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Age at Diagnosis and Patient Preferences for Treatment Outcomes in AML: A Discrete Choice Experiment to Explore Meaningful Benefits

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Abstract

Background: The recent expansion of treatment options in acute myeloid leukemia (AML) has necessitated a greater understanding of patient preferences for treatment benefits about which little is known.

Methods: We sought to quantify and assess heterogeneity of the preferences of AML patients for treatment outcomes. An AML-specific discrete choice experiment (DCE) was developed involving multiple stakeholders. Attributes included in the DCE were event-free survival (EFS), complete remission (CR), time in the hospital, short-term side effects, and long-term side effects. Continuously-coded conditional, stratified, and latent-class logistic regressions were used to model preferences of 294 AML patients.

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Contribution: J.S., E.E, B.O., B.D.S, and J.F.P.B. designed and performed the study. D.R.R., N.L.C. and J.F.P.B analyzed the data and created the figure. D.R.R and J.F.P.B. wrote the manuscript. N.L.C, J.S., E.E., B.O, and B.D.S. reviewed the manuscript.

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Results: Most patients were white (89.4%) and in remission (95.0%). A 10% improvement in the chance of CR was the most meaningful offered benefit ($p<0.001$). Patients were willing to trade up to 22 months of EFS or endure 8.7 months in the hospital or a two-step increase in long-term side effects to gain a 10% increase in chance of CR. Patients diagnosed at 60 years or older (21.6%) more strongly preferred to avoid short-term side effects ($p=0.03$). Latent class analysis showed significant differences of preferences across gender and insurance status.

Conclusions: In this national sample of mostly AML survivors, patients preferred treatments that maximized chance at remission, however significant preference heterogeneity for outcomes was identified. Age and gender may affect patients' preferences.

Impact: Survivor preferences for outcomes can inform patient-focused drug development and shared decision-making. Further studies are necessary to investigate the use of DCEs to guide treatment for individual patients.

Keywords

Acute Myeloid Leukemia; Patient Preference; Discrete Choice Experiment; Patient Outcome Assessment; Clinical Decision-Making; Patient-Centered Care

Introduction:

Acute myeloid leukemia (AML) is a heterogenous hematologic malignancy resulting in clonal expansion of myeloid progenitors, compromised hematopoiesis and eventually bone marrow failure.(1) Over 21,000 people are diagnosed with AML each year in the US.(2) Prognosis remains poor; over two-thirds of all patients will not survive 5 years after diagnosis with less than 40% of patients diagnosed over the age of 60 surviving one year.(2,3) Long-term survival is typically only achieved through intense multi-agent chemotherapy often including a hematopoietic cell transplant (HCT) that exposes patients to a significant risk of treatment-related complications.(1) Survivors report substantial chronic side effects from treatment, and quality of life declines for patients following diagnosis.(4,5)

Since 2017 alone, 8 new chemotherapeutic agents were approved for AML, bringing an unprecedented expansion to the treatment landscape and leading to a paradigm shift in therapeutic decision-making.(6,7) The expansion of treatment options in other cancers has led to a greater interest in understanding what patients view as the meaningful benefits of therapies to personalize treatment recommendations.(8) Among cancers where several effective treatment options are available, substantial progress has already been made to understand patient preferences in order to inform treatment delivery.(8–12) Multicenter randomized trials in breast and prostate cancer have shown that preference elicitation tools can improve patient satisfaction, increase high-quality decisions, and align treatment choice with risk category.(9,10) However, there is a paucity of data on patient preferences for treatment outcomes among AML patients.

In order to understand the patient perspective on the meaningful benefits of therapy, we sought to capture AML patients' preferences for treatment outcomes and to assess preference heterogeneity across patients' age, age at diagnosis, and other characteristics. We focused primarily on quantifying the preferences of AML survivors given their personal

experience with the treatment side effects and benefits. Understanding the meaningful benefits of therapies is important to a range of vested parties within healthcare. Informed shared decision-making at the bedside about chemotherapy requires clinicians to understand and elicit patient values in order to tailor therapy recommendations. The pharmaceutical industry and the FDA utilize preference data to contribute to a broader understanding of the patient experience and inform patient-focused drug development.(13–15) Patient-derived outcomes also contribute to the ongoing discussion of the appropriate therapeutic endpoints in AML.(16)

Materials and Methods:

Instrument Development

An iterative five-step framework involving patients, caregivers, and disease and methodological experts was used to develop an AML-specific discrete choice experiment (DCE) through a process that has been previously published.(17) The DCE was designed to require participants to choose between two treatment options with different attributes and levels. Attributes are specific treatment outcomes (benefits or harms); levels are the stipulated magnitudes of attributes. DCE design and validation was done according to best-practices and overseen by the patient and expert advisory boards.(18–20) The process for DCE development included: (1) evidence synthesis, (2) diverse stakeholder engagement, (3) patient and caregiver engagement, (4) pre-test interviews, and (5) pilot-testing. The primary focus of this process was to develop and refine attributes and levels to include in the DCE that were patient- and caregiver-derived and meaningful to treating clinicians. Semi-structured qualitative interviews with patients and caregivers led to the identification of 10 attributes that were considered for inclusion (event-free survival (EFS); complete remission (CR); time in hospital; need for blood transfusions; mental health; fever and infection; nausea, vomiting, and decreased appetite; organ toxicity; chemobrain; and fatigue).

CR and EFS were both chosen by the expert stakeholder committee to be included as measures of treatment benefit. Overall survival (OS) was not included due to known issues with dominance in DCEs (21) and the inability to confidently and precisely estimate meaningful levels to include from available evidence. Specific attributes involving symptoms of treatment or of disease were consolidated into general terms (“long-term side effects” and “short-term side effects”). To inform patient-focused drug development, the term “side effect” was chosen as a measure of symptoms as opposed to other more general terms such as “quality of life”. Time in the hospital was also included.

Results of pre-testing and initial pilot-testing have been previously published.(17) Following a national pilot test (n=51) modifications were made and approved by advisory committees and the FDA to better reflect new treatment options: the levels of EFS were changed from 6, 9, and 12 months to 6, 12, and 24 months, and the probability of CR was narrowed from 20, 40, and 70 percent to 40, 50 and 60 percent. Other attributes and levels remained unchanged: time in hospital (none, 1 month, 3 months), short-term side effects (mild, moderate, severe), and long-term side effects (none, mild, moderate).

A D-optimal design with zero priors was chosen.(22–25) The final experimental design consisted of twenty-seven paired-profile choice tasks. These tasks were split into three blocks of nine choice tasks each to reduce the cognitive burden according to best-practices.(26) Participants were randomly assigned to one of the three blocks. An example choice task is included in Supplemental Figure 1. Participants were given lay descriptions of all the attributes prior to the DCE (Supplemental Table 1) which were community-derived and confirmed by the FDA. In addition to the DCE choice tasks, the survey also contained questions on clinical history, sociodemographic information and participants' comprehensibility, user acceptability, consistency and relatability. All designs were generated using Ngene (ChoiceMetrics, Melbourne, Australia).

Study Design

A national survey with the DCE was conducted in partnership with the Leukemia & Lymphoma Society (LLS). AML patients who participated in previous LLS surveys were invited via e-mail to participate. Participants were required to be at least 18 years of age at the time of the survey and have a diagnosis of AML. Surveys were in English only. Two reminder emails were sent with 3-weeks interval in the case of non-response.

Data from this study was presented to the FDA on April 30, 2018 as a part of an ongoing effort to inform patient-focused drug development and on December 3, 2018 at the American Society of Hematology Annual Meeting and Exposition. This study was conducted in accordance with the criteria set by the declaration of Helsinki and was determined to be exempt human-subjects research by the institutional review board at the Johns Hopkins Bloomberg School of Public Health (#7200). A waiver of informed consent was obtained. Participants were informed of the purpose of the study, that their participation was voluntary and that completing the survey implied consent to join the study.

Statistical analyses

Descriptive statistics were created for the clinical and sociodemographic information. Categorical variables and continuous variables were summarized using frequency statistics and means, standard deviations, and ranges, respectively.

A conditional logistic regression was conducted to analyze the choice observations.(18,27,28) Choice decisions (the dependent variable) were regressed on the level of change in treatment attributes (the explanatory variables) between the two treatment alternatives of each choice task. Treatment attributes were treated as continuous variables to produce more parsimonious estimators.(29)

Equivalencies were calculated by dividing the regression coefficient of one attribute by the coefficient of another attribute according to the minimum acceptable benefit approach; confidence intervals were estimated using the delta method.(30) A dominance test was conducted to assess internal validity.(31) Sub-group analysis compared outcomes based on age, age at diagnosis, remission status, times since diagnosis, and history of allogeneic HCT. Latent class analysis was performed to identify underlying classes.(18) All analyses were conducted using StataIC 14 software (StataCorp, CollegeStation, TX, USA).

Results:

The survey was sent to 896 patients with AML; 322 participated in the survey and 294 completed the DCE (response rate, 32.8%). Table 1 summarizes the demographic and clinical characteristics of the sample stratified by age at diagnosis. The mean age of participants was 56.8 years (range, 19 – 87). Most patients were white (89.4%), married (74.7%), and college-educated (74.4%). Most patients reported having insurance when treated (97%) with 12.9% reporting Medicare/Medicaid. Nearly all patients (95.0%) reported being in remission. About two-thirds (63.8%) had previously received an allogeneic HCT. Patients self-reported being diagnosed with AML a median of 7 years ago (range 1–40 years; Quartile$_1$ (Q_1) 0–5, Q_2 5–7, Q_3 7–10, Q_4 10+ years). Nearly 30% reported that a palliative care specialist was involved in their care. Thirty-one patients (9.6%) reported receiving novel therapies (either immunotherapy or targeted agents) and 105 (35.7%) reported participating in a clinical trial.

Approximately one-fifth (21.6%) of patients were diagnosed at or over the age of 60 years. Patients diagnosed older than age 60 years were less likely to be married, more likely to be divorced, less likely to be employed, and more likely to have Medicare/Medicaid (all $p<0.001$). Patients diagnosed older were diagnosed more recently than those diagnosed younger (mean, 6.61 v. 8.61 years, $p=0.007$) and were less likely to have had an autologous HCT ($p=0.043$). Clinical characteristics did not otherwise differ between groups on measured variables.

Table 2 displays continuously coded preference estimates for the total sample and the sample stratified by age at diagnosis. Higher preference estimates correspond to a stronger preference for the outcome; a null (zero) value corresponds to no preference for the outcome. A 10% increase in CR had the highest preference estimate (1.054, CI 0.94, 1.17). This was followed by a preference for a reduction in the severity of long-term side effects (1-step decrease = 0.524, CI 0.43, 0.61) and severity of short-term side effects (1-step decrease = 0.326, CI 0.25, 0.41). Patients preferred longer EFS (6 months increase = 0.286, CI 0.24, 0.33) though not as strongly as they preferred chance of CR or a reduction in side effects. The length of time in the hospital had the lowest preference estimate (1-month decrease = 0.122, CI 0.07, 0.17).

Subgroup analysis of preference estimates for patients stratified by age at diagnosis (< 60 years v. ≥ 60 years) is presented in columns 3 and 4 of Table 2. In the adjusted regression model, “age at diagnosis” was a statistically better predictor of class than “age” and resulted in a better model fit. Generally, patients diagnosed at an older age had different preferences (Wald, $p<0.001$) and more strongly preferred to avoid short-term side effects as compared to those diagnosed younger (preference estimate, 0.50 v. 0.28, $p=0.03$).

To explore the influence of time since diagnosis on preferences, stratified analysis was completed. Analyses stratifying time since diagnosis into quartiles and also by < 5 years v. ≥ 5 years since diagnosis yielded no significant differences in preferences (Wald $p>0.25$). The 5-year time point was chosen as patients are most likely cured after being in remission for 5 years.(32) Further analyses revealed that patients diagnosed more recently (up to 2 years, 26

patients, 8.8%) valued CR less (0.78) than those diagnosed 3–5 years (1.19, p=0.014) or 10+ years ago (1.20, p=0.009) (Supplemental Table 2). Patients diagnosed at an older age (≥ 60 years) did not differ in overall preferences when stratified by time since diagnosis (< 5 years [42 patients] v. ≥ 5 years [19 patients], p=0.126). This suggests that the significant difference in preference for avoidance of short-term side effects between those diagnosed younger and older is not explained by the differential time since diagnosis.

Table 3 describes the equivalencies between treatment benefits for the entire sample. Equivalencies (points of indifference) represent two outcomes that are preferred the same by participants. Participants equally preferred a 10% increased chance of CR to: an increase of 22 months of EFS, a decrease of 8.7 months in the hospital, a 3.2-step decrease in short term side effects, and a 2.0-step decrease in long-term side effects. Equivalencies for 6-months of EFS are shown in column 3.

Figure 1 illustrates the latent class analysis (LCA) of two underlying phenotypes of patients. The preference estimate for a reduction in long-term side effects was highest in Class 1 (“side effects”, 1-step decrease = 0.73) whereas complete remission was highest in Class 2 (“remission”, 10% increase in CR = 3.06). Classes differed by demographics (Table 4). Women were more likely to be within the side effects class (59% v. 47%, p=0.046). Patients who were privately insured were more likely to be within the remission class (84% v. 72%, p=0.02). A potential trend was identified for minorities falling within the remission class (8% v. 15%, p=0.07).

There were no statistical differences in the preference estimates of any specific attribute between patients who underwent allogeneic HCT as compared to those who did not (Supplemental Table 3), those reporting receiving novel therapies (immunotherapy or targeted agents) as compared to those not (Supplemental Table 4) or between patients currently in remission and those not in remission. Definitive conclusions from the latter two analyses are limited by the small sample size of patients receiving novel therapies (31, 9.6%) and patients not in remission (19, 5.9%).

Demographics (gender, age, race/ethnicity, marital status) and clinical characteristics (time since diagnosis, treatment received, clinical trial participation) were available for 539 patients who did not respond to the survey and 28 patients who responded to the survey but did not complete all choice tasks (drop-outs). These characteristics did not significantly differ from the characteristics of the sample who completed all choice tasks (all p>0.05) suggesting that the sample represents the overall surveyed population on the measured variables.

Overall the survey was acceptable to patients; patients found the questions easy to understand (79%), easy to answer (68%), and relevant to them (72%). Eighty-nine percent of patients reported answering the questions in a way consistent with their preferences.

Discussion:

In chronic lymphoid leukemia and chronic myeloid leukemia highly effective molecularly targeted agents have fundamentally changed the treatment paradigm such that intensive

cytotoxic therapies are often reserved only for patients with leukemia that progresses on targeted therapy.(33,34) The recent expansion of the therapeutic landscape in AML, by contrast, has substantially complicated treatment decision-making while offering only marginal benefits to most patients.(35) Clinical equipoise remains in many situations between intensive therapies and outpatient regimens.(36,37) To avoid misguided treatment decisions, cancer care teams have the responsibility to personalize therapy options for patients and align treatment choices to the risks and benefits acceptable to them.(38–40) An understanding of patient preferences for outcomes is vital to inform this process.

This study captured the preferences for treatment benefits of a national population of AML patients and assessed the impact of clinical and demographic factors on these preferences. The study design focused on recruiting predominantly AML survivors. Survivors are experts of their own experience, being uniquely qualified to understand the meaningful benefits of AML therapy and associated risks. Most of the patients included in this study had already been through treatment and personally experienced the risks and benefits of therapy. In making choices between outcomes, they could draw on their own first-hand knowledge to inform their preferences rather than relying on merely perceived risks and benefits. Capturing this survivor perspective is an essential initial step to understand the patient voice. However, generalizability to newly diagnosed or relapsed patients making actual treatment decisions is inherently compromised by both selection bias and, as this study demonstrates, the potential for preferences to change over time.

Frequently, the benefits offered by novel therapies come with known risks identified in early phase trials. Data from this DCE, which patients found easy to answer and relevant, identified ranges of meaningful benefits to participants by determining specific inflection points (equivalencies) where treatment preferences changed based on the magnitude of the offered benefit (Table 3). For instance, participants viewed a 10% change in the chance of CR as equivalent to a 2-step change (e.g., from none to moderate) in long-term side effects. This implies that, when considering a novel therapy, participants would be willing to endure substantially more long-term side effects if it improved their chance of CR by 10%, or would be willing to sacrifice up to 10% chance of CR for a therapy that reduced long-term side effects from moderate to none. These equivalencies inform patient-focused drug development by identifying tradeoffs patients likely would find acceptable when considering these therapies.(13–15) Roughly 10% of the sample had received a novel therapy as part of their treatment.

The DCE artificially required participants to directly compare length of EFS to chance of CR. Clinically, a clear dichotomy between these attributes is artificial as achieving CR is required to maintain EFS. Although theoretically unrealistic, these scenarios quite starkly illustrate that participants perceived achieving CR as much more valuable than extending EFS. They were only willing to forgo up to a 2.7% (CI 2.2, 3.3) increased chance of CR in exchange for 6 extended months of EFS. The inherent survivor bias in our study warrants caution in generalizing these data. For AML survivors, achieving CR was likely a pivotal, celebratory moment in their treatment success. This experience may have contributed to their valuation of achieving CR. Similarly, prolonged time without an event may be best appreciated by those patients who have relapsed and may not have been included in our

sampling strategy. Regardless, these findings suggest that achieving CR is highly valuable to patients.

Although preferences for treatment outcomes differed significantly between participants diagnosed at 60 years or older as compared with those diagnosed younger concerning short-term side effects, all participants most highly valued the chance of CR. Across age categories, participants were willing to endure 8.7 months in the hospital to achieve a 10% increase in chance of CR. These data suggest that many older patients are willing to consider and likely would prefer more intensive chemotherapy despite the risks. Recently, time at home has emerged as an important patient-centered outcome to consider, especially for older patients.(41,42) Our data suggests caution, however, in overestimating patients' valuation of time at home. This fact is particularly relevant as more older patients are receiving combination outpatient therapy (often a hypomethylating agent and venetoclax) instead of intensive therapy.(43,44)

We used LCA to segregate data into two phenotypically distinct classes. One class very strongly preferred to maximize the chance of CR, and another was more balanced in their valuation of treatment outcomes though slightly preferring to avoid long-term side effects over other benefits (Figure 1). Class placement differed by gender and insurance. Women were more likely to be in the side effects class. Privately insured patients were more likely to be in the remission class. Increasing the chance of CR was more than five-times preferred to avoiding long-term side effects among those in the remission class. Corroborating the shared experience of oncologists, this illustrates the very strong preference of some patients for achieving CR irrespective of the risks. Despite class placement differing by gender and insurance, the substantial preference heterogeneity reinforces the importance of determining individual preferences through shared decision-making for individual treatment decisions.

This study has several important limitations. Although OS is likely the most important factor in treatment decision-making,(16) OS was not included in the DCE. This was done in accordance with best-practices as including OS often results in dominance and may critically undermine the validity of the DCE(8,20,21). Additionally, the lack of mature OS data for novel AML therapies (e.g. venetoclax, ivosidenib, enasidenib) compromised our confidence in determining an accurate range of OS to include in the DCE(45–47). Including both CR and EFS as surrogates was thought to allow for participants to determine which aspects of survival (disease control or lack of clinical events) were most important. Further, as with all DCEs, preferences are based on patients' understanding of the attributes. We attempted to standardize patients' understanding by providing clear, community-derived descriptions of all attributes, several of which were in relative terms. As most patients reported questions were easy to understand, and they were able to answer in a way that was consistent with their preferences, it appears that attributes were well understood by patients. The cross-sectional nature of the study prevented the exploration of variation of preferences over time. The moderate response rate, low proportion of patients who had received novel therapies, and high proportion of younger, white, and educated patients limit generalizability.

Data from this study can inform clinical care by providing insight into the general patient perspective of meaningful benefits of treatment. Further research into the implementation of these methods into shared decision-making at the time of treatment decision is particularly needed. Because time since diagnosis may alter preferences, longitudinal studies are needed. Trials also need to establish the validity of such methods during episodes of acute distress, such as initial diagnosis and relapse, when patients have compromised decisional capacity. (48)

Conclusion:

Determining meaningful treatment benefits for AML patients is critical with the expanding therapeutic landscape. In this large study, the first of its kind in AML, we have described general patient preferences for outcomes, illustrating significant preference heterogeneity for meaningful treatment benefits across gender and age at diagnosis. This suggests that treatment decisions may be preference sensitive—determining ideal therapy will depend on the specific benefits most valued by individual patients. Eliciting and understanding the treatment preferences of patients is therefore more important than ever in making treatment recommendations. As we seek in AML to advance personalized medicine—a principal component of patient-centered care—we have the emerging and welcome opportunity to target our therapies not only to individual disease characteristics, but also to the individual preferences of our patients.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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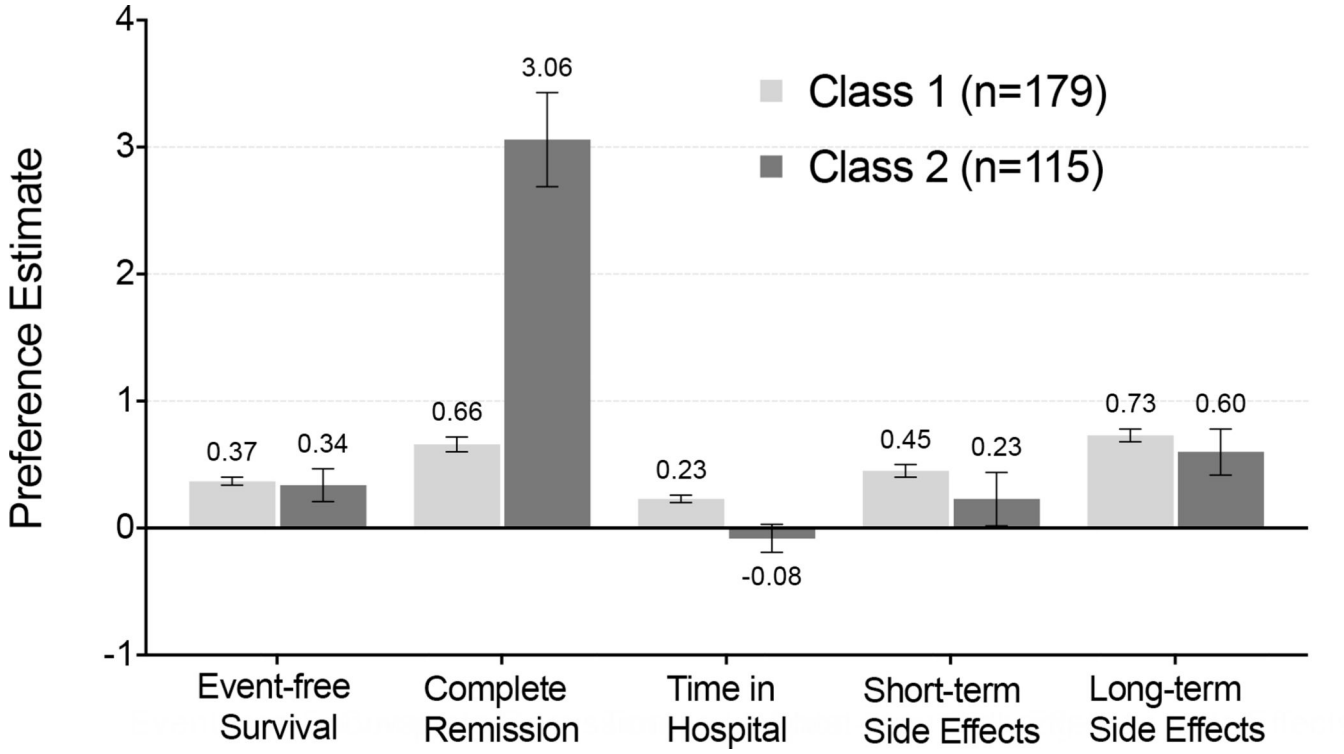

Figure 1.

Latent class analysis of AML patient preferences illustrating two distinct classes of patients. Patients in Class 1 tend to prefer avoiding long-term side effects more than other offered benefits. Patients in Class 2 strongly prefer to achieve complete remission over other benefits.

Table 1.

Demographic and Clinical Characteristics of AML patients ($N = 322$), total[†] and stratified by age at diagnosis (< 60 years v. ≥ 60 years)

		Total	Age at diagnosis		p-value
			<60 years	≥ 60 years	
n (%)		322 (100%)	221 (78.4%)	61 (21.6%)	
Current Age, years	Median (range)	60 (19–85)	47 (19–59)	66 (60–85)	<0.001
Gender	Female	156 (54.7%)	122 (55.2%)	32 (52.5%)	0.70
Race/Ethnicity	White/Caucasian	254 (89.4%)	193 (87.7%)	58 (95.1%)	0.25
	Hispanic	13 (4.6%)	12 (5.5%)	1 (1.6%)	
	Asian	8 (2.8%)	8 (3.6%)	0 (0.0%)	
	Other	5 (1.8%)	4 (1.8%)	1 (1.6%)	
	Black/African American	4 (1.4%)	3 (1.4%)	1 (1.6%)	
Marital Status	Married or domestic partnership	213 (74.7%)	175 (79.2%)	36 (59.0%)	<0.001
	Divorced	38 (13.3%)	21 (9.5%)	17 (27.9%)	
	Single, never married	28 (9.8%)	22 (10.0%)	5 (8.2%)	
	Widowed	6 (2.1%)	3 (1.4%)	3 (4.9%)	
Educational status	Completed College or higher	212 (74.4%)	166 (75.1%)	44 (72.1%)	
Current Employment status	Employed for wages	130 (45.6%)	122 (55.2%)	6 (9.8%)	<0.001
	On disability	55 (19.3%)	52 (23.5%)	3 (4.9%)	
	Retired	77 (27.0%)	29 (13.1%)	47 (77.0%)	
Insurance during treatment	Private/Group	246 (86.0%)	186 (84.2%)	31 (50.8%)	<0.001
	Medicare/Medicaid	37 (12.9%)	35 (15.8%)	30 (49.2%)	
	Uninsured	3 (1.0%)	2 (0.9%)	0 (0.0%)	
Treatment received	Allogeneic transplant	206 (63.8%)	146 (66.1%)	38 (62.3%)	0.58
	Autologous transplant	25 (7.7%)	21 (9.5%)	1 (1.6%)	0.043
	Clinical trial	115 (35.7%)	80 (36.2%)	22 (36.1%)	0.98
	Palliative Care	96 (29.7%)	74 (33.5%)	15 (24.6%)	0.19
Years since diagnosis	Median (range)	7 (1–40)	7 (1–27)	8 (1–40)	0.007
Disease status	In remission	303 (95.0%)	209 (95.0%)	56 (94.9%)	0.98
Self-assessed personality (agree or strongly agree with the statement)	I am always optimistic about my future	113 (69.3%)	86 (69.4%)	23 (65.7%)	0.68
	I have a lot of self-control	155 (72.1%)	118 (71.5%)	33 (71.7%)	0.98
	I am actively working to improve my health	146 (77.2%)	109 (77.3%)	33 (75.0%)	0.75
	I am a risk taker	83 (32.3%)	66 (32.7%)	16 (31.4%)	0.86
	I am good with numbers	116 (56.0%)	95 (59.4%)	21 (48.8%)	0.22

[†]This includes all participants who started the survey. Some participants did not complete all questions resulting in different numbers in each category. Rounding may result in all categories not adding up to 100%.

Table 2.

Preference estimates for treatment benefits of AML patients (continuously coded), total and stratified by age at diagnosis (< 60 years v. ≥ 60 years)[†]

Benefit (Level)	Total (n=294)	Less than 60 years (n=221)	60 years and older (n=61)	p-value
	Preference Estimate (95% CI)	Preference Estimate (95% CI)	Preference Estimate (95% CI)	T-test
Event free survival (6-month increase)	0.286 (0.24, 0.33)	0.297 (0.24, 0.35)	0.273 (0.17, 0.38)	0.70
Complete remission (10% increase)	1.054 (0.94, 1.17)	1.059 (0.96, 1.16)	0.956 (0.77, 1.14)	0.43
Time in hospital (1-month decrease)	0.122 (0.07, 0.17)	0.124 (0.07, 0.18)	0.091 (−0.004, 0.19)	0.61
Short-term side effects (1-step decrease)	0.326 (0.25, 0.41)	0.284 (0.20, 0.37)	0.503 (0.34, 0.67)	0.03
Long-term side effects (1-step decrease)	0.524 (0.43, 0.61)	0.516 (0.43, 0.61)	0.518 (0.35, 0.68)	0.98

[†]Twelve participants did not complete the question about age.

Table 3.

Equivalencies among preferences of AML patients for treatment benefits ($N = 294$)

Benefit	Equivalent value 10% increased chance of complete remission (95% CI)†	Equivalent value 6-months increase in EFS (95% CI)†
Event free survival (Increased time)	22.1-month increase (17.6, 26.7)	Referent
Complete remission (Increased chance)	Referent	2.7% increase (2.2, 3.3)
Time in hospital (Decreased time)	8.7-month decrease (4.9, 12.4)	2.4-month decrease (1.3, 3.4)
Short-term side effects (Decreased magnitude)	3.2-step decrease (2.4, 4.1)	0.88-step decrease (0.62, 1.1)
Long-term side effects (Decreased magnitude)	2.0-step decrease (1.7, 2.4)	0.55-step decrease (0.42, 0.67)

†Calculated using delta method following continuous conditional logistic regression

Table 4.

Demographic and clinical features stratified by latent class (N=294)

Demographic and clinical features	Class 1: (n=179)		Class 2: (n=115)		p-value
	N	%	N	%	
Age, median (range)	60 (19–85)		59 (27–78)		0.13
Years since diagnosis, median (range)	7 (1–40)		8 (1–27)		0.32
Female gender	105	59%	51	47%	0.046
Minority race	14	8%	16	15%	0.07
Education, less than college	40	23%	33	31%	0.14
Insurance, private	128	72%	92	84%	0.02
In remission	167	93%	110	97%	0.40
Treatments received					
Allogeneic HCT	117	65%	76	66%	0.90
Immunotherapy	9	5%	3	3%	0.31
Targeted	15	8%	7	6%	0.47
Palliative care	59	33%	33	29%	0.44

HCT= Hematopoietic cell transplant, SD = Standard deviation