Parents' Views of Cancer-Directed Therapy for Children With No Realistic Chance for Cure

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ABSTRACT

Purpose

Previous literature suggests that parents often wish to continue cancer-directed therapy for their children with incurable cancer. We assessed parents' experiences with treatment for their children with cancer and no realistic chance of cure.

Patients and Methods

We administered questionnaires to 141 parents of children with cancer who died after receiving care at one of two cancer centers. Parents were asked whether the child benefited and suffered from treatment administered after the parent recognized that cure was not a realistic expectation, and whether they would recommend cancer-directed therapy to other families of children with advanced cancer.

Results

Fifty-three (38%) of 141 children received cancer-directed therapy after the parent recognized that the child had no realistic chance for cure. Most of these parents felt that their child had experienced at least some suffering resulting from the therapy (61%, 31 of 51) and little to no benefit (57%, 29 of 51). Fifty-one (38%) of 135 parents overall would recommend standard chemotherapy and 46 (33%) of 140 would recommend experimental chemotherapy to families of children with advanced cancer. Even parents who would not recommend standard chemotherapy generally felt the physician should offer it (91%, 88 of 97). Parents who reported that their children experienced suffering resulting from cancer-directed therapy (odds ratio = 0.46; $P = .02$) were less likely to recommend standard chemotherapy to other families.

Conclusion

Although many parents choose treatment for their children with incurable cancer, bereaved parents often would not recommend such therapy. Parents who felt their children suffered as a result of cancer treatment were particularly unlikely to recommend it.

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INTRODUCTION

Adult cancer patients are increasingly using cancer-directed therapy for cancer with no realistic chance of cure.¹⁻⁷ Previous literature suggests that patients choose to treat incurable cancer for multiple reasons. Inaccurate perceptions of prognosis are one such reason; patients with unrealistic expectations for cure may be more likely to choose aggressive therapies, including cancer treatment, than patients with more realistic expectations.⁸⁻¹⁰ Patients who recognize that cure is unlikely may also elect to continue cancer-directed therapy, though with different goals, such as life extension or symptom palliation.^{11,12} In some cases, however, the choice of "life-extending" therapy rather than symptom-directed therapy does not appear to prolong life.^{8,10,13} Finally, patients may find value in continuing cancer treat-

ment, even if treatment is unlikely to offer medical benefit. For example, adult cancer patients are often willing to accept intensive treatment with little possibility of benefit, beyond what healthy adults would consider acceptable,¹² if they have strong social ties or children living at home.¹⁴

Much like adult patients, parents of children with cancer tend to pursue cancer-directed therapy even when they understand that cure is unlikely, and they rarely elect to discontinue such therapy without an explicit physician recommendation to do so.¹⁵ We sought to understand in greater depth parents' perspectives on treatment for cancer with no realistic chance for cure. We interviewed 141 parents of children who died as a result of cancer after receiving care at one of two pediatric oncology centers. We asked parents whether they had chosen cancer treatment for their child with incurable cancer, and we

asked parents who responded affirmatively to describe their goals of such treatment and whether their children suffered or benefited as a result. In addition, we asked parents whether they would recommend cancer-directed therapy to other families in a similar situation.

PATIENTS AND METHODS

The study was conducted at the Dana-Farber Cancer Institute/Children's Hospital (DFCI/CHB; Boston, MA), and at Children's Hospitals and Clinics (CHC; St Paul and Minneapolis, MN). We interviewed English-speaking parents of children who died as a result of cancer between 1990 and 1999.^{9,16,17} Interviews were conducted between 1997 and 2001, at least 1 year after the child's death. Of 244 eligible parents, 222 were located, 146 agreed to participate, and 141 were interviewed (response rate 64%, 141 of 222 parents located). We interviewed one parent per family and reviewed the child's medical record a mean of 3.2 years after the child's death (range, 1.1 to 8.0 years).

The questionnaire and its development and validation have been described.^{9,16,17} Items were closed-ended with categoric responses or Likert scales. Three trained interviewers and three investigators conducted interviews by telephone; 35 were conducted in person at the parent's request.

Parents were asked to provide the approximate date when they first realized that the child had no realistic chance for cure. Parents were asked whether their children had received "any cancer-directed therapy, such as chemotherapy, radiation therapy, and/or surgery" after this realization; these children are described interchangeably in this report as having received treatment after the parent recognized that they had no realistic chance for cure or as having received treatment for incurable cancer. Parents were asked which types of cancer-directed therapy were administered and whether their children had experienced specific care attributes (hospital admission, outpatient clinic visits, visiting nursing care), suffering, and benefit ("a great deal," "a lot," "some," "a little," "not at all") as a result of this therapy.

Parents were asked to report their goals of cancer-directed therapy, starting with treatment administered at diagnosis ("to cure cancer," "to be able to keep hoping," "to make sure we have done everything," "to extend life as long as possible but without hope of a cure," "to lessen suffering as much as possible," "to help cancer research," or "other"). Parents whose children received cancer treatment after the parent had recognized that the child had no realistic chance for cure were asked to report their goals of that treatment. In addition, parents were asked, in retrospect, what they now think the goal of cancer therapy should be when there is no realistic chance for cure. Some parents reported different goals of treatment in retrospect than they had held while the child was actually receiving treatment for incurable cancer; in this article, we have described these parents as parents whose goals of treatment for incurable cancer had changed in retrospect.

Parents were asked about symptoms (pain, anorexia, dyspnea, fatigue, nausea/vomiting, constipation, and diarrhea) and symptom-associated suffering ("a great deal," "a lot," "some," "a little," "not at all"). Parents were also asked to respond to clinical vignettes. Vignettes assessed parents' willingness to recommend standard or experimental chemotherapy to another family whose child had cancer and no realistic chance for cure. The vignettes are available in the Appendix (online only). Additional data were collected from parents on demographic attributes (age, sex, race, education, income, and religion).

Trained research assistants abstracted medical records to determine the child's sex; diagnosis; dates of birth, diagnosis, and death; number of hospital days in the last month of life; number, types, and timing of cancer-directed regimens; enrollment in clinical studies; date of termination of the last cancer-directed regimen; cause of death (progressive disease and/or treatment-related complication); and location of death. Both sites' institutional review boards approved this study.

Statistical Methods

Analyses were conducted using the SAS statistical package (SAS Institute, Inc, Cary, NC).

Parents who responded "yes" or "probably yes" to either or both vignettes about standard chemotherapy were classified as willing to recommend

standard chemotherapy to other families. Similarly, parents who responded "yes" or "probably yes" to either or both vignettes about experimental chemotherapy were classified as willing to recommend experimental chemotherapy. Other variables using Likert scales were dichotomized as specified in tables and text. McNemar's test was used to determine whether differences between parents' responses to vignettes tended to be distributed evenly or in a predominant direction.

Parents' willingness to recommend standard chemotherapy, and willingness to recommend experimental chemotherapy, served as the outcome variables for binary logistic regression, performed using generalized estimating equations to account for clustering by physician. Variables considered were

Table 1. Child and Parent Characteristics

Characteristic	No.	%
Child characteristics (N = 141)		
Care at DFCI/CHB	102	72
Female sex	66	47
Age at diagnosis, years		
Median		7.0
Range		0.0-20.1
Age at death, years		
Median		8.9
Range		0.3-25.3
Death at home	67	48
Type of cancer		
Hematologic malignancy	70	50
Brain tumor	28	20
Other solid tumor	43	30
Treatment (N = 141)		
No. of cancer-directed regimens		
Median		3
Standard deviation		2.0
Enrollment in clinical study	100	71
Enrollment in phase I study*	23	17
Bone marrow transplant	54	38
Cancer-directed therapy in the parent-defined end-of-life care period (n = 51)†		
Chemotherapy	25	49
Radiation therapy	18	35
Surgery	8	16
No. of days before death that last cancer-directed therapy was administered (n = 53)		
Median		16
Range		0-184
Cause of death (N = 141)		
Treatment-related complication	29	21
Progressive cancer	110	79
Parent characteristics (N = 141)		
Age at interview, years		
Median		43.4
Standard deviation		7.7
Female sex	117	83
White, non-Hispanic	131	93
Post-secondary education	79	56
Annual household income ≥ \$35,000	107	77

Abbreviation: DFCI/CHB, Dana-Farber Cancer Institute/Children's Hospital.

*All phase I clinical trial participants received treatment at DFCI/CHB (Boston, MA).

†Parents whose children received cancer treatment after they recognized that the child had no realistic chance for cure; n = 51 because of two missing parent responses about type of therapy administered.

chosen on the basis of a priori hypotheses that parent attributes (eg, race and education) and care experiences (eg, suffering and benefit resulting from cancer-directed therapy) might be associated with parents' willingness to recommend treatment. Bivariable relationships were determined and sensitivity analyses performed controlling for time since death, site of care, and death resulting from progressive cancer, and limiting analyses to parents whose children died with progressive cancer.

RESULTS

Characteristics of the 141 children and their parents are summarized in Table 1. Fifty-three (38%) of 141 children received cancer-directed therapy after the parent recognized that the child had no realistic chance for cure. All of these children died with progressive cancer, not as a result of treatment complications. Children who received treatment for incurable cancer did not differ from those who did not receive such therapy with respect to parent race, site of care, duration of disease, or duration of the end-of-life period. Parents whose children received treatment in this period tended to have higher educational attainment ($P = .01$) and income ($P = .01$), to use a greater number of different cancer regimens ($P = .004$), and to discontinue therapy closer to the time of death ($P = .02$) than did parents whose children did not receive therapy.

Most parents recalled that their goal of the first cancer treatment administered after diagnosis was cure (85%, 114 of 134; Table 2). Parents who continued cancer treatment after they had recognized that the child had no realistic chance for cure, however, did so with a variety of goals, including cure (20%), life extension (22%) and lessening suffering (20%). When parents were asked to

consider in retrospect what the goal of such treatment should be, a few continued to report curative goals. The goal reported most often, though, was lessening suffering. Among parents who chose to use treatment for their child's incurable cancer, slightly more than half (55%, 27 of 49) changed their goals of that treatment in retrospect.

Parents reported the need for some hospitalizations (49%, 25 of 51), outpatient clinic visits (39%, 20 of 51), and home nursing care (10%, five of 51) related to treatment for incurable cancer. The majority of parents reported that their child had experienced at least some suffering (61%, 31 of 51) because of the last cancer-directed therapy, and 57% (29 of 51) reported that the child had received little to no benefit. Reports of suffering were associated with parents' recall that their children had experienced adverse effects of the last cancer-directed therapy ($P = .001$), but were not associated with the type of therapy received ($P = .81$). When reports of suffering and benefit were considered jointly, 34% of parents (17 of 50) attributed both at least some suffering and little to no benefit to the last cancer-directed therapy (Table 3).

Parents were asked to consider the use of standard chemotherapy for a hypothetical child with advanced cancer (Appendix). A minority were willing to recommend chemotherapy to the family of a child with (16%, 21 of 135) or without (31%, 44 of 141) significant symptoms. Even among those who would not recommend chemotherapy, most (91%, 88 of 97) felt that the physician should or probably should offer it. Overall, 38% ($n = 51$) would recommend standard chemotherapy for an asymptomatic child (59%, 30 of 51), a symptomatic child (14%, seven of 51), or both (27%, 14 of 51).

Table 2. Goals of Cancer-Directed Therapy

Goal	%		
	Goal of Cancer-Directed Therapy at Diagnosis	Goal of Cancer-Directed Therapy Administered After the Child Had No Realistic Chance for Cure*	In Retrospect, Parent's Opinion About What the Goal of Cancer-Directed Therapy Should Be When the Child Has No Realistic Chance for Cure
Child received cancer-directed therapy after the parent had recognized that the child had no realistic chance for cure ($n = 51$)			
To cure cancer	84	20	12
To keep hoping	0	14	14
To ensure that everything had been done	0	14	8
To extend life without a hope of cure	14	22	10
To lessen suffering	2	20	43
To help cancer research	0	2	2
Other	0	10	8
Child did not receive cancer-directed therapy after the parent had recognized that the child had no realistic chance for cure ($n = 83$ for goal at diagnosis,† $n = 65$ for retrospective goal‡)			
To cure cancer	85	NA	17
To keep hoping	0		11
To ensure that everything had been done	0		12
To extend life without a hope of cure	12		6
To lessen suffering	1		46
To help cancer research	1		2
Other	0		6

Abbreviation: NA, not applicable.

*Limited to those parents whose children received cancer-directed therapy in the end-of-life period.

†Limited to those parents whose children received cancer-directed therapy at diagnosis.

‡Limited to those parents whose children received a second cancer-directed regimen after diagnosis.

Table 3. Relationship Between Parents' Perceptions of Suffering and Benefit Resulting From Last Cancer-Directed Therapy (n = 50)

Parents' Perception	%	
	A Great Deal, a Lot, or Some Benefit	A little or No Benefit
A great deal, a lot, or some suffering	26	34
A little or no suffering	18	22

NOTE. Limited to parents whose children received cancer-directed therapy after the parent had recognized that there was no realistic chance for cure, and who answered both questions.

Parents were more likely to recommend chemotherapy when the child was asymptomatic ($P = .0002$).

Among parents whose children had actually received treatment for incurable cancer, about half (52%, 26 of 50; Table 4) would recommend standard chemotherapy, either when the child was symptomatic (8%, two of 26), asymptomatic (69%, 18 of 26), or in both circumstances (23%, six of 26).

Slightly more than one quarter of parents (28%, 39 of 140) were willing to recommend experimental chemotherapy to the family of a child without symptoms, and 19% (26 of 140) would recommend study enrollment to the family of a symptomatic child. Among those parents who would not recommend experimental chemotherapy, most (77%, 78 of 101) felt that the physician should or probably should offer it. Overall, 33% of parents ($n = 46$) would recommend experimental chemotherapy for an asymptomatic child (41%, 19 of 46), a symptomatic child (15%, seven of 46), or both (43%, 20 of 46). Parents were more likely to recommend experimental chemotherapy when the child was asymptomatic ($P = .01$). Among 16 parents of children who had participated in phase I clinical trials, 38% (six of 16) would or probably would recommend experimental chemotherapy to another family.

In bivariable analyses, parents ($n = 140$) were more likely to recommend standard chemotherapy to another family if their own child had received treatment for incurable cancer (odds ratio = 2.04; $P = .05$; Table 5.) In contrast, parents were less likely to recommend chemotherapy if they believed that their child had experienced suffering as a result of cancer-directed therapy (odds ratio = 0.46; $P = .02$). Parents were also less likely to recommend chemotherapy if their goals of cancer-directed therapy had changed in retrospect (odds ratio = 0.39, $P = .05$). Results were similar after adjustment for time since death, site of care, and cause of death, and when analyses were

limited to parents whose children had died with progressive disease. Among parents whose children had actually received chemotherapy for incurable cancer, those whose goals of cancer-directed therapy had changed in retrospect were less likely to recommend standard chemotherapy to other families (odds ratio = 0.14; 95% CI 0.04 to 0.57; $P = .01$).

DISCUSSION

We asked parents about their experiences with treatment for their children with cancer and no realistic chance for cure, and we compared their own choices for therapy with the general values about treatment they expressed in response to vignettes. We found that many bereaved parents would not recommend treatment for incurable cancer to other families, even if they had chosen such treatment for their own children. Parents who reported that their children experienced treatment-related suffering were particularly unlikely to recommend treatment to other families.

These findings raise questions as to why so many bereaved parents would express general values for cancer therapy that were different from the choices they had made for the care of their own children. Our data cannot fully answer this question, but they do raise some hypotheses.

Perhaps the most concerning possible explanation for this discrepancy relates to parents' knowledge of the risks and benefits of cancer treatment. The vignettes elicit parents' values for cancer treatment by exploring the trade-off between treatment-associated suffering and benefit. Misperceptions about possible benefits of treatment, including whether cure is a realistic expectation, are a known barrier to value-driven end-of-life decision-making.^{8,9} However, we specifically focused on parents who recognized that their children had no realistic chance for cure. Misconceptions about core issues of treatment benefit, such as treatment intent, should therefore not have played a major role in our population. Misconceptions about risks of treatment could underlie this finding, however; if parents were not fully aware of the possibility of treatment-related suffering, they might have been more likely to choose cancer therapy for their children.

In support of this hypothesis, we found that parents were less likely to recommend chemotherapy to other families if their own child had suffered as a result of treatment. This finding is consistent with previous literature that suggests that parents consider suffering when making end-of-life decisions for their children.¹⁸ The extent of suffering reported was higher than we had anticipated, particularly given

Table 4. Children's Receipt of Cancer-Directed Therapy After the Parent Had Recognized That the Child Had No Realistic Chance for Cure, and Parents' Willingness to Recommend Cancer-Directed Therapy to Other Families (n = 140)

Therapy Status	%	
	Parent Willing to Recommend Standard Chemotherapy ($P = .01$)	Parent Willing to Recommend Experimental Chemotherapy ($P = .44$)
Child received cancer-directed therapy after the parent had recognized that the child had no realistic chance for cure (n = 52)	52	29
Child received no cancer-directed therapy after the parent had recognized that the child had no realistic chance for cure (n = 88)	29	35

Table 5. Factors Associated With Recommending Cancer-Directed Therapy: Bivariable Relationships (n = 140)

Parent Characteristic	Factors Associated With Recommending Standard Chemotherapy			Factors Associated With Recommending Experimental Chemotherapy		
	Odds Ratio	95% CI	P	Odds Ratio	95% CI	P
Male sex	1.07	0.43 to 2.65	.88	1.28	0.54 to 3.06	.58
Non-Hispanic white race	0.59	0.17 to 1.98	.39	0.30	0.09 to 0.95	.04
Post-secondary education	1.34	0.65 to 2.76	.42	0.81	0.44 to 1.50	.50
Income $\geq$ \$35,000/year	0.88	0.36 to 2.16	.77	0.45	0.21 to 0.94	.03
Experiences with cancer-directed therapy						
Child participated in a phase I clinical trial	2.53	1.08 to 5.95	.03	2.15	0.92 to 5.00	.08
Child received cancer-directed therapy after the parent had recognized that the child had no realistic chance for cure	2.04	1.01 to 4.13	.05	0.81	0.43 to 1.52	.51
Child experienced suffering (a great deal, a lot, or some) resulting from last cancer-directed therapy	0.46	0.23 to 0.90	.02	0.90	0.41 to 1.98	.80
Child benefited (a great deal, a lot, or some) from last cancer-directed therapy	1.25	0.62 to 2.54	.54	0.77	0.36 to 1.69	.52
Parent reported a different goal of the last cancer-directed therapy in retrospect	0.39	0.15 to 1.01	.05	1.56	0.52 to 3.02	.61
End-of-life care experiences						
Child suffered "a great deal" or "a lot" from more than two symptoms in the end-of-life care period	0.95	0.47 to 1.92	.88	0.65	0.30 to 1.41	.28
Child was hospitalized in last month of life	1.08	0.46 to 2.52	.87	0.50	0.22 to 1.15	.10

previous reports that oral chemotherapy and phase I agents are well tolerated at the end of life.¹⁹⁻²⁵

We do not know if parents expected the degree of suffering they reported, or if prior knowledge about the possibility of suffering would have affected their choices. The process by which parents made decisions about cancer treatment was undoubtedly more complex than our survey could evaluate, and our assessment of the physician's role in this process was limited. Future research is needed to understand factors that contribute to parents' decision making in greater depth. However, because it is at least possible that parents might prospectively make different decisions if they think treatment is likely to cause suffering, physicians need to ensure that parents are well-informed about any potential for suffering.

A second possible explanation is that some parents' opinions about cancer-directed therapy change after the child's death. Our interviews with parents occurred years after their children's deaths, and families may have come to these opinions about cancer treatment through their personal experiences during that time. In support of this hypothesis, we found that parents' goals of care change in retrospect as they look back on cancer treatment decisions. Parents whose goals of care changed in retrospect were less likely to recommend cancer therapy to other families of children with advanced cancer. These findings suggest a complex trajectory of evolving beliefs about care, starting during the child's illness and continuing after death. The finding that parents rethink care decisions and goals after the child's death may simply be part of this process. Whether rethinking of decisions is difficult for parents and, if so, whether bereavement support can help with this experience is unknown.

A third possible explanation for differences between some parents' actual choices and later recommendations relates to our study design. We created the vignettes for the purpose of this study and considered them to be indicators of parents' general values about treatment for incurable cancer. Vignette-based research is an accepted technique for assessing general values and preferences for end-of-life

care.²⁶⁻³⁰ However, we do not know whether the situation of the child in the vignette was similar to the situation in which parents actually elected to start cancer-directed therapy. Differences could account for parents' willingness to start cancer treatment for their own children, but not to recommend it to other families. The standard chemotherapy was described as an oral agent, however, which may have made it even less invasive than what some families chose for their children. In addition, by asking parents to reflect on hypothetical situations, we allowed parents to recommend treatment courses that were different from their own choices without having to state directly that they regretted their decisions. We believe this technique allowed us to be as respectful as possible of their experiences.

Our study has other limitations. We asked parents whether their children suffered and benefited from treatment, but we do not know how well they were able to distinguish treatment-related suffering from suffering related to disease progression. We do not have comparative data on suffering in children who did not receive cancer-directed therapy during the same care period. We should note, though, that participating parents, whose children received a mean of three different cancer regimens, were highly experienced with cancer therapy. Their reports of suffering correlated strongly with treatment-related adverse effects, which tend to be cyclical in nature and are often distinct from symptoms of disease progression. Parents' attributions of the sources of suffering may therefore have some validity.

Parents were asked to recall complex aspects of their child's illness and therapy. We have worked to minimize possible biases inherent in the retrospective design. For example, we found no consistent relationships between our primary outcomes and the time between the child's death and parental study enrollment. In addition, the retrospective design allowed us to conduct interviews with a large number of bereaved parents without relying on prospective determination of prognosis or treatment intent, issues that could introduce bias.

Our response rate of 64% left many parents' opinions unrepresented, and the diversity of our sample is limited. We have previously reported that respondents and nonrespondents at DFCI/CHB were similar with regard to most demographic and disease characteristics.¹⁶ Nonetheless, a pattern of nonresponse could have influenced our findings.

Although the use of cancer-directed therapy when there is no realistic chance for cure is becoming increasingly common, many parents report that their child suffered as a result of such treatment, and many parents who chose treatment for their own children would not recommend it to other families. We have raised hypotheses about the reasons for these findings, but more research is needed. In particular, we do not know whether physicians can change this experience for parents, especially those who later reconsider their prior choices for care. In light of our finding that many parents felt that their children had experienced suffering as a result of treatment for incurable cancer, physicians should continue to help parents develop realistic expectations about this possibility. How this will affect the complex path by which parents make treatment decisions for their children with incurable cancer, however, remains to be seen.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The author(s) indicated no potential conflicts of interest.

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Appendix

The Appendix is included in the full-text version of this article, available online at www.jco.org. It is not included in the PDF version (via Adobe® Reader®).