Code Status Documentation in the Outpatient Electronic Medical Records of Patients with Metastatic Cancer

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BACKGROUND: Advanced care planning (ACP) is considered an essential component of medical care in the United States, especially in patients with incurable diseases. However, little is known about clinical practices in outpatient oncology settings related to discussing end-of-life care and documenting code status preferences in ambulatory medical records.

OBJECTIVE: To assess the rate of documentation of code status in the electronic longitudinal medical records (LMR) of patients with metastatic cancer.

DESIGN: Retrospective review of 2,498 patients with metastatic solid tumors at an academic cancer center. An electronic patient database and the LMR were queried to identify demographic information, cancer type, number of clinic visits, and documentation of code status.

PARTICIPANTS: The sample consisted of adult patients with metastatic prostate, breast, ovarian, bladder kidney, colorectal, non-colorectal gastrointestinal (GI), and lung cancers.

MEASUREMENTS: Primary outcome was the percentage of documented code status in the LMR.

MAIN RESULTS: Among the 2,498 patients, 20.3% had a documented code status. Code status was designated most frequently in patients with non-colorectal GI (193/609, 31.7%) and lung (179/583, 30.7%) cancers and least frequently in patients with genitourinary malignancies [bladder/kidney (4/89, 4.5%), ovarian (4/93, 4.3%), and prostate (7/365, 1.9%) cancers]. Independent predictors of having documented code status included religious affiliation, cancer type, and a greater number of visits to the cancer center. Younger patients and black patients were less likely to be designated as DNR/DNI.

CONCLUSIONS: Despite the incurable nature of metastatic cancer, only a minority of patients had a code status documented in the electronic medical record.

KEY WORDS: resuscitation preferences; DNR/DNI; metastatic cancer.

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BACKGROUND

With innovations in medical technology and resuscitation techniques, advanced care planning (ACP) has become an increasingly necessary component of medical care in the US.^{1,2} ACP typically entails advanced directives that either describe patients' wishes for care in the event of a specific medical scenario ("living will") or assign another party to express patients' wishes in the event they are unable to do so ("health care proxy").³ Unfortunately, the impact of advance directives on treatment decision-making is often minimal due to their ambiguity and the unpredictability of the medical circumstances in which such documents may need to be utilized.⁴⁻⁶ For patients who have a high likelihood of death due to terminal illnesses, specific and clear documentation of code status [i.e., do not resuscitate (DNR) and do not intubate (DNI) or full code] provides better guidance for clinical care compared to traditional ACP documents.

Recently, hospitals have implemented protocols for documenting code status upon admission, though this may not be the optimal time for such discussions.⁷ Decisions regarding intubation are often made urgently in emergency rooms where it is challenging for patients and families to give thoughtful consideration to options for care.⁸ Discussing and documenting resuscitation preferences in the ambulatory care setting may provide an opportunity to address these concerns proactively. In the outpatient setting, a documented code status is not a medical order as it is in the inpatient setting. However, it effectively expresses patients' preferences for resuscitation should they experience a life-threatening event. Moreover, code status documented in the ambulatory medical record is clearer and less susceptible to interpretation than traditional ACP documents.

One potential barrier to addressing resuscitation preferences in outpatient settings is the absence of an established method for documenting this information in the medical record.⁹ In inpatient settings, many hospitals have computer-

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ized ordering systems where code status can easily be recorded and retrieved.¹⁰ Such systems generally do not exist for ambulatory care. We therefore developed an ambulatory code status module in our electronic medical record, which could be easily accessed by all clinicians throughout the hospital. The goal of the current study was to assess the initial use of this module in a sample of individuals with metastatic cancer.

METHODS

Implementation of the LMR Code Status Module (LCS)

Prior to 2006, the Massachusetts General Hospital (MGH) and its affiliate institutions had no standard policies or method to document resuscitation preferences in the electronic ambulatory medical record (LMR). To address these concerns, a committee was formed within the MGH to draft a hospital policy for recognizing resuscitation preferences in the ambulatory patient population. Once the policy was approved, an Information Systems committee was established to develop the code status module within the LMR. The goal of the LMR code status module (LCS) was to create a standard method and location for the documentation of EOL care goals and resuscitation preferences in the outpatient medical record. Before the LCS was integrated into the LMR, all participating institutions reviewed and approved the module and created hospital policies for its utilization.

The LCS includes three options for resuscitation preferences: full code, DNR/DNI, or DNR/DNI with specific resuscitation preferences (for patients who would like to receive particular life-prolonging therapies). While the LCS was developed for the outpatient setting, clinicians are encouraged to access the electronic ambulatory medical record and LCS for all patients admitted to the hospital or emergency department. After reviewing and confirming the patient's EOL care preferences, as documented in the LCS, the code status designation is added to the inpatient record.

Data Source

We extracted information from both the Eclipsys database (TSI, Transitions Systems Inc.) and the LMR. Eclipsys contains demographic, clinical and billing data for all patients seen at the MGH and affiliated institutions. Prior to their first medical visit, all patients must go through a central registration system and provide their demographic information. The LMR was queried for completion of LCS and the designated resuscitation preference [full code or DNR/DNI (including specific resuscitation preferences)]. This study was approved by the institutional review board (IRB) at the MGH.

Study Participants

We queried Eclipsys for all patients seen at the MGH Cancer Center from 1 October 2006-29 February 2008. Because the LCS was first made available in April 2006, this study period was chosen to allow clinicians sufficient time to be introduced to the module and receive training on its use. We limited the sample to patients with the seven most common metastatic solid tumors using the International Classification of Disease,

ninth revision (ICD-9 codes). To ensure that patients in the sample were receiving longitudinal care, only those with three or more visits to the MGH Cancer Center were included, ruling out those who were seen for second-opinion consultations. Demographic factors (age, sex, race, religion, and marital status) were obtained from Eclipsys. All identifiers were subsequently removed from the data for the purpose of analysis.

Data Analysis

Frequencies of completed code status documentation were compiled along with rates of DNR/DNI designations. Independent predictors of code status documentation and DNR/DNI status were investigated using multiple logistic regression with age, sex, race, marital status, religion, cancer type, and number of visits as covariates in SPSS version 15. Associations with two-sided *p* values <0.05 were considered significant.

RESULTS

Utilization of the LCS in the Cancer Center

Over the course of the study period, 2,498 patients with metastatic cancer were seen at the MGH Cancer Center three or more times. Table 1 summarizes patient demographic characteristics and lists the LCS completion rate for the entire sample (508/2,489, 20.3%) and for each of the seven metastatic cancer types identified through ICD-9 codes. The majority of patients who had completed the LCS were designated as DNR/DNI (328/508, 64.5%).

Patient Predictors of LCS Completion

Clinical and demographic factors that independently predicted completion of LCS or designation of DNR/DNI are shown in Table 2. Patients with non-colorectal GI cancers and lung cancers were most likely to have a completed LCS. Among those with completed LCS, younger patients and black patients were less likely to be designated as DNR/DNI. Finally, patients who self-identified as Jewish were less likely to have a completed LCS, but more likely to be designated as DNR/DNI if a code status preference was reported.

DISCUSSION

This is the first study on the documentation of code status in ambulatory patients with metastatic cancer. After implementing an outpatient code status module in the electronic medical records, only a minority of patients with metastatic cancers had a documented code status. Approximately 20% of patients had a completed LCS, with most frequent documentation among those with non-colorectal GI malignancies (31.7%) and lung cancer (31.7%). While these results may be explained by the poorer prognoses of these two cancer populations, the chance of meaningful recovery after a cardiopulmonary resuscitation attempt is limited for anyone with metastatic disease.^{11,12} Given the poor outcomes post-resuscitation, patients with metastatic cancer would benefit from conversations with their clinicians regarding their care preferences. Such treat-

Table 1. Sample Characteristics and Rates of Code Status Documentation

Variable	Sample characteristics	Documented code status	Designated DNR/DNI
	N (%)	N (%)	N (%) ^a
All patients	2,498 (100)	508 (20.3)	328 (64.5)
Sex			
Female	1,242 (49.7)	249 (20.0)	165 (66.3)
Male	1,256 (50.3)	259 (20.6)	164 (63.3)
Age			
>70	792 (31.7)	151 (19.1)	111 (73.5)
61-70	733 (29.3)	168 (22.9)	113 (67.3)
51-60	592 (23.7)	116 (19.6)	72 (62.1)
<51	381 (15.3)	73 (19.2)	33 (45.2)
Race/ethnicity			
White	2,260 (90.5)	457 (20.2)	304 (66.5)
Black	69 (2.8)	13 (18.8)	4 (30.8)
Latino/Hispanic	62 (2.5)	12 (19.4)	5 (41.7)
Asian	63 (2.5)	13 (20.6)	11 (84.6)
Other	28 (1.1)	7 (25.0)	3 (42.9)
Religion			
Jewish	161 (6.4)	22 (13.7)	19 (86.4)
Catholic	1,299 (52.0)	283 (21.8)	182 (64.3)
Protestant/Christian	522 (20.9)	119 (22.8)	73 (61.3)
No preference	361 (14.5)	58 (16.1)	39 (67.2)
Other	62 (2.5)	11 (17.7)	6 (54.5)
Marital status			
Married/partnered	1,680 (67.3)	322 (19.2)	205 (63.7)
Divorced	200 (8.0)	50 (25.0)	25 (50.0)
Single	361 (14.5)	74 (20.5)	54 (73.0)
Widowed	233 (9.3)	55 (23.6)	40 (72.7)
Cancer type			
Prostate	365 (14.6)	7 (1.9)	5 (71.4)
Breast	568 (22.7)	88 (15.5)	67 (76.1)
Ovarian	93 (3.7)	4 (4.3)	3 (75.0)
Bladder/kidney	89 (3.6)	4 (4.5)	3 (75.0)
Colorectal/intestinal	191 (7.6)	33 (17.3)	18 (54.5)
Non-colorectal GI	609 (24.4)	193 (31.7)	113 (58.5)
Lung	583 (23.3)	179 (30.7)	119 (66.4)

^aNote: DNR/DNI = do not resuscitate/do not intubate. Percentage of DNR/DNI is based on total number of participants with documented code status for each category

ment wishes ought to be clearly documented whether or not patients prefer resuscitation. Of note, the majority of patients with documented resuscitation preferences in our study were designated as DNR/DNI, raising the question of whether clinicians completed the LCS most frequently for patients who were more ill. Finally, our data also confirm prior research demonstrating that demographic factors, such as age, religion and race, are associated with EOL decision-making.¹³⁻¹⁷

This study has several important advantages over previously published reports. First, we examined resuscitation preferences that were actually documented in the medical record rather than patient reported preferences, which may not translate into actual decision-making. Second, because our administrative data include all patients seen in our Cancer Center, we have not introduced bias by limiting the sample to only those who agreed to participate in a research study. Finally, previous studies have generally examined elderly populations or those with a variety of medical conditions, while our study included a relatively homogeneous sample of metastatic cancer patients. A possible limitation of this study is that the documented code status may not accurately reflect the content of all EOL care discussions. Also, this study was

conducted at a single academic cancer center, with highly specialized disease groups, which may limit its generalizability to other care settings.

The literature suggests that cancer patients and their families prefer detailed and honest communication about their prognosis.¹⁸ In addition, patients' understanding of their illness and prognosis impacts their decision-making at the end of life.¹⁹ Encouraging discussions and documentation regarding patients' resuscitation preferences is an important step to improve communication about general goals of care in patients with metastatic cancers.²⁰ While documenting code status in ambulatory records may prevent unwanted futile resuscitation attempts, more work is needed to increase this practice by physicians. Merely having a place for documentation is not sufficient, even for patients with serious illnesses. However, our findings suggest that developing and implementing a system-wide standardized and accessible electronic method for documenting code status is feasible in an academic medical center. Future studies are needed to determine if documenting care preferences and ambulatory code status impacts EOL care.

Table 2. Independent Predictors of Code Status Documentation and DNR/DNI Designation

Predictor variable	Documented code status	Designated DNR/DNI
	Odds ratio (95% CI)	Odds ratio (95% CI)
Sex		
Female	Reference	Reference
Male	1.06 (0.85, 1.34)	0.95 (0.62, 1.45)
Age		
>70	Reference	Reference
61-70	1.05 (0.79, 1.39)	0.78 (0.45, 1.34)
51-60	0.94 (0.69, 1.28)	0.54 (0.30, 0.98)**
<51	0.86 (0.60, 1.24)	0.26 (0.13, 0.51)***
Race/ethnicity		
White	Reference	Reference
Black	0.90 (0.45, 1.81)	0.19 (0.05, 0.78)**
Latino/Hispanic	0.92 (0.46, 1.83)	0.43 (0.12, 1.49)
Asian	0.93 (0.47, 1.87)	3.28 (0.69, 15.64)
Other	1.45 (0.53, 3.94)	0.57 (0.10, 3.13)
Religion		
Jewish	Reference	Reference
Catholic	1.85 (1.09, 3.12)**	0.24 (0.06, 0.89)**
Protestant/Christian	1.67 (1.02, 2.72)**	0.28 (0.08, 1.01)*
No preference	1.36 (0.57, 3.22)	0.41 (0.06, 2.71)
Other	1.25 (0.71, 2.20)	0.35 (0.09, 1.39)
Marital status		
Married/partnered	Reference	Reference
Divorced	1.24 (0.84, 1.81)	0.60 (0.30, 1.18)
Single	1.09 (0.80, 1.49)	1.76 (0.95, 3.26)
Widowed	1.26 (0.87, 1.84)	1.19 (0.58, 2.43)
Cancer type		
Prostate	Reference	Reference
Breast	7.47 (3.36, 16.64)***	1.04 (0.17, 6.32)
Ovarian	2.14 (0.60, 7.61)	0.81 (0.04, 15.53)
Bladder/kidney	1.98 (0.56, 7.05)	1.38 (0.06, 29.66)
Colorectal/intestinal	9.09 (3.89, 21.25)***	0.33 (0.05, 2.16)
Non-colorectal GI	17.55 (8.07, 38.16)***	0.43 (0.07, 2.49)
Lung	17.40 (7.98, 37.92)***	0.49 (0.09, 2.87)
Number of clinic visits	1.08 (1.06, 1.11)***	0.97 (0.94, .997)**

* $p < 0.06$, ** $p < 0.05$, *** $p < 0.001$

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