Physician and Patient and Caregiver Health Attitudes and Their Effect on Medicare Resource Allocation for Patients With Advanced Cancer

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**IMPORTANCE** Physicians must participate in end-of-life discussions, but they understand poorly their patients' end-of-life values and preferences. A better understanding of these preferences and the effect of baseline attitudes will improve end-of-life discussions.

**OBJECTIVE** To determine how baseline attitudes toward quality vs quantity of life affect end-of-life resource allocation.

**DESIGN, SETTING, AND PARTICIPANTS** Otolaryngology–head and neck surgery (OHNS) physicians were recruited to use a validated online tool to create a Medicare health plan for advanced cancer patients. During the exercise, participants allocated a limited pool of resources among 15 benefit categories. These data were compared with preliminary data from patients with cancer and their caregivers obtained from a separate study using the same tool. Attitudes toward quality vs quantity of life were assessed for both physicians and patients and caregivers.

**INTERVENTIONS** Participation in online assessment exercise.

**MAIN OUTCOMES AND MEASURES** Medicare resource allocation.

**RESULTS** Of 9120 OHNS physicians e-mailed, 767 participated. Data collected from this group were compared with data collected from 146 patients and 114 caregivers. Compared with patients and caregivers, OHNS physician allocations differed significantly in all 15 benefit categories except home care. When stratified by answers to 3 questions about baseline attitudes toward quality vs quantity of life, there were 3 categories in which allocations of patients and caregivers differed significantly from the group with the opposite attitude for at least 2 questions: other medical care (question 1, \( P < .001 \); question 2, \( P = .005 \)), palliative care (question 1, \( P = .008 \); question 2, \( P = .006 \); question 3, \( P = .009 \)), and treatment for cancer (questions 1 and 2, \( P < .001 \)). In contrast, physician preferences showed significant differences in only 1, nonmatching category for each attitude question: cash (question 1, \( P = .02 \)), drugs (question 2, \( P = .03 \)), and home care (question 3, \( P = .048 \)).

**CONCLUSIONS AND RELEVANCE** Patients with cancer and their caregivers have different preferences from physicians. These preferences are, for these patients and their caregivers, affected by their baseline health attitudes, but physician preferences are not. Understanding the effect of baseline attitudes is important for effective end-of-life discussions.
End-of-life discussions are a vital part of the job of the physician, especially those who deal with cancer care. Patients with advanced disease want these end-of-life discussions to happen in an open and honest manner, and they prefer to have them early in the course of therapy.1,2 Physicians tend to be uncomfortable with early end-of-life discussions and often delay them, especially for patients who are not symptomatic.2,3 Unfortunately, physicians also have a poor understanding of their patients’ values and preferences during this time, sometimes even treating patients in a way that is inconsistent with patient preferences.4-8 Moreover, physicians struggle with discussing the difficult matter of treating cancer vs palliation.7 Given the intimate nature of these end-of-life discussions, a better understanding of patient and physician preferences for end-of-life care may lead to more effective discussions.9,10

In a previous article, we examined how otolaryngology physicians allocated a fixed pool of Medicare resources among 15 different benefit categories for patients with advanced cancer, and we compared these data with allocations made by patients with cancer and caregivers of patients with cancer obtained from a separate study.11 We found significant differences in resource allocations when comparing the physician data with pooled data from the patients and caregivers in 14 of the 15 benefit categories.11 That work was focused on how demographic data (eg, sex, age) collected from physicians, patients, and caregivers affected how these resources were allocated.

Few investigators have looked at how baseline attitudes regarding quality or quantity of life affect end-of-life decision making for patients with advanced cancer. Koedoot et al12 found that patients who valued quantity of life were more likely to choose palliative chemotherapy over supportive care, whereas those who valued quality of life were more likely to choose supportive care. Others have shown that these attitudes can be measured easily and that they are associated with patient preferences for certain communication styles (eg, speaking in a positive manner or softening the blow when giving bad news).13,14 No one, to our knowledge, has examined how these baseline attitudes in physicians influence end-of-life decision making or how physician attitudes compare with patient attitudes.

The present work builds on our prior research by exploring how personal preferences about quality of life and quantity of life affect preferences in allocation of limited health care resources. We hypothesized that the underlying preferences for quality of life vs quantity of life would result in significant differences in Medicare resource allocations for patients with advanced cancer.

Methods

Choosing Healthplans All Together (CHAT) is a validated tool for assessing individual and group preferences for health plans in the setting of limited resources.15 Priorities for Medicare Advanced Cancer Care (PMACC), a study currently being conducted through the Duke Sanford School of Public Policy, is using a modified version of the CHAT tool to assess how patients with cancer and their caregivers would craft a new Medicare plan for patients with advanced cancer. Given the substantial time commitment and group participation needed for the traditional CHAT exercise, a single-round, online version of the modified CHAT tool was developed for use with physicians (Figure).

The CHAT tool used in PMACC is a 4-round, individual and group exercise requiring participants to allocate a limited pool of resource units among well-defined benefit categories (Table 1 and eAppendix in Supplement). The goal of the exercise is to create a new Medicare plan for patients with advanced cancer. Advanced cancer is defined as a cancer that is not generally considered curable and is expected to shorten a person’s life. All Duke University Medical Center patients with a cancer diagnosis, as well as their caregivers, were eligible to participate in PMACC.

The CHAT tool has 15 different benefit categories, each with between 1 and 4 different levels of coverage available. The participants were provided detailed descriptions of each benefit category. Full coverage in each of the benefit categories would require 88 resource units, but participants are given only 50 units. Thus, prioritization of coverage allocations is required. In the first and fourth rounds, the allocations are made individually, and in the second and third rounds group allocations are made.

The single-round, online version of the modified CHAT tool for physicians was constructed using the same format as the PMACC tool. It was housed on a secure website and was password protected. Institutional review board approval was obtained from Duke University School of Medicine. Three separate e-mails were sent to 9120 members of the American Academy of Otolaryngology-Head and Neck Surgery with valid e-mail addresses. Consent to participate was obtained prior to completion of the exercise by having participants click “Accept” after reading the consent. These otolaryngology-head and neck surgery (OHNS) physicians were asked to use the modified CHAT tool to create a new Medicare plan for patients with advanced cancer.

Basic demographic information was collected from each participant. No personal identifying information was obtained. The respondents’ self-reported health status was queried on a scale ranging from poor to excellent. Participants then answered 3 health attitude questions:

1. Would you rather have 1 year of life at 100% health or 10 years of life at 10% health?
2. Would you rather have 2 years of life at 50% health or 4 years of life at 25% health?
3. Would you rather have 4 years of life at 25% health or 8 years of life at 12.5% health?

Participants then completed the CHAT exercise. Data entered into the online assessment were captured in a password-protected database. A unique identifier was used to ensure that there were no duplicate responses but was not associated with the demographic or assessment data to preserve anonymity.

The OHNS physician data were compared with preliminary data on patients with cancer and their caregivers.
Figure. Screenshot of the Online Version of the Choosing Healthplans All Together (CHAT) Tool

Click on the category titles for descriptions. Descriptions will be displayed at the bottom of the page. Allocate the resources to create a new Medicare plan for patients with advanced cancer. You do not have to use all of the resources.

Total: 0, Remaining: 50

<table>
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<tr>
<th>Category</th>
<th>Description</th>
<th>Cost for Full Coverage, Units</th>
</tr>
</thead>
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<tr>
<td>Advice</td>
<td>Advice regarding future medical care (e.g., living wills, estate planning)</td>
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<tr>
<td>Cash</td>
<td>$360-$1200 per month to help with general living expenses</td>
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<td>Surgery, wigs, etc done primarily for cosmesis</td>
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<td>Counseling and emotional support for the patient and family</td>
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<td>Home improvements to assist the patient</td>
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<td>Care to control cancer and manage symptoms and complications</td>
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Table 1. General Description of Each Benefit Category With Cost Associated With Full Coverage

obtained from the PMACC study. Data for the patients and their caregivers were taken from round 4 of the PMACC study exercise. Because physicians are more familiar with medical terminology and health plan benefits than patients and caregivers, we assumed that the single-round allocation data from the physicians would be roughly equivalent to the fourth-round data from the patients and caregivers from the PMACC study.
Descriptive counts and percentages were produced for 3 groups, OHNS physicians, caregivers, and patients. Allocation of resources was evaluated with analysis of variance. The mean score for each response was converted to an ordinal scale ranging from 0 to 4. Statistical comparisons were made between each group and their reported preference for the quality and quantity of life questions. All analyses were conducted in SAS, version 9.3 (SAS Institute).

### Results

A total of 767 OHNS physicians (8.4% of those invited) were recruited and completed the assessment. Responses were obtained from the PMACC study for 146 patients with cancer and 114 caregivers. Table 2 lists physician, patient, and caregiver demographic data along with each group’s answer to each of the health attitude questions. The association of health status with resource allocation was analyzed. There were no significant associations with health status among the OHNS physicians. Those patients with worse overall health preferred more coverage in the cosmetic \((P = .03)\), home care \((P = .046)\), and nursing facility \((P = .02)\) categories.

The association of resource allocation with the answers to the health attitude questions was analyzed. Stratifying by the answer to question 1 (1 year at 100% health vs 10 years at 10% health), there was a significant difference in resource allocation among OHNS physicians in only the cash category \((P = .02)\). The OHNS physicians who favored 1 year of life at 100% health allocated for more cash. Those patients with cancer and their caregivers who favored 1 year of life at 100% health allocated more resources toward other medical care \((P < .001)\) and palliative care \((P = .008)\) but fewer resources to treatment for cancer \((P < .001)\). When stratified according to their answer to question 1, there were significant differences between the allocations of OHNS physicians and those of patients and caregivers in the palliative care \((P = .02)\) and treatment for cancer \((P = .01)\) categories (Table 3).
Table 3. Mean Allocation Score* for OHNS Physicians and Patients and Caregivers for Health Allocation Questions

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<th>Category</th>
<th>Allocation Score, Mean</th>
<th>P Value</th>
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<td></td>
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<td>Within Group</td>
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Abbreviation: OHNS, otolaryngology-head and neck surgery.

*Mean allocation score is determined by assigning 0 to no coverage, 1 to basic coverage, 2 to intermediate coverage, 3 to high coverage, and 4 to advanced coverage.
When stratified by answer to question 2 (2 years at 50% health vs 4 years at 25% health), there was a significant difference in OHNS physicians' resource allocation only in the drugs category \( P = .02 \), with those who favored 2 years at 50% health electing for less drug coverage. The patients and caregivers had significant differences in allocations for home improvement \( P = .002 \), other medical care \( P = .005 \), palliative care \( P = .006 \), and treatment for cancer \( P < .001 \). Those who favored 2 years of life at 50% health allocated more coverage to other medical care and palliative care but less coverage to treatment for cancer and home improvement. When stratified according to their answer to question 2, there were significant differences between the allocations of OHNS physicians and those of patients and caregivers in home improvement \( P = .003 \), other medical care \( P = .02 \), palliative care \( P = .02 \), and treatment for cancer \( P = .01 \) (Table 3).

When stratified according to answer to question 3 (4 years at 25% health vs 8 years at 12.5% health), there were significant differences in OHNS physician resource allocations in the home care \( P = .048 \) and nursing facility \( P = .02 \) categories. Those who favored 4 years at 25% health wanted less home care coverage and more nursing facility coverage. Patients and caregivers stratified according to question 3 had significant differences in complementary care \( P = .049 \) and palliative care \( P = .009 \), with those who favored 4 years at 25% health electing more coverage in palliative care and less coverage in complementary care. When stratified according to their answer to question 3, there were significant differences between the allocations of OHNS physicians and those of patients and caregivers only in the house calls \( P = .02 \) category (Table 3).

Discussion

Stratifying the participants by their answers to the health attitude questions yielded significant differences in resource allocation. The main point of these questions was, broadly speaking, to separate those who value quality of life from those who value quantity of life. However, the benefit categories that were significantly different for each question did not always present a consistent pattern as each respondent group progressed from question 1 to 3. Physicians' answers to each question had a significant effect on allocations for certain categories, but the affected categories were completely different for each of the 3 questions. The fact that no consistent trend emerged suggests that the answers to these questions are not of prime importance in physicians' end-of-life decision making. In contrast, stratifying patients with cancer and their caregivers by their answers to the health attitude questions revealed consistent trends. The answer to all 3 questions significantly affected resource allocation for the palliative care category. For questions 1 and 2, the answer significantly affected treatment for cancer and other medical care. Although the answer to question 3 did not significantly affect allocation for treatment for cancer, there is a nonsignificant result of those valuing quality of life wanting less treatment. These results suggest that the answers to these health attitude questions are of substantial importance when patients and caregivers make resource allocations in the palliative care, treatment for cancer, and other medical care categories. Indeed, the more that these patients with cancer and their caregivers value quality over quantity of life, the more resources they allocate to palliative care and other medical care and the fewer resources they allocate to treatment for cancer.

These findings suggest that end-of-life decision making by patients with cancer and their caregivers is significantly affected by their preference for quality of life or quantity of life, but OHNS physicians' decision making is not. This disconnect is somewhat puzzling because one would expect baseline views to affect people in the same way. We hypothesized that those who value quantity of life would elect for more palliative care and less treatment for cancer, which is just what we found among the patients with cancer and their caregivers. We did not see this in the OHNS physicians. This could suggest that our online assessment is flawed in some way that prevents us from adequately assessing how this baseline view affects physicians, although it is difficult to come up with a reason that would not also apply to the assessment given to the patients and caregivers. The more likely explanation is that patients with cancer and their caregivers are living in a situation that demands an assessment of quality of life vs quantity of life. Having faced their own or their loved one's mortality, they are more likely to have already answered these questions in some form, and their more mature viewpoints on this have informed their resource allocations.

To our knowledge, this is the first study to look at how health status and attitudes affect resource allocations for advanced cancer. These results are especially relevant in the context of end-of-life discussions, where effective communication is enhanced by knowledge of patient preferences.9,10 Others have reported that attitudes toward quality of life vs quantity of life affect patient preferences for treatment and physician-patient communication.12,13 Our data underscore these findings and add the important finding that physicians' preferences are not influenced by this baseline attitude.

Recognition of this difference between physicians and their patients is critical. Physicians are often asked, in the context of treatment decisions, what they would do if they were in the position of the patient. This question assumes that physicians can appreciate the perspective and values of their patients in making treatment recommendations. Other authors have demonstrated that patient treatment decisions are complex and depend heavily on the patient's individual perspective on prognosis and potential gains or losses from treatment.16 Moreover, physicians who have not personally experienced what their patients are experiencing are poor at appreciating their patients' perspectives.16,17 Our data support these findings. A better understanding of the baseline differences in perspective between physicians and patients and caregivers should enhance the physician-patient relationship and lead to more effective end-of-life conversations.

These results are also relevant because health policy makers are advocating for an approach that is more in keeping with patient preferences.18 Some are looking to advanced directives and increased use of hospice care as potential cost-saving mechanisms.19 Even if the savings are small or nonexistent, as some authors assert,20,21 principles of patient autonomy and dignity dictate increased use of these mecha-
Health Attitudes and Medicare Resource Allocation data could be confounded by differing definitions of advanced cancer. Second, the patient data included patients with any cancer stage and prognosis. This group may not adequately represent patients with advanced cancer. Third, our assessment of quality of life vs quantity of life, although useful, was not as nuanced as that of some other, more extensive assessment tools. Our assessment broadly categorized patients but did not tease out those who demand both quantity and quality or those who have resigned themselves to having neither. Fourth, these data could be confounded by differing definitions of advanced cancer. Head and neck oncologists typically view stage III and IV cancers to be “advanced,” whereas our definition refers to more life-threatening disease. We believe that this concern is minimized given the emphasis on palliative care in the assessment and the clear descriptions of the categories. Last, there may be a selection bias. The responding physicians may be more interested or involved in cancer treatment, making our broad assessment less generalizable.

Conclusions

This is the first study to look at how health attitudes toward quality and quantity of life affect resource allocation for patients with advanced cancer. We show that allocations by patients with cancer and their caregivers are influenced by their choice of quality of life over quantity of life. In contrast, OHNS physicians’ allocations do not seem to be influenced by these baseline attitudes. Recognition of these differences should lead to more effective end-of-life discussions among physicians and their patients.