in the proportion of men and women who died; however, women were older at the time of death than men with a higher proportion of men in the 4th to 7th decade of life, and a higher proportion of women in the 8th and 9th decades of life.

Patient characteristics according to race are summarized in Table 1.b. Median age was younger among blacks (64.0 years) than whites (70.5 years). The number of days prior to death (length of stay) was similar in blacks and whites across each of the three levels of care at the time of death. The rate of unexpected death, based on a subjective assessment at the time of death by the care team, was similar in blacks and whites (8.6% and 8.3%, respectively; $p = 0.164$). Black patients were more likely to choose full code as compared to white patients (43% versus 27%), and were less likely to choose DNR (37 % versus 44%) or withdrawal of life support (21% versus 29%) (Figure 1).

Factors Associated With Full Code Status at the End-of-life

A univariable analysis of variable association with the full code status was first conducted to identify those variables that were significantly related to full code status, without controlling for others. Based on these findings, length of stay (Wald $\chi^2 = 42.4$; O.R. 0.91 [CI, 0.88-0.94], $p < 0.0001$), race (Wald $\chi^2 = 20.512$; O.R. 1.97 [CI, 1.47-2.64], $p < 0.0001$), and age (Wald $\chi^2 = 18.72$; O.R. 0.98 [CI, 0.97-0.99], $p < 0.0001$) were highly associated with full code status, as were a number of admitting diagnoses.

Next, a multivariable model, the factors significantly associated with full code status after adjusting for other variables that may have influenced level of care at the time of death included: length of stay, race, age, and presence of a lethal arrhythmia on admission to the CCU (Table 2). While length of stay and age were important contributors to the model (Wald statistic, 38.58 for length of stay and 14.46 for age), and were both statistically significant ($p < .0001$), the relationship with full code status was similar for race (Wald statistic 22.96, OR 1.91 for black versus white).

For length of stay, each incremental day of CCU stay decreased the likelihood of being full code status by only 9% (O.R. 0.91 [95% CI, 0.88-0.94], $p < .0001$). For age, each incremental decade of life decreased the likelihood of being full code status by 18% (O.R. 0.82 [95% CI, 0.74-0.90], $p < .0001$). By contrast, blacks were almost twice as likely (O.R. 1.91) as whites and others to choose full code status, even after controlling for other variables that may have influenced the relationship, such as length of stay in the CCU, age and diagnosis on admission.

In the second step of the sequential logistic regression analysis, factors associated with withdrawal from life support were evaluated (Table 3). Again, race was a significant, independent contributor, with blacks half as likely to choose withdrawal of life support as compared to whites (OR 0.54 [95% CI, 0.38 – 0.78], $p = 0.006$). Other variables associated with level of care at end-of-life remained important predictors of withdrawal of support, including age, length of stay and diagnosis.

Discussion

Findings in this study suggest that preferences for care at the end-of-life differ significantly according to race, and also, though to a lesser extent, according to length of stay and age. Blacks are more likely to choose full code status over DNR or withdrawal of life support, as compared to whites. Similar findings regarding racial differences in preferences for end of life care have been reported in other settings, such as primary care,(19) nursing homes (20) and hospice.(21) These prior studies suggest that blacks are less likely to complete advance directives or to pursue hospice and related types of palliative care at the end of life. Our findings show that, similar to nursing homes and hospice settings, in a critical care setting blacks are also less likely to limit aggressive care, and significantly more likely to choose full code, as compared to others.

Race and Level of Care at the End-of-life

Although blacks reportedly receive fewer invasive interventions at the time of diagnosis, particularly interventional procedures such as percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG),(22-26) the data from our study suggest that near the end-of-life blacks more frequently chose aggressive supportive care. Similarly, a nationwide study of 10,122 deaths found that blacks were more likely to die in a hospital than whites (70.4% vs. 55.1%). These findings are consistent with our data, and suggest that black race is associated with more aggressive end-of-life care. Similar to our study, in the Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments (SUPPORT) study, 30% of white patients did not want cardiopulmonary resuscitation (CPR) compared with 19% of non-white patients (RR 1.62; 95% CI: 1.3-2.1).(27)

Length of Stay and Level of Care at the End-of-Life

Length of stay was also significantly associated with level of care; however the timing of death increased across the care groups, with full codes being shortest and withdrawal of support being the longest (Table 1.a.). The median length of stay prior to death for patients who were full code was one day, for DNR status the median time to death was three days, and for withdrawal of life support five days. The relationship was not unexpected since the situations surrounding full code often leave little time for lengthy discussions and require rapid decision-making. Other studies evaluating length of stay as it relates to withdrawal of life support are few, and we found only one published study evaluating this relationship in an intensive care setting.(18) Consistent with our reflections on this finding, Wunsch and colleagues found that, on average, the length of stay in patients who choose withdrawal of life support is longer, due in part to the families' need to process the situation and the finality of the end of life.(18)

Age, Sex and Level of Care at the End-of-life

Age was also associated with level of care at the end-of-life. As age increased, full code orders were less common than either DNR or withdrawal of life support. These findings are consistent with the SUPPORT study, which interviewed 1650 patients on resuscitation preferences,(26;27) finding that patients who did not want cardiopulmonary resuscitation

(CPR) were older (mean 65.6 vs. 60.3 years, $p < .001$); 36.7% of patients who had “do not resuscitate status” and did not want CPR were 70–79 years of age.

A six-year difference in the median age of blacks versus whites was observed, with blacks being younger than whites. The younger age of blacks at the time of death may have contributed to choosing a more aggressive approach to care at the end-of-life. However, it is important to note that the life expectancy among blacks in the U.S. is 5 years lower, on average, as compared to whites (69 years on average for black men, as compared to 75.3 among white men)(28); suggesting that the patients in our study are consistent with national population with regard to age at the time of death.(29)

In our analysis, the proportions of levels of care at the time of death were similar among men and women, and sex was not significantly associated with level of care in multivariable modeling. Similarly, in the literature, patient sex has not been independently associated with level of care at the time of death.(5;18) However, women in most studies are older at the time of death than men, as was true in our study.(2;30)

Implications for Practice

Our study was not designed to determine the specific factors underpinning the observed association of race with end-of-life decisions. Literature suggests three major reasons, including spirituality, distrust of the healthcare delivery system and the collective community that influence end-of-life decisions making among blacks. Because spirituality is widely reported to be a fundamental tool for coping with the experience of death, particularly among blacks (31;32), the results of our study may not be surprising. Understanding the nature and importance of black spirituality may allow us to assist black patients and families through the death and dying process in a manner that is harmonious with their culture.

Distrust of the healthcare delivery system may also be an important factor in decision-making at the end-of-life among blacks. The historical root of distrust stems from generations of perceptions of unequally rendered services, abuses in medical experimentation, and economic injustice.(33) Such perceptions have led to a general loss of credibility of health care providers and institutions.

A third factor that may influence decision-making by blacks at the end-of-life is the collective community.(31) Black culture places a strong value on the “collective” or family, friends and the faith community. Honoring members of this community, especially family, is a central focus of the “collective” culture and decisions made without consensus of the community is considered disrespectful. Arranging for inclusion of family members, faith community and clergy in discussions and decision-making is an important way to assist black patients at the end-of-life.

Other possible reasons for differences in end of life choices include our approach in discussing end-of-life; the patient and family understanding of the choices at end-of-life; patient and family circumstances or previous experience with end-of-life decision-making; or differences in beliefs regarding appropriate care at end-of-life. Although our standard unit approach is consistent for all patients, the specific course that discussions take is unique and tailored to meet the needs of the individual patient and family. Tailoring that occurred in the context of care to address the specific needs of the patient and family included varying the actual time-line for decision-making; addressing families’ past experience with hospitalized family members, illness and death; and using effective communication techniques to work closely with individual family dynamics. Each of these variations may influence the tailored approach taken in planning the continuum of care at the end-of-life.

Limitations

Because data were collected in a cardiac intensive care unit, and only on patients who died, the results may be specific to this patient population. Our findings may be a reflection of cultural differences in the southeastern United States, and may not be generalizable to other regions of the United States. A third limitation is the inability to evaluate the degree to which findings may be confounded by educational or socio-economic factors. While we recognize the importance of the relationship between socio-economic status (SES) and end of life preferences (34), we did not collect individual-level socioeconomic data in this study. However, we know that of all cardiac patients cared for at Duke University Hospital, 35% are black and 58% are white, and that this is a proportionally accurate representation of Durham County.(35) Of those Durham county residents, a higher percentage of blacks are at poverty level (20% of blacks and 8.5% of whites, respectively), and are unemployed (8.9% of blacks and 2.7% of whites, respectively).(35) These data suggest that black patients represented in this study were likely to be disproportionately socio-economically disadvantaged as compared to whites. If so, as suggested by Volandes and colleagues, this disadvantage may affect their health literacy levels and be reflected in their choices for care at the end-of-life.(34)

In addition, patients whose end-of-life care began in the cardiac care unit but ended in another unit were not captured in this dataset. It is also possible that patients who died prior to having the opportunity to complete an advanced directive could result in the appearance of lower DNR rates at the time of death. However, we do not suspect any systematic bias related to age, sex or race in transfer of these patients from the CCU, nor do we expect differential patterns of death by race that would materially change our results.

Conclusions

In the cardiac intensive care setting where terminal disease is common, we have found that race has a significant association with level of care at the end of life. When controlling for other variables including age, gender, length of stay and admitting diagnosis, blacks were more likely than whites to choose a status of full code. Sensitivity to this difference may be important to providing better end-of-life care.

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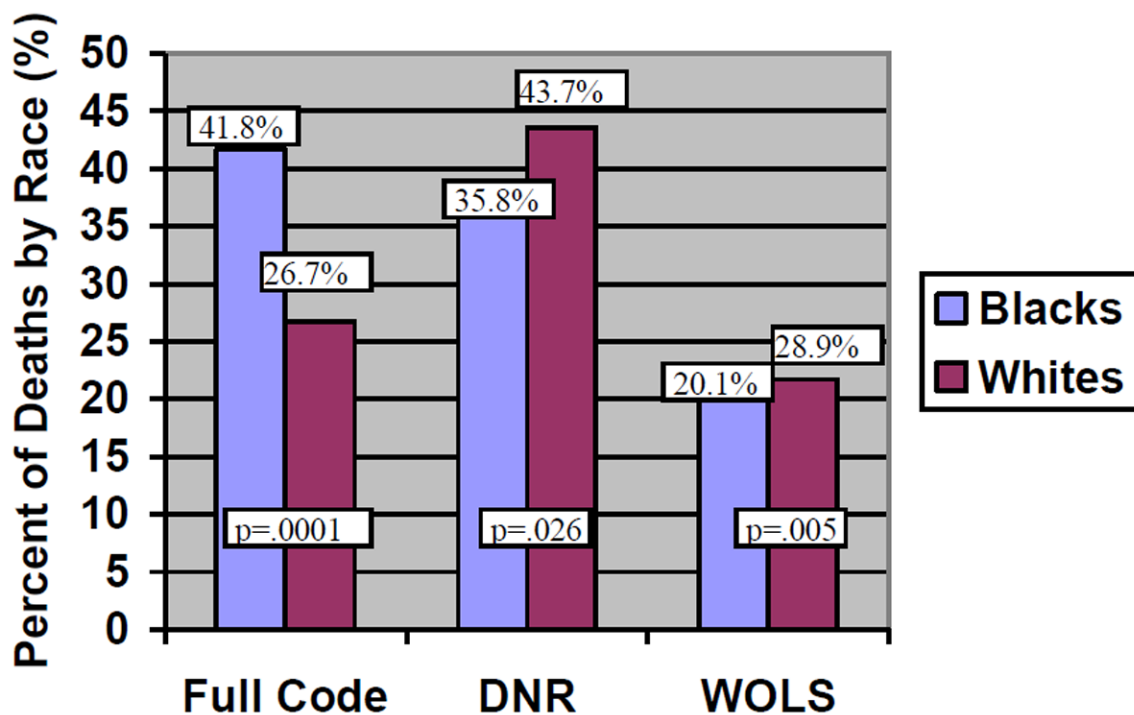


Figure 1.
 Level of Care at End of Life According to Race
 *Chi Square test of difference used for group comparisons

Table 1

a. Demographic Characteristics According to End-of-life Status

Patient characteristics	Full Code(n=344)		DNR* (n=442)		WOLS* (n=286)		Test of Difference (p)
Continuous Variables	Median	IQR	Median	IQR	Median	IQR	ANOVA
Age (years)	66.0	56.75	72.0	63.79	66.5	57.75	<.0001
Length of Stay (days)	1.0	0.3	3.0	1.10	5.0	2.10	<.0001
Categorical	n	(%)	N	(%)	n	(%)	χ^2
Gender							
Men (% of men)	190	33.6	232	41.1	143	25.3	.421
Women (% of women)	154	30.4	210	41.4	143	28.2	
Race (% of race)							
Asian	4	100	0	0	0	0	**
Black	112	41.8	100	37.3	56	20.1	<.0001
Hispanic	2	66.7	1	33.3	0	0	**
Native American	10	34.5	12	41.4	7	24.1	**
Other	2	100.0	0	0	0	0	**
Unknown	20	50.0	10	25.0	10	25.0	**
White	194	26.7	319	44.0	213	29.3	<.0001
Ventilator in place % of ventilated patients)	274	49.4	219	39.5	62	11.2	<.0001
CCU Diagnosis (% of each diagnostic group)							.004
Anoxia	0	0	1	100.0	0	0	
Arrhythmia	16	45.7	18	51.4	1	2.9	
Cardiogenic Shock	8	36.4	8	36.4	6	27.3	

Patient characteristics	Full Code(n=344)		DNR* (n=442)		WOLS* (n=286)		Test of Difference (p)
Continuous Variables	Median	IQR	Median	IQR	Median	IQR	ANOVA
Cardiomyopathy	4	10.8	14	37.8	19	51.4	
Heart Failure	12	24.5	27	55.1	10	20.4	
Post Cardiac Arrest	85	34.0	78	31.2	87	34.8	
Respiratory Failure	16	23.9	29	43.3	22	34.3	
Post Respiratory Arrest	6	20.7	13	44.9	10	34.5	
Pneumonia	1	7.7	6	46.2	6	46.2	
Sepsis	19	28.8	31	47.0	16	24.2	
Unstable Angina	3	37.5	3	37.5	2	25.0	
Valvular Disease	2	28.6	2	28.6	3	42.9	
Multisystem Organ Failure	3	50.0	1	16.7	2	33.3	
Pump Failure	7	22.6	14	45.2	10	32.2	
Other	4	21.1	8	42.1	7	36.8	
Heart Transplant Rejection	1	50.0	0	0	1	50.0	
Myocardial Infarction	157	35.7	189	43.0	94	21.4	
b. Demographic Characteristics by Race							
Patient characteristics	Black (n=268)		White (n=726)		Other (n=78)		Tests of Difference (p)
Continuous Variables	Median	IQR	Median	IQR	Median	IQR	ANOVA
Age (years)	64	50.74	70	62.78	66	58.76	<.0001
Length of Stay (days)	2	1.7	3	1.7	2	1.7	.917
Categorical	n	(%)	N	(%)	n	(%)	χ^2

Patient characteristics	Full Code(n=344)		DNR* (n=442)		WOLS* (n=286)		Test of Difference (p)
Continuous Variables	Median	(IQR)	Median	(IQR)	Median	(IQR)	ANOVA
Gender							.008
Men (% of race)	121	45.1	406	55.9	38	48.7	
Women (% of race)	147	54.8	329	45.3	40	51.2	
Level of Care							
Full code (% of race)	112	41.7	194	26.7	38	48.7	<0.0001
DNR (% of race)	96	35.8	317	43.6	22	28.2	.006
Withdrawal of life support (% of race)	54	20.1	210	28.9	17	21.7	.013
Ventilator in place (% of race)	154	57.4	355	48.8	46	58.9	.024
CCU Diagnosis (% of race)							.162
Anoxia	1	0.3	0	0.0	0	0.0	**
Arrhythmia	6	2.2	27	3.7	2	2.5	**
Cardiogenic Shock	3	1.1	19	2.6	0	0.0	**
Cardiomyopathy	6	2.2	18	2.4	3	3.8	**
Heart Failure	13	4.8	31	4.2	5	6.4	**
Post Cardiac Arrest	80	28.9	157	21.6	13	16.6	**
Respiratory Failure	14	5.2	48	6.6	5	6.4	**
Post Respiratory Arrest	8	2.9	19	2.6	2	2.5	**
Pneumonia	1	0.3	11	1.5	1	1.2	**
Sepsis	17	6.3	45	6.1	4	5.1	**
Unstable Angina	1	0.3	6	0.8	1	1.2	**
Valvular Disease	2	0.7	5	0.6	0	0.0	**

Patient characteristics	Full Code(n=344)	DNR* (n=442)	WOLS* (n=286)	Test of Difference (p)
Continuous Variables	Median (IQR)	Median (IQR)	Median (IQR)	ANOVA
Multisystem Organ Failure	1 0.3	5 0.6	0 0.0	**
Pump Failure	6 2.2	25 3.4	0 0.0	**
Other	6 2.2	12 1.6	1 1.2	**
Heart Transplant Rejection	2 0.7	0 0.0	0 0.0	**
Myocardial Infarction	101 37.6	298 41.0	41 52.5	.005

* DNR = do not resuscitate; WOLS = withdrawal of life support

** Cell counts with possible expected count of < 5 were not run.

** Cells with expected counts of less than 5 were not run

Table 2

Predictors of Full Code Status in Cardiac Care Unit Patients at the End-of-life

Predictor Variables	Full Code (n=1072) ^a			
	Wald	OR	95% (CI)	p-value
Gender (female vs. male)	2.49	0.80	0.61, 1.06	.12
Age (every 10 yrs)	14.46	0.82	0.74, 0.89	<.0001
Race				
Black vs. White	22.96	1.91	1.39, 2.63	<.0001
Black vs. Other	5.91	1.35	0.43, 1.28	.02
Length of Stay (per day)	38.58	0.91	0.88, 0.94	<.0001
Diagnosis				
Arrhythmia	5.10	1.70	0.82, 3.53	.01
Cardiac Arrest	0.14	0.76	0.54, 1.08	.71
Cardiomyopathy	2.49	0.31	0.10, 0.94	.12
Chronic Heart Failure	0.42	0.56	0.27, 1.15	.58
Other	0.23	0.63	0.42, 0.94	.63
Respiratory arrest	0.01	0.68	0.36, 1.28	.91
Pump failure	1.88	1.98	0.38, 10.21	.17
Sepsis	1.45	0.22	0.028, 1.80	.23

^ac-statistic = .72

Table 3

Factors Associated With Withdrawal of Life Support as Compared to DNR

Predictor Variables	Withdrawal of Life Support (<i>n</i> = 728) ^a			
	Wald	OR	95% (CI)	<i>p</i> -value
Gender Female vs male	2.80	1.28	0.96, 1.70	.09
Age per 10 yrs	4.80	0.90	0.80, 0.99	.03
Race				
Black vs. White	7.71	0.54	0.38, 0.78	.01
Black vs. Other	0.15	0.83	0.44, 1.57	.70
Length of Stay (per day)	19.43	1.047	1.02, 1.05	<.0001
Diagnosis				
Arrhythmia	6.35	0.11	0.02, 0.84	.01
Cardiac Arrest	8.33	2.11	1.47, 3.02	.004
Cardiomyopathy	0.51	1.52	0.64, 3.62	.47
Chronic heart failure	0.52	0.86	0.41, 1.84	.47
Other	1.52	1.50	1.00, 2.23	.22
Respiratory arrest	1.05	1.53	0.86, 2.71	.31
Pump failure	0.16	1.54	0.27, 8.76	.69
Sepsis	0.53	2.68	0.86, 8.36	.10

^a c statistic = .67