

# Advanced Cancer and End-of-Life Preferences: Curative Intent Surgery Versus Noncurative Intent Treatment

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## Abstract

**Background:** People with cancer face complex medical decisions, including whether to receive life-sustaining treatments at the end of life. It is not unusual for clinicians to make assumptions about patients' wishes based on whether they had previously chosen to pursue curative treatment.

**Objective:** We hypothesized that cancer patients who initially underwent curative intent surgery (CIS) would prefer more aggressive end-of-life treatments compared to patients whose treatment was noncurative intent (non-CIT).

**Methods:** This study was a retrospective review of data from a large, randomized controlled trial examining the use of an online decision aid for advance care planning, "Making Your Wishes Known" (MYWK), with patients who had advanced cancer. We reviewed patients' medical records to determine which patients underwent CIS versus non-CIT. In the parent trial, conducted at an academic medical center (2007–2012), 200 patients were enrolled with stage IV malignancy or other poor prognosis cancer. Patients' preferences for aggressive treatment were measured in two ways: using patient-selected General Wishes statements generated by the decision aid and patient-selected wishes for specific treatments under various hypothetical clinical scenarios (Specific Wishes).

**Results:** We evaluated 79 patients. Of these, 48 had undergone initial CIS and 31 had non-CIT. Cancer patients who initially underwent CIS did not prefer more aggressive end-of-life treatments compared to patients whose treatment was non-CIT.

**Conclusions:** Clinicians should avoid assumptions about patients' preferences for life-sustaining treatment based on their prior choices for aggressive treatment.

## Introduction

PEOPLE WITH CANCER face a daunting number of medical decisions, including whether to receive life-sustaining treatments at the end of life. These decisions are complex and influenced by a number of factors, including avoiding pain and suffering, preventing major debilities that threaten one's independence or quality of life, and the desire to not burden family members.<sup>1,2</sup> Even so, in our clinical experience, it is not unusual for clinicians to make assumptions about patients' wishes regarding such treatment based on whether they had previously chosen to pursue curative treatment. Wishes for life-sustaining interventions, however, may be independent of these earlier treatment-path choices. The present study examines whether such wishes correlated with patients' prior choices to pursue treatment with curative intent.

We hypothesized that patients with advanced cancer who initially underwent curative intent surgery (CIS) would have advance directives that documented preferences for more aggressive end-of-life treatments compared to those patients who had initial noncurative intent treatment (non-CIT).

## Methods

For the present study we analyzed data from a large, randomized, controlled trial examining the use of an online decision aid for advance care planning, "Making Your Wishes Known" (MYWK), with patients who had advanced cancer.<sup>3–5</sup> In the parent trial (2007–2012), 200 patients were enrolled with stage IV malignancy or other poor prognosis cancer. Patients were excluded if they were non-English speaking, moderately to severely depressed (score  $\geq 20$ ) on

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TABLE 1. PATIENT CHARACTERISTICS

	CIS (n = 48)	Non-CIT (n = 31)	P-value
Age: years (mean, SD)	60.3, 14.4	65.1, 12.5	0.13
Sex: female (n, %)	22, 45.8%	12, 38.7%	0.53
Race: White (n, %)	47, 97.9%	29, 93.6%	0.71

CIS, curative intent surgery; non-CIT, noncurative intent treatment.

the Beck Depression Inventory-II,<sup>6</sup> cognitively impaired (score  $\leq 23$  on the Folstein Mini Mental State Exam),<sup>7</sup> or were unable to read at the eighth-grade level or higher (Wide-Range Achievement Test-3).<sup>8</sup> Participants were randomized so that half completed the MYWK decision aid, and half received standard advance care planning education materials.

Because standard advance care planning materials did not yield advance directive documents with detailed preferences regarding life-sustaining medical treatment, only patients in the MYWK decision aid arm were included in the present analysis. Retrospective review of the patients' medical records was performed (by NJG) to identify patients that met inclusion criteria ( $n = 79$ ) and to determine which patients underwent CIS versus non-CIT. For this analysis, CIS was defined as surgical interventions or procedures with the aim of complete eradication (via resection or ablation) of all existing disease. By contrast, non-CIT was defined as treatment with a main goal to alleviate symptoms, with no expectation of longer survival. For the present analysis we excluded individuals who had primary CNS or hematologic malignancies, because of the difficulty in determining whether their treatments were CIS versus non-CIT. CIS procedures performed included gastrointestinal ( $n = 9$ ); skin, soft tissue, and breast ( $n = 9$ ); pulmonary ( $n = 8$ ); urological ( $n = 6$ ); CNS ( $n = 5$ ); and other ( $n = 11$ ) surgeries.

Patients' preferences for aggressive treatment were measured in two ways. First, we identified which of the six possible General Wishes statements generated by the MYWK decision aid were chosen by patients as representing their views regarding aggressive treatment. We then dichotomized the variable by classifying the six possible statements into two categories (prefer more or prefer less aggressive treatment). For example, the following general wishes statement was classified as preferring more aggressive treatment:

TABLE 2. WISHES FOR TREATMENT/GENERAL WISHES: PERCENTAGE FAVORING MORE AGGRESSIVE TREATMENT\*

	n	%
CIS		
Favor more aggressive	14	29.2
Favor less aggressive	34	70.8
Total	48	100.0
Non-CIT		
Favor more aggressive	6	19.4
Favor less aggressive	25	80.6
Total	31	100.0

\* $P$ -value = 0.33

CIS, curative intent surgery; non-CIT, noncurative intent treatment.

TABLE 3. WISHES FOR TREATMENT AGGRESSIVENESS SCORE: POSSIBLE SCORE RANGE (0.40)\*

	N	Median	Interquartile range
CIS	48	12.5	3.5–21.0
Non-CIT	31	14.0	2.0–24.0
Total	79		

\*Wilcoxon signed rank  $P$ -value = 0.94.

CIS, curative intent surgery; non-CIT, noncurative intent treatment.

"I cherish my life regardless of its quality. I would want any and all medical treatments that might prolong my life, even if the result is a quality of life that others regard as very poor. This means that I want all treatments: even if treatment would prolong my life by only hours or days; their chance of success is very low; regardless of the cost of treatment; regardless of the burden of treatment on me or others."

Second, we examined wishes for specific treatments under various hypothetical clinical scenarios (Specific Wishes). MYWK explains health conditions (stroke, dementia, coma, and terminal illness) that can prevent a patient from communicating preferences for medical treatments, and describes interventions that commonly involve life or death decisions (CPR, mechanical ventilation, dialysis, and tube feeding). The user is prompted to make decisions (to have or not have) specific treatment under each scenario. From this, we created a treatment aggressiveness scale (0–40; higher = more aggressive) to score patients' summed preferences regarding eight specific treatments under five clinical scenarios (40 combinations).

To test our primary hypothesis, we compared the treatment preferences of the patients who had CIS to patients who did not undergo treatment with non-CIT. All variables were summarized with frequencies and percentages or means, medians, and standard deviations (SDs). A Wilcoxon signed-rank test was used to compare medians for treatment aggressiveness between groups. A logistic regression was used to test for associations between General Wishes categories and the CIS group, and between Specific Wishes and the CIS group. All analyses were performed using statistical software SAS (SAS version 9.3; SAS Institute, Inc., Cary, NC).

## Results

We evaluated the wishes of 79 patients (mean age = 62 years, SD: 14 years; 43% female; 96% white). Of these, 48 had undergone initial CIS and 31 had non-CIT. There were no significant differences in demographics by treatment group (see Table 1). The distribution of General Wishes statements chosen by study participants did not vary significantly by initial treatment (CIS versus non-CIT,  $P = 0.33$ ) (see Table 2). Also, there was no significant difference in median treatment aggressiveness scores between groups (12.5 in the CIS group versus 14.0 in the non-CIT group,  $P = 0.94$ ) (see Table 3). However, regardless of group, individuals desired less aggressive treatment when the prognosis of their condition was worse (see Table 4).

## Discussion

Patients' decisions to receive or not receive specific medical treatments under the five clinical scenarios did not

TABLE 4. CIS VERSUS NON-CIT GROUP: PARTICIPANTS WHO “WANT” EACH TREATMENT SCENARIO

Treatment (8)	Clinical scenario (5)															
	Stroke, improve				Stroke, not improve within year				Coma, improve				Coma, not improve			
	CIS	Non-CIT	P-value		CIS	Non-CIT	P-value		CIS	Non-CIT	P-value		CIS	Non-CIT	P-value	
CPR	32 (66.7%)	22 (71.0%)	0.69	12 (25.0%)	9 (29.0%)	0.69	28 (58.3%)	13 (42.9%)	0.16	4 (8.3%)	4 (12.9%)	0.71	8 (16.7%)	7 (22.6%)	0.51	
MV <24 hours	38 (79.2%)	24 (77.4%)	0.85	17 (35.4%)	11 (35.5%)	0.99	30 (62.5%)	17 (54.8%)	0.50	6 (12.5%)	5 (16.1%)	0.74	12 (25.0%)	8 (25.8%)	0.94	
MV <1 month	28 (58.3%)	17 (54.8%)	0.76	11 (22.9%)	7 (22.6%)	0.97	24 (50.0%)	11 (35.5%)	0.21	3 (6.3%)	2 (6.5%)	1.00	8 (16.7%)	6 (19.4%)	0.76	
MV >1 month	18 (37.5%)	12 (38.7%)	0.91	3 (6.3%)	5 (16.1%)	0.25	19 (39.6%)	10 (32.3%)	0.51	2 (4.2%)	2 (6.5%)	1.00	5 (10.4%)	5 (16.1%)	0.50	
KD <1 month	41 (85.4%)	27 (87.1%)	1.00	16 (33.3%)	12 (38.7%)	0.63	33 (68.8%)	18 (58.1%)	0.33	5 (10.4%)	5 (16.1%)	0.50	10 (20.8%)	8 (25.8%)	0.61	
KD >1 month	27 (56.3%)	21 (67.7%)	0.31	7 (14.6%)	8 (25.8%)	0.22	27 (56.3%)	15 (48.4%)	0.49	2 (.2%)	2 (6.5%)	1.00	7 (14.6%)	6 (19.4%)	0.58	
FT <1 month	34 (70.8%)	20 (64.5%)	0.56	17 (35.4%)	12 (38.7%)	0.77	29 (60.4%)	17 (54.8%)	0.62	4 (8.3%)	5 (16.1%)	0.47	8 (16.7%)	8 (25.8%)	0.33	
FT >1 month	22 (45.8%)	14 (45.2%)	0.95	9 (18.8%)	6 (19.4%)	0.95	24 (50.0%)	11 (35.5%)	0.21	2 (4.2%)	2 (6.5%)	1.00	7 (14.6%)	6 (19.4%)	0.58	

CIS, curative intent surgery; CPR, cardiopulmonary resuscitation; FT, feeding tube; KD, kidney dialysis; MV, mechanical ventilator; non-CIT, noncurative intent treatment.

differ based on whether patients initially underwent CIS versus had non-CIT. However, when contemplating conditions with a poor prognosis—such as a stroke or coma that would *not* improve—significantly more patients wanted less aggressive treatment compared to conditions that had a more favorable prognosis (e.g., a stroke or coma that would improve over time). This suggests that decisions are more correlated with prognosis than with patients' initial preferences for more or less aggressive medical treatment.

The reasons people accept or don't accept life-sustaining medical treatment towards the end of their lives are many and varied. Though one might expect that patients with advanced cancer who undergo aggressive curative surgery will want more aggressive treatment in general, this does not seem to be the case. As such, clinicians should be careful to avoid making assumptions about patients' preferences for life-sustaining treatment based on their prior choice whether to receive treatment with curative intent.

This study has several limitations. The categorization of CIS was determined retrospectively by a single physician reviewer, without the benefit of interviews to establish patients' individual perceptions regarding their condition, prognosis, and surgery. Additionally, data were collected from a larger study at a single institution whose patient population had low ethnic diversity, was predominantly white, non-urban, and was heterogeneous in terms of underlying diseases and clinical prognosis.

### Conclusions

Compared to patients whose treatments are noncurative, patients with advanced cancer who undergo surgery with curative intent do not express different preferences for life-sustaining medical treatment on advance directive documents. This holds for both their general as well as their specific wishes.

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### Author Disclosure Statement

Benjamin H. Levi and Michael J. Green have intellectual property and copyright interests for the decision aid used in

this study, *Making Your Wishes Known: Planning Your Medical Future (MYWK)*, which is available online free of charge. A version of *MYWK* that can be widely distributed is currently under development in partnership with a private commercial enterprise.

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