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Parent Understanding of the Risk of Future Limitations Secondary to Pediatric Cancer Treatment

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Abstract

Background—Parents and physicians may have different understandings of a child's risk of future limitations due to cancer or cancer treatment. We evaluated alignment between parent- and physician-estimated risk of late effects.

Methods—We surveyed 352 parents of children with cancer within 12 weeks of diagnosis, and the children's oncologists, at Dana-Farber/Boston Children's Cancer and Blood Disorders Center and Children's Hospital of Philadelphia. We assessed parent and physician estimations of the child's risk of future limitations in physical abilities, intelligence or quality of life (QOL) due to cancer treatment. Physician-estimated risk of limitations 50% was considered high risk.

Results—Physicians considered 22% of children at high risk of physical impairments, 9% high risk for impaired intelligence, and 6% high risk for impaired QOL. Among high-risk children, 38% of parents recognized this risk in physical abilities, 21% in intelligence, and 5% in QOL. In multivariable analysis, parental understanding of risk, defined as concordant parent and physician estimates, was greater among parents of children at lower risk of future limitations (OR 2.59; 95% CI 1.35–4.96). Regardless of risk, 92% of parents considered it very/extremely important to receive information about potential health implications of cancer treatment.

Conclusions—Although most parents want information about life after cancer, most parents of children at high risk of future impairment do not recognize this risk. Strategies to improve communication about late effects throughout pediatric cancer treatment should prioritize meeting information needs and improving parent understanding of the risk of impairment.

Keywords

Late Effects of Cancer Treatment; Pediatric Oncology; Health Communication; Risk Communication

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Conflicts of Interest Disclosure

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Introduction

In the current treatment era, over 80% of children diagnosed with cancer will become long-term survivors.¹ This cure is not without cost, as cancer and its treatments can cause long-term health effects well beyond completion of therapy. More than 60% of childhood cancer survivors experience at least one chronic medical condition, or late effect, of treatment.² Furthermore, cancer and its treatment may impair long-term health status, with over 40% of long-term survivors experiencing adverse health in at least one domain of general health, mental health, functional impairment, or activity limitations.^{3,4} However, little is known about how to best communicate the risk of late effects or future functional impairment to patients and families, nor about parental interest in receiving late effects information early in treatment.

Though the risk of late effects and functional impairment has been well described, research suggests that this risk is not optimally conveyed to parents. Compared with information about treatment, parents report receiving lower quality information about what their child's diagnosis means for the future.⁵ Many parents of survivors feel sub-optimally prepared for their child's life after cancer treatment,⁶ and parents continue to report unmet information needs about late effects well into their children's survivorship.⁷ Many have attempted to mitigate this information gap through provision of health information and targeted educational interventions in survivorship clinics.^{8,9} However, the first discussions of potential late effects of cancer and its treatment typically occur during initial conversations about therapy, as this information is a necessary component of informed consent, and as it may impact treatment decision-making. In this study, we sought to better understand the communication process about risks of potential long-term effects of cancer and cancer treatment by evaluating parents' perceptions of their child's risk of future limitations in the early treatment period, shortly after they engaged in discussions about diagnosis and treatment. We particularly examined whether parents of children whom physicians considered to be at the highest risk of future limitations recognized this risk, and whether parents' desires for information about late effects varied based on their child's risk.

Methods

We surveyed parents of children with cancer and the children's pediatric oncologists at Dana-Farber/Boston Children's Cancer and Blood Disorders Center and the Children's Hospital of Philadelphia within 12 weeks of the child's oncologic diagnosis. Surveys were conducted between November 2008 and April 2014, and were available in English and Spanish. Eligibility criteria included child 18 years of age, child's cancer diagnosis between 1 and 6 weeks from the date of first contact, parent able to read English or Spanish, and permission to approach granted by the child's oncologist. Eligible parents were approached in person or by mail with a letter inviting participation, the survey, and a postage-paid postcard to return if they declined participation. Non-responding parents were approached a second time in person or by mail. One parent per child completed the survey. Parent participants received a \$10 gift card as a token of appreciation. Only those surveys returned within 12 weeks of diagnosis were included in the analysis. Once a parent

completed a survey, their child's primary oncologist (attending physician or fellow) was given the paired physician survey. Physician participants received a \$5 gift card in thanks for participation. The institutional review boards of the Dana-Farber Cancer Institute and Children's Hospital of Philadelphia approved this study.

Three hundred eighty-two of 565 eligible parents (68%) completed the survey within 12 weeks of their child's diagnosis. Participation rates did not significantly differ by diagnosis group, although parents of children with brain tumors were slightly less likely to participate as compared with parents of children with hematologic malignancies or extra-cranial solid tumors ($p=0.07$). Paired physician surveys were obtained for 361 of the 382 parent surveys (95%). Ninety-four physicians participated; 34 (36%) had a single patient enrolled, 33 (35%) physicians had 2–3 patients enrolled, and 27 (29%) had 4 patients enrolled. Nine surveys were excluded due to incomplete items for the primary outcome of future limitations (6 parents, 3 physicians). In total, this analysis included 352 parents of children with cancer and their children's physicians.

Both parent and physician survey instruments utilized items or modified items drawn from previously developed questionnaires,^{5,10,11} with new questions developed based on literature review, parent and physician interviews, and general principles of survey design. The survey instrument underwent pilot testing with parents and physicians for face and content validity prior to implementation. Parent survey instruments were available in English and Spanish, and parent and physician surveys were offered in paper-and-pencil or electronic format per participant preference.

Study Outcomes

The primary study outcome was parent understanding of his/her child's risk of future limitations, which was defined as agreement between parent and physician estimations of risk. Parents and physicians were asked to report the likelihood that a child would experience future functional limitations due to cancer or cancer treatment in 3 domains using previously developed items.^{6,10} Parents and physicians were asked to predict the likelihood of a child experiencing functional limitations in: "physical abilities (such as difficulty exercising)," "intelligence (such as difficulty with schoolwork)," and "quality of life (such as difficulty enjoying time with family or friends)," with response options, "extremely likely (>90%)," "very likely (75–90%)," "moderately likely (50–74%)," "somewhat likely (25–49%)," "unlikely (10–24%)," and "very unlikely (<10%)."

The secondary outcome was parent information preferences about possible future limitations. Parents were asked the importance of knowing "how likely it is that cancer or its treatment may affect your child's life in the future" with responses on a 5-point Likert scale. Parents were also asked their preferred level of detail about "the likelihood that your child will have limitations in the future" with responses of "as many details as possible in all situations," "details only in certain situations, such as when the information is important for a decision," or "not to hear a lot of details."

Explanatory factors

Additional items assessed factors we hypothesized could affect parent perception of risk of future limitations including prognosis, communication quality, information quality, emotional impact of information, and trust in physicians. To determine prognostic understanding, parents and physicians were asked the child's likelihood of cure, with response options "extremely likely (>90%)," "very likely (75–90%)," "moderately likely (50–74%)," "somewhat likely (25–49%)," "unlikely (10–24%)," "very unlikely (<10%)," and "no chance of cure." Prognosis estimations were dichotomized as "favorable" (>75% chance of cure), or "less favorable" (<75% chance of cure) given current survival estimates for all children with cancer. Parent and physician estimates of prognosis were considered in agreement if both selected the same estimate of the child's prognosis.

We assessed parent perception of medical communication quality overall utilizing a previously developed scale with items assessing how often the oncologist gives understandable answers to questions, takes adequate time to answer questions, and conveys information in a sensitive manner, with response options never/sometimes/usually/always.¹² Parent perception of information quality was evaluated using a previously developed scale with items assessing the quality of information received about treatment, likelihood of cure, likelihood of future limitations, cause of cancer, and overall, with response categories excellent/good/satisfactory/fair/poor.¹² Parents were asked how "upsetting is it to you to know information about how likely it is that cancer or its treatment may affect your child's life in the future?" Response options included extremely upsetting/very upsetting/somewhat upsetting/a little upsetting/not at all upsetting. Trust in physician was assessed using an item from the Trust in Physician scale.^{13,14}

Parent and child attributes were obtained by questionnaire and medical record review. Parents' sex, age, educational level, and race/ethnicity were obtained by questionnaire. Parent dispositional optimism,¹⁵ decisional regret,¹⁶ and decision-making preferences and role¹⁷ were assessed using previously validated scales. Child's diagnosis, date of diagnosis, and date of birth were obtained by medical record review.

Statistical Methods

Responses to the items on risk of future limitations and information preferences were summarized descriptively. In the present analysis, risk of future limitations 50% in a given category was considered "high risk"; 10–49% chance of future limitations was considered "moderate risk"; and 10% chance was deemed "low risk based on our clinical impression of risk perception.

To assess the primary study outcome of agreement between parent and physician perceptions of risk of future functional limitations, we used physician estimation as the benchmark of actual patient risk. Parent estimations were considered concordant with physician estimates if parents placed their child in the same risk group (high, moderate, or low) as the child's physician. The 6 original risk categories were collapsed into the 3 broader categories of high, moderate and low risk to ensure that parents and providers with similar, if not identical, risk conception were deemed concordant. Agreement between the 3-level

designation of parent and physician estimates of risk groups was quantified using the Kappa statistic, and tests of symmetry (i.e. an extension to McNemar's test for more than two groups) were conducted to test whether parents tended to overestimate or underestimate their child's risk relative to their child's physician. For the secondary study outcome of information preferences, importance of information about the likelihood of future impact was dichotomized as extremely/very vs. somewhat/a little/not at all important, and preferred level details was dichotomized as "as many details as possible" versus all other responses. Fisher's exact test was used to compare concordance of parent and physician predictions by physician-estimated risk, and to compare parent information preferences by physician-estimated risk. These analyses were conducted separately by limitation type (physical abilities, intelligence, QOL).

To investigate factors associated with concordant parent and physician estimation of risk of future limitations, we conducted univariate and multivariable mixed-effects logistic regression. Analyses were conducted with repeated measures by limitation type (physical function, intelligence, QOL), with limitation types nested within parents (random intercept) and parents nested within physicians (random intercept). The multivariable model was constructed from backwards variable selection, setting the significance level for removal from the model at 0.10, and including the following variables in the model regardless of significance: parent education, parent race/ethnicity, diagnosis category, and physician-rated prognosis. Explanatory variables were categorized consistently with prior analyses of this dataset, unless described otherwise in the methods section. Statistical analyses were conducted with Stata.

Results

Parent respondents were predominantly female, white and well-educated (Table 1). Most parents (87%) thought their child had 75% chance of cure, while physicians considered only 60% of children to have such a favorable prognosis.

Physicians estimated 22% (76/352) of children to be at high risk for future limitations in physical abilities, 9% (33/352) at high risk for limitations in intelligence, and 6% (22/352) at high risk for limitations in quality of life (QOL). Absolute proportions were similar among parents; 24% of parents identified their children as having a high risk of future limitations in physical abilities, 13% at high risk of limitations in intelligence, and 13% at high risk of limitations in QOL (Table 2). Despite the overall similar proportions, fewer than half of all parents selected the same risk category as their child's physician (43% in physical abilities, 49% in intelligence, and 43% in QOL). Furthermore, among children deemed to be at high risk of future impairment by their oncologist, only 38% of parents recognized this risk of physical limitations, 21% in intelligence, and 5% in QOL (Figure 1). Parents of children with a lower risk of future limitations in intelligence ($p=0.001$) and QOL ($p<0.001$) were more likely to understand their child's risk of future impairment, whereas risk status was not significantly associated with parental understanding of risk of physical limitations. While parents underestimated risk of future limitations in QOL ($p=0.01$), parents were as likely to underestimate as to overestimate risk of limitations in physical abilities ($p=0.25$) and intelligence ($p=0.12$) (Table 2, test of symmetry).

In unadjusted analyses, parents were more likely to understand their child's risk of future limitations when the child was at low risk of future impairment (OR 3.01; 95% CI, 1.62–5.60, Table 3). Parents who found information about future limitations less upsetting were also more likely to understand their child's risk of future impairment, relative to parents who were extremely or very upset by such information (OR 1.75; 95% CI 1.08–2.82). There was a borderline result, though not statistically significant, toward parents being less likely to understand their child's risk of future impairment if their child had a lower likelihood of cure (OR 0.63; 95% CI 0.38–1.04). Parent understanding of risk of future limitations was not significantly associated with parent dispositional optimism, decisional regret, decision making preferences or roles, trust in physician, patient age or gender, or physician years of practice in unadjusted analysis. In multivariable analysis, only lower physician-estimated risk of future impairment was significantly associated with increased parental understanding of their child's risk of future limitations (OR 2.59 for low vs high, 95% CI 1.35–4.96; OR 2.08 for moderate vs high, 95% CI 1.15–3.77).

Overall, 92% of parents felt it was extremely or very important to receive information about the likelihood of their child experiencing future effects of cancer treatment, and there were no statistically significant differences in parent information preferences between those whose children were at high, moderate or low risk of future impairment (Table 4). Similarly, 86% of parents preferred receiving detailed information about the likelihood of their child experiencing future limitations from cancer or cancer treatment.

Discussion

Most childhood cancer survivors experience long-term health effects of cancer and cancer treatment. In this study, we found that the vast majority of parents of children with cancer want detailed information about their child's risk of late effects in the early treatment period. However, fewer than half of parents recognized whether their child's risk of future impairment was high, moderate, or low in three broad domains. Perhaps most strikingly, parents whose children were at the highest risk of future limitations were the least likely to understand this risk.

Discrepant understandings of prognosis or risk of future limitations between patients or their surrogates and their providers have been previously described in oncology and critical illnesses, with patients or surrogates typically being more optimistic than providers.^{10,18–20} These discrepant views have been attributed to misunderstandings, differences in beliefs, and lack of explicit discussions about risk,^{18,19} and all of these elements are likely involved in parental misunderstanding of risk of impairment due to cancer and cancer treatment. While our study did not evaluate the reasons for limited parental understanding of risks of future limitations, previous work showed that late effects are discussed far less than acute effects of treatment in initial informed consent discussions.²¹ Furthermore, our finding in unadjusted analysis that parents were less likely to understand their child's risk of impairment if they found this information upsetting also suggests that there may be an emotional component that affects how this information is conveyed and perceived. Physicians may adjust the emphasis and content of their early discussions if parents seem upset by the information, and

parents who find these discussions distressing may be less able to process the information. Lastly, risk is hard to predict, let alone convey.

Parent understanding of risk of future limitations may be influenced by a variety of factors including prior experiences, optimism, health literacy and numeracy, emotional state, and quality and quantity of information received. Our model accounted for several of these factors, yet they were not statistically significant predictors of improved understanding in this study. These factors, as well as cultural and linguistic differences in information preferences and understanding, certainly warrant further investigation. While we did not examine the content of initial discussions of information about late effect risks, the discrepancy in understanding highlighted in this study, combined with parental desire for information, suggests that there is considerable room for improvement in risk communication about potential long-term effects of cancer and its treatment. Standardization of presentation of risks of late effects using best practices of risk presentation,^{22,23} exploration of novel methods of information delivery such as video informed consents,^{24,25} and engagement of patient and family stakeholders in the process of improving consent forms for clinical trials and treatment plans,²⁵ could aid providers in communicating these risks to parents, and improve provider and parent understanding of risk of late effects.

While prior studies have shown that parents and physicians have different predictions of a child's prognosis and risk of future limitations,^{6,10} this study shows that these differing views begin around the time of diagnosis, and that risk itself contributes to discrepant understanding of long-term outcomes as parents of children at highest risk of future limitations were least likely to understand their child's risk. Parental misunderstanding of risk of late effects near the start of therapy may impact parents' ability to engage in shared treatment decision-making when different treatment options have different late effect risks. Furthermore, poor understanding of likelihood of future health needs may negatively impact appropriate engagement in optimal risk-based survivorship care after completion of therapy,^{26–28} as parents play a critical role in their children's receipt of survivorship care even as their children become adolescents and young adults.^{29,30}

This study improves our understanding of parents' awareness of their child's risk of long-term impairment as a result of cancer and cancer treatment, but it has several limitations. We surveyed parents of children with a variety of malignancies, each with different risks of future impairment. Furthermore, we chose to focus on 3 broad categories of functional limitations, rather than risks of specific late effects, in order to capture parental understanding of what their child's life might be like after treatment. While these broad limitations may be harder to predict than specific late effect risks, pilot testing revealed these general concepts to be important to parents. In addition, rates of functional impairment as a result of pediatric cancer and cancer therapy have been well described across malignancies,^{3,4} and these functional outcomes may be especially germane to parents and families. We used physician-estimated risk of impairment as the comparator, but we know that physicians may also be overly optimistic about a patient's chance of cure or likelihood of future impairment.^{6,10} As the experts on a child's specific treatment risks, and as purveyors of information to parents, physician impression of risk of future impairment was selected to conceptualize broad risk categories, and to shed some insight into parent-physician

communication about long-term outcomes. Finally, this study did not include an evaluation of the initial informed consent discussions between parents and physicians, and therefore we do not know the extent to which late effects risks were discussed or emphasized. However, potential late effects are an important element of informed consent, and studies have shown that late effects are typically mentioned in initial treatment discussions.²¹ Strengths of this study include the relatively large sample size, and the pairing of parent and physician estimates for the same child. An additional strength is the proximity of survey administration to initial diagnostic and treatment conversations during which risk of late effects are first discussed.

This study shows that parents of children with cancer want detailed information about their children's future risk of functional impairment as a result of cancer and cancer therapy. However, communication practices at diagnosis, combined with challenges processing information during an emotionally overwhelming time, may contribute to a discrepancy between parent and physician estimations of risk of functional limitations. These findings suggest that the early treatment period is a critical yet underutilized moment to begin educating parents and patients about the risks of late effects. But, increased focus on potential long-term outcomes in early treatment discussions is not sufficient. Follow-up conversations about risks of late effects should occur throughout therapy and after treatment completion to meet parent information preferences,³¹ and to ensure appropriate surveillance for late effects. As Oeffinger and Hudson have argued, optimal risk-based survivorship care can and should be a continuum of care "from cancer diagnosis to eventual death regardless of age."^{28,32} Increasing knowledge of risk factors and combinations of factors which predispose to specific late effects can help us identify those at highest risk earlier on in treatment, and these families can be counseled accordingly.³³ Risk-based survivorship care should begin at diagnosis in order to identify those at greatest risk of late effects, integrate consideration of late effects in initial treatment decision-making, educate patients and parents using best practices of risk communication, and ensure engagement in optimal survivorship care.

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Abbreviations

QOL	Quality of life
CI	Confidence Interval
OR	Odds Ratio

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FIGURE 1.

Parental Understanding of Risk of Future Limitations: percentages represent parents whose predictions of risk of future limitations aligned with physician estimates, and p-values test for differences in parent understanding by physician-estimated risk of limitations.

TABLE 1

Parent and patient characteristics (N=352)

	N (%)
Parent age *	
<30	37 (11)
30 to 39	136 (39)
40 to 49	134 (39)
50+	38 (11)
Parent gender *	
Female	281 (81)
Male	68 (19)
Parent education *	
Some college	120 (35)
College graduate	139 (40)
Graduate/professional school	86 (25)
Parent race/ethnicity *	
White	277 (79)
Black	22 (6)
Hispanic	26 (7)
Other	24 (7)
Language of survey completion	
English	339 (96)
Spanish	13 (4)
Child age at diagnosis	
0 to 2	93 (26)
3 to 6	72 (20)
7 to 12	78 (22)
13 to 18	109 (31)
Child gender *	
Male	153 (44)
Female	198 (56)
Diagnosis	
Hematologic malignancies	173 (49)
Solid tumor	136 (39)
Brain tumor	43 (12)
Site	
Boston	260 (74)
Philadelphia	92 (26)

* Parental age was missing for 7; parental gender was missing for 3; parental education was unknown for 7, parental race/ethnicity was missing for 3; and child gender was unknown for 1.

TABLE 2

Physician and parent estimates of risk of future limitations (N=352)

	Physician estimate N (%)	Parent estimate N (%)	Parent matches physician estimate N (%) ^a	Cross-tabulation of physician and parent estimates, N			K ^b	pc
				Parent-High	Parent-Moderate	Parent-Low		
Limitations in physical abilities								
High	76 (22)	86 (24)	29 (38)	29	28	19	0.13	0.25
Moderate	153 (43)	137 (39)	69 (45)	29	69	55		
Low	123 (35)	129 (37)	55 (45)	28	40	55		
Limitations in intelligence								
High	33 (9)	44 (13)	7 (21)	7	20	6	0.13	0.12
Moderate	142 (40)	150 (43)	67 (47)	20	67	55		
Low	177 (50)	158 (45)	97 (55)	17	63	97		
Limitations in QOL								
High	22 (6)	46 (13)	1 (5)	1	8	13	0.02	0.01
Moderate	161 (46)	134 (38)	64 (40)	24	64	73		
Low	169 (48)	172 (49)	86 (51)	21	62	86		

^aPercentages calculated within risk category based on physician-estimated risk. For example, among 76 children deemed high risk per physician estimate, 29 parents (29/76=38%) recognized this risk.^bKappa statistic of agreement between parent and physician estimates.^cp values for tests of symmetry (extension to McNemar's test for 2 groups) to evaluate parent over- versus under-estimation of risk.

Unadjusted and adjusted analyses to investigate factors associated with parental understanding of risk for future limitations from multilevel mixed-effects logistic regression. Odds ratios > 1 represent increased likelihood of parent understanding of risk of future limitations.

TABLE 3

	Unadjusted			Adjusted		
	OR	95% CI	P value	OR	95% CI	P value
Parent education			0.85			0.97
Some college	1.00			1.00		
College graduate	1.17	0.67, 2.04		1.06	0.61, 1.85	
Graduate/professional school	1.15	0.61, 2.16		1.00	0.53, 1.87	
Parent race/ethnicity			0.65			0.44
White	1.00			1.00		
Black	0.71	0.26, 1.92		0.68	0.26, 1.79	
Hispanic	0.81	0.32, 2.09		0.86	0.34, 2.17	
Other	0.58	0.22, 1.53		0.48	0.18, 1.26	
Language of survey completion			0.49	--	--	--
English	1.00			--	--	--
Spanish	0.63	0.17, 2.37		--	--	--
Diagnosis			0.20			0.48
Hematologic malignancies	1.00			1.00		
Solid tumor	0.99	0.58, 1.71		1.19	0.69, 2.07	
Brain tumor	0.48	0.21, 1.09		0.72	0.31, 1.66	
Physician-rated prognosis			0.07			0.57
Favorable (>75%)	1.00			1.00		
Less favorable (<75%)	0.63	0.38, 1.04		0.85	0.50, 1.47	
Agreement between parent and physician prognosis			0.10	--	--	--
No	1.00			--	--	--
Yes	1.53	0.92, 2.55		--	--	--
Physician-estimated risk category for future limitations			0.002			0.02

	Unadjusted			Adjusted		
	OR	95% CI	P value	OR	95% CI	P value
High	1.00			1.00		
Moderate	2.14	1.20, 3.83		2.08	1.15, 3.77	
Low	3.01	1.62, 5.60		2.59	1.35, 4.96	
Quality of information about likelihood of future limitations						
Poor/fair/satisfactory	1.00		0.99	--	--	--
Excellent/good	1.00	0.60, 1.67		--	--	--
Upsetting to know about future limitations						
Extremely/very	1.00		0.02	1.00		0.07
Not at all/a little/somewhat	1.75	1.08, 2.82		1.57	0.97, 2.54	
Communication summary score						
Lower	1.00		0.66	--	--	--
Higher	1.12	0.69, 1.81		--	--	--
Information quality summary score						
Lower	1.00		0.43	--	--	--
Higher	0.82	0.50, 1.34		--	--	--
Trust in physician						
Not completely	1.00		0.10	--	--	--
Completely	1.55	0.92, 2.61		--	--	--
Type of limitation						
Physical	1.00		0.12	--	--	--
Intelligence	1.37	0.95, 1.99		--	--	--
Quality of life	0.97	0.67, 1.40		--	--	--
Parent dispositional optimism						
Less optimistic	1.00		0.08	--	--	--
More optimistic	1.53	0.95, 2.47		--	--	--
Parent decisional regret						
			0.55	--	--	--

	Unadjusted			Adjusted		
	OR	95% CI	P value	OR	95% CI	P value
Not heightened	1.00			--	--	--
Heightened	0.81	0.41, 1.59		--	--	--
Parent preferred decision-making role						
Active	1.00		0.09	--	--	--
Passive	0.53	0.26, 1.09		--	--	--
Actual decision-making role matched preferences						
No (not matched)	1.00		0.55	--	--	--
Yes (matched)	0.86	0.52, 1.41		--	--	--
Child age at diagnosis						
<10	1.00		0.21	--	--	--
10	1.37	0.84, 2.25		--	--	--
Child gender						
Female	1.00		0.85	--	--	--
Male	0.95	0.58, 1.55		--	--	--
Physician years of practice						
10	1.00		0.49	--	--	--
>10	1.23	0.69, 2.20		--	--	--

TABLE 4

Parent information preferences according to physician-estimated risk of future limitations. P values test whether parent information preferences differ by physician-estimated risk of future limitations.

% of parents who feel it is <u>extremely/very important to receive information</u> about the possibility of future effects of cancer treatment				
	High Risk %	Moderate Risk %	Low Risk %	P
Limitations in Physical Abilities	89	92	93	0.72
Limitations in Intelligence	82	92	94	0.08
Limitations in QOL	82	93	92	0.22