

# Evaluating Patient Preferences for Chronic Lymphocytic Leukemia in Korea: A Discrete Choice Experiment

Byung Woo Yoon,<sup>1</sup> Suhyeon Lee,<sup>2</sup> Mei Xue,<sup>3</sup> Yan Meng,<sup>4</sup> Dominic Pilon,<sup>5</sup> Fengyi Jiang,<sup>6</sup> Keri Yang,<sup>3</sup> Sikander Ailawadhi<sup>7</sup>

<sup>1</sup>Department of Internal Medicine, Gachon University Gil Hospital, Incheon, Republic of Korea; <sup>2</sup>BeOne Medicines, Ltd, Seoul, Republic of Korea; <sup>3</sup>BeOne Medicines, Ltd, San Carlos, CA, USA;

<sup>4</sup>Analysis Group, Inc., Boston, MA, USA; <sup>5</sup>Analysis Group, Inc., Montreal, QC, Canada; <sup>6</sup>Analysis Group, Inc., Toronto, ON, Canada; <sup>7</sup>Mayo Clinic, Jacksonville, FL, USA

## CONCLUSIONS

- This patient preference survey provided valuable insights into the treatment preferences of Korean patients with CLL, highlighting the importance of QOL considerations for treatment decision-making
- Among the evaluated attributes, patients placed the greatest weight on minimizing the impact of AEs, particularly headache and diarrhea, on daily functioning, followed by dosing frequency
- Insights into patient preferences underscore the need for patient-centered care that prioritizes not only clinical efficacy but also tolerability and convenience
- Results from this study support shared decision-making in CLL treatment selection and the development of personalized treatment strategies that better align with patient needs and expectations in Korea

## INTRODUCTION

- Chronic lymphocytic leukemia (CLL) disease control and survival outcomes have improved since the introduction of Bruton tyrosine kinase (BTK) inhibitors<sup>1-6</sup>
- Since CLL often requires treatment, understanding patient preferences is critical in optimizing adherence and overall satisfaction. However, there are limited published data on how Korean patients prioritize treatment efficacy, safety, and the convenience of administration
- Incorporating patient perspectives supports decision-making and could enhance treatment adherence and outcomes
- Discrete choice experiment (DCE) is a widely acknowledged approach to quantify patient preferences and trade-offs among available treatment options
- This comprehensive quantitative analysis aimed to evaluate patient preferences for treatment attributes associated with various BTK inhibitors among patients with CLL in Korea

## METHODS

### Data Source and Study Population

- Adult patients (aged ≥18 years) with a confirmed diagnosis of CLL in Korea were recruited by the Korea Blood Disease & Cancer Association to participate in an online DCE survey questionnaire from April 30, 2025, to May 22, 2025

### Study Design

- The DCE study survey was conducted to evaluate patient preferences for BTK inhibitor treatment options for CLL, following the ISPOR Task Force report on Constructing Experimental Designs for Discrete-Choice Experiments<sup>7,8</sup>
- DCE attributes were selected based on published literature and clinical inputs for BTK inhibitor treatment, including the following attributes and levels:
  - The efficacy attribute included progression-free survival (PFS)
  - Safety attributes included the impact of adverse events (AEs), including diarrhea, headache, atrial fibrillation, and hypertension, on quality of life (QOL), defined as the extent to which AEs caused interruptions in patients' ability to engage in their usual day-to-day activities
  - Convenience attributes included formulation type (tablet or capsule) and dosing frequency (once daily or twice daily) (Table 1)

Table 1. Attributes and Levels

Attribute types	Attributes	Levels
Efficacy	Prevention of disease progression	3 years
		4 years
		5 years
Safety	Impact of diarrhea on quality of life	None or mild
		Moderate
		Significant
Safety	Impact of headache on quality of life	None or mild
		Moderate
		Significant
Safety	Impact of atrial fibrillation on quality of life	None or mild
		Moderate
		Significant
Safety	Impact of hypertension on quality of life	None or mild
		Moderate
		Significant
Convenience	Formulation type	Oral tablet
		Oral capsule
Convenience	Dosing frequency	Once daily
		Twice daily

- Using the identified attributes and levels, DCE choice tasks were generated with the D-efficient design, a statistical approach in which combinations of attributes and levels are selected to maximize data collected while minimizing the number of questions each respondent needs to answer<sup>7,8</sup>
- In this study, each patient completed 11 choice tasks
  - Each choice task contained two hypothetical CLL treatment profiles (treatment A and treatment B) with varying combinations of attribute levels
  - Patients were asked to weigh the pros and cons associated with each attribute and to choose their preferred treatment profile. An example of a choice task is shown in Figure 1

Figure 1. Example of a Choice Task<sup>a</sup>

치료 특징	치료 A	치료 B
본 치료는 다음 기간 동안 질병의 진행을 방지합니다	3년	5년
소스가 삶의 질에 미치는 영향	없음 또는 경미함	심각함
도움이 삶의 질에 미치는 영향	심각함	없음
심장질환이 삶의 질에 미치는 영향	없음	심각함
고혈압이 삶의 질에 미치는 영향	중등 또는 경미함	심각함 (약는 약)
편두통	중등 또는 경미함	심각함 (약는 약)
두약의 빈도	하루 한 번	하루 두 번
어떤 치료를 선호하시나요?	<input type="radio"/>	<input type="radio"/>

Treatment Features	Treatment A	Treatment B
The treatment can prevent disease progression for...	3 years	5 years
Impact of diarrhea on quality of life	None or mild	Significant
Impact of headache on quality of life	Significant	Moderate
Impact of atrial fibrillation on quality of life	Moderate	Significant
Impact of hypertension on quality of life	Moderate	None or mild
Formulation type	Oral tablet	Oral capsule
Dosing frequency	Once daily	Twice daily
Which treatment do you prefer?	<input type="radio"/>	<input type="radio"/>

<sup>a</sup>When the patient hovers over or clicks on an attribute (underlined in the figure), the description of the attribute will be shown in a pop-up window. <sup>b</sup>The English version of the choice card has been translated for this presentation only, and patients were only shown the Korean version.

- In addition to the DCE, the survey also recorded patient demographic characteristics, such as age, sex, education level, and employment status
- Clinical characteristics collected from the survey assessed time since diagnosis, lines of treatment, and common side effects experienced
- The importance of efficacy measures, including pausing disease progression, extending life expectancy, and increasing the likelihood of remission or cure, was further evaluated using rating questions on a scale from 0 to 10, where 0 indicated "not at all important" and 10 indicated "extremely important"
- Subgroup analyses were also performed to gain insights into variations in treatment preferences across various populations, including patients aged <60 years and ≥60 years, those who received ≥2 lines of treatment, and those who experienced AEs from CLL treatment

## Statistical Analysis

- Continuous variables were summarized with means, medians, and SDs, while categorical variables were described using frequencies and percentages
- Participants' preference data collected from the DCE were analyzed using a conditional logistic regression model. Coefficients were used to calculate the relative importance of each attribute, as well as patient willingness to trade off specified BTK inhibitor treatment attributes

## RESULTS

### Patient Characteristics

- In this study, 57 patients with CLL were recruited
  - Patients had a mean age of 61 years, 54% were aged ≥60 years, 65% were male, and 23% were employed full time (Table 2)
- The majority of patients (70%) were diagnosed ≥5 years ago (26% diagnosed 1 to <5 years ago; 4% diagnosed <1 year ago)

Table 2. Summary of Patient Demographics

Characteristics	Patients (N=57)
Age, mean ± SD [median], years	61 ± 12 [63]
≤60 years, n (%)	26 (45.6)
61-70 years, n (%)	17 (29.8)
71-80 years, n (%)	13 (22.8)
>80 years, n (%)	1 (1.8)
Sex, n (%)	
Male	37 (64.9)
Female	20 (35.1)
Education level, n (%) <sup>a</sup>	
Below bachelor's degree	28 (49.1)
Bachelor's degree or higher	27 (47.3)
Employment, n (%) <sup>b</sup>	
Full-time	13 (22.8)
Part-time	4 (7.0)
Self-employed	8 (14.0)
Retired	10 (17.5)
Unemployed	13 (22.8)
Other <sup>c</sup>	10 (17.5)

<sup>a</sup>Response categories do not add up to 100% because the proportion of respondents who selected "Prefer not to answer" is not presented in the table. <sup>b</sup>Response categories were not mutually exclusive. <sup>c</sup>The "other" category includes full-time domestic responsibility and students.

- For treatment experience, 11% of patients were treatment naive, and 89% had received ≥1 treatment (first line, 61%; second line, 21%; third line or later, 7%)
- Among patients with treatment experience (51 of 57 patients), 69% reported having experienced ≥1 AE, with the most common AEs being nausea and/or vomiting (24%), skin rashes (22%), fatigue or extreme tiredness (18%), neutropenia (18%), and anemia (16%) (Table 3)

Table 3. Summary of Patient Clinical Characteristics

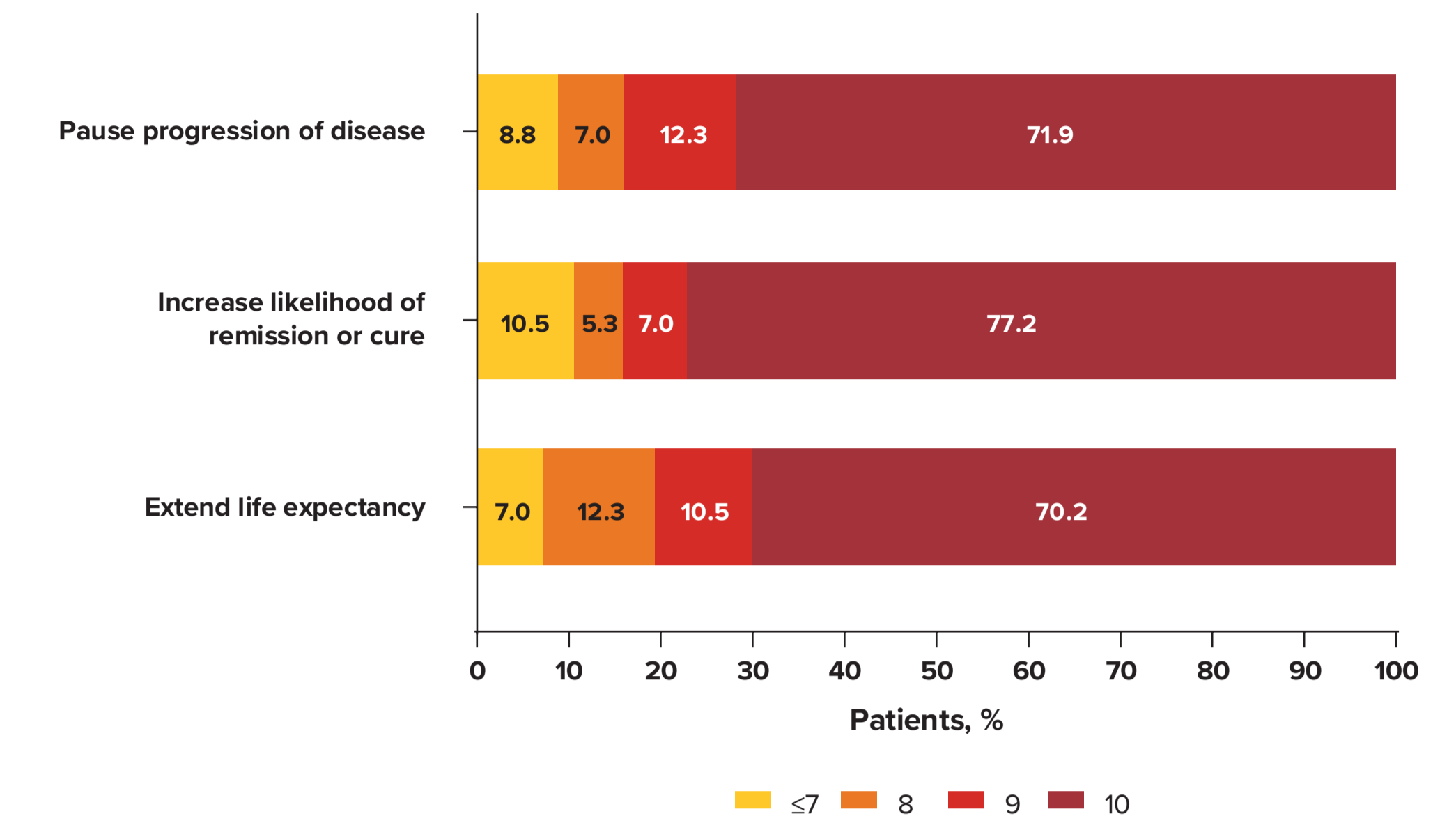
Characteristics	Patients (N=57)
Time since diagnosis, n (%)	
<1 year	2 (3.5)
1 to <2 years	2 (3.5)
2 to <5 years	13 (22.8)
≥5 years	40 (70.2)
Line of treatment, n (%)	
Treatment naive	6 (10.5)
First line	35 (61.4)
Second line	12 (21.1)
Third line and later	4 (7.0)
Most common side effects experienced from treatment, n (%) <sup>a,b</sup>	n=51
≥1 side effect	35 (68.6)
Nausea and/or vomiting	12 (23.5)
Skin rashes	11 (21.6)
Fatigue or extreme tiredness	9 (17.6)
Neutropenia	9 (17.6)
Anemia	8 (15.7)

<sup>a</sup>Categories were not mutually exclusive. <sup>b</sup>Among participants who had received ≥1 CLL treatment.

### Importance of Efficacy Measures

- Patients equally valued the importance of CLL treatments that could extend life expectancy, increase the likelihood of remission or cure, and pause the progression of disease, with average rating scores being 9.1, 9.2, and 9.2 out of 10, respectively (Figure 2)

Figure 2. Importance of Efficacy Measures<sup>a</sup>

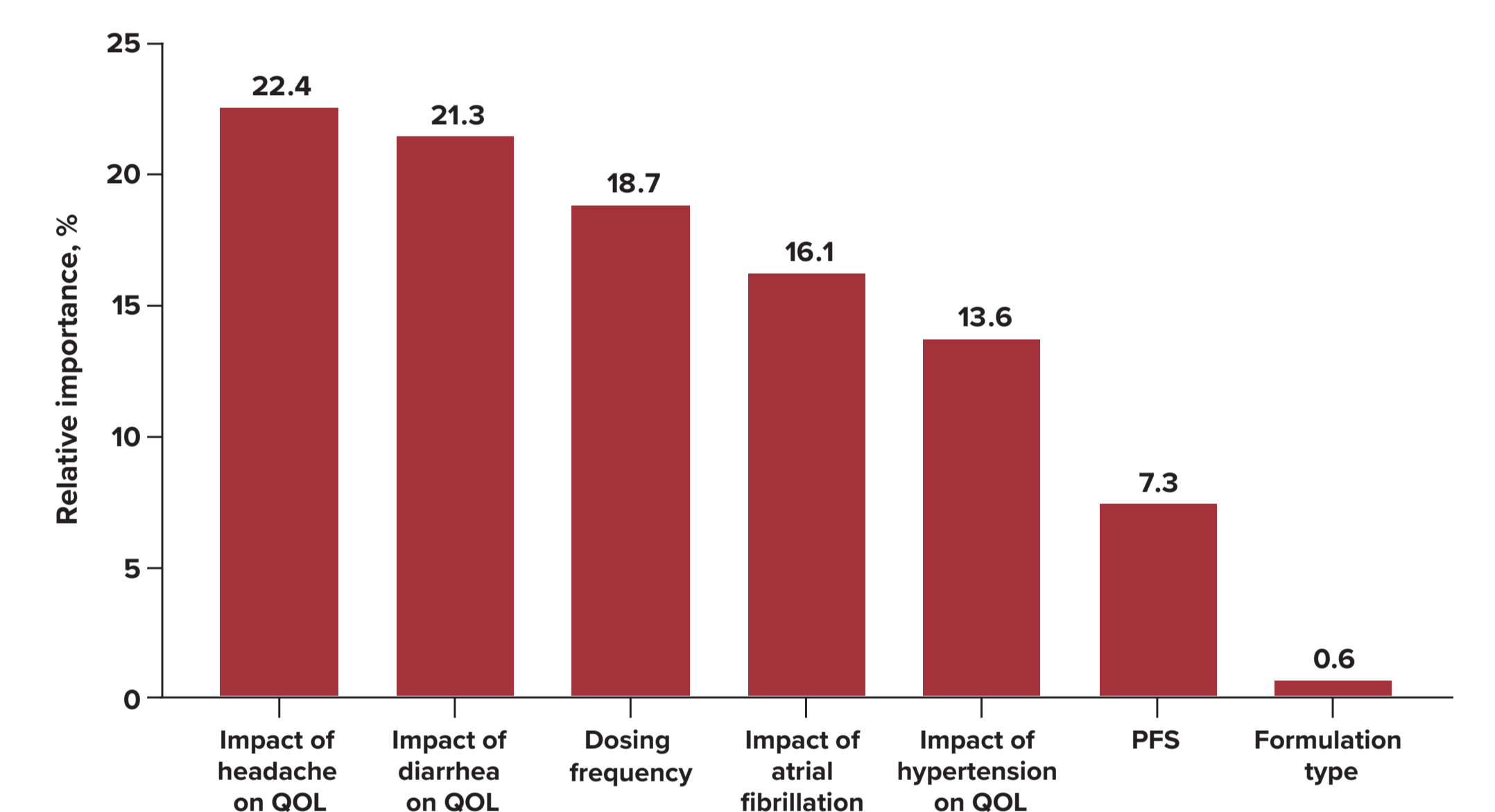


<sup>a</sup>Patients were asked to rate the importance of each efficacy measure in their decision to select a treatment using a scale from 0 to 10, with 0 indicating "not at all important" and 10 indicating "extremely important". The bar plot displays the percentage of patients who rated each efficacy measure ≤7, 8, 9, and 10. Additionally, the mean score for each efficacy measure was calculated as the average rating across all patients.

### Patient Preference From DCE Results

- In the context of CLL treatment preferences, patients showed a significant preference ( $P<.05$ ) for treatments that minimized the impact of AEs on QOL, offered longer PFS, and required less frequent dosing. Formulation type did not have a statistically significant impact on treatment choice
- Patients placed greater importance on how treatment-related attributes affect their QOL and dosing frequency. The highest-ranked factors were the impact of headache (22%) and diarrhea (21%) on QOL, followed by dosing frequency (19%), the impact of atrial fibrillation (16%) and hypertension (14%) on QOL, PFS (7%), and formulation type (1%) (Figure 3)

Figure 3. Relative Importance of Attributes to Patients With CLL



Abbreviations: CLL, chronic lymphocytic leukemia; PFS, progression-free survival; QOL, quality of life.

### Subgroup Analyses

- Results from the subgroup analyses were generally consistent with the full-sample analysis, with the impact of AEs on QOL being the most important factor for treatment decision-making, especially among older patients, although the relative ranking of impacts of AEs varied by age group and treatment experience (Figure 4)
- Among efficacy attributes, younger patients (aged <60 years) valued PFS slightly more than older patients (aged ≥60 years), ranking it fourth and sixth of seven attributes, respectively
- Preference on dosing frequency was more important to patients who received ≥2 lines of treatment compared with the overall sample, reflecting the treatment burden experienced from previous regimens

Figure 4. Subgroup Analysis of Attributes Ranked by Korean Patients With CLL<sup>a,b</sup>

	Headache	Diarrhea	Dosing frequency	Atrial fibrillation	Hypertension	PFS	Formulation type
All patients (N=57)	1	2	3	4	5	6	7
≥2 lines of treatment (n=16)	4	2	1	7	3	5	6
Experienced AEs (n=35)	2	1	3	5	4	6	7
Aged <60 years (n=26)	1	2	6	5	3	4	7
Aged ≥60 years (n=31)	2	1	3	4	5	6	7

<sup>a</sup>AEs (headache, diarrhea, atrial fibrillation, and hypertension) included in this figure refer to their impact on patient QOL. <sup>b</sup>The relative importance of each attribute was ranked on a scale of 1-7, with 1 being the most important and 7 the least important. Abbreviations: AE, adverse event; PFS, progression-free survival; QOL, quality of life.

### Study Limitations

- The sample size was relatively modest, and findings may not be generalizable to the overall CLL population in Korea
- To reduce participants' response burden, the DCE included only a limited set of BTK inhibitor treatment attributes. Attributes not evaluated in the study may also influence patient preferences

## REFERENCES

- Sharma S, et al. *Cancer*. 2019;125(9):1432-1440.
- Fitzgerald L, et al. *Blood*. 2024;144(suppl 1):7753.
- Alu A, et al. *J Hematol Oncol*. 2022;15(1):138.
- Byrd JC, et al. *N Engl J Med*. 2013;371(3):213-223.
- Burger JA, et al. *N Engl J Med*. 2013;371(25):2425-2437.
- Brown JR, et al. *N Engl J Med*. 2023;388(4):319-332.
- Bridges JF, et al. *Value Health*. 2011;14(4):403-413.
- Johnson FR, et al. *Value Health*. 2013;16(1):3-13.

## DISCLOSURES

YM: Research funding: BeOne Medicines, Ltd. DP: Employment: Analysis Group, Inc.; Research funding (payable to institution): BeOne Medicines, Ltd. SA: Consulting: Sanofi, BMS, BeOne Medicines, Ltd, Janssen, Regeneron, Cellectar, Pfizer, GSK; Research funding: Sanofi, GSK, BMS, Genentech, Janssen, Cellectar, AbbVie, Ascentage Pharma. SL, MX, KY: Employment and may own stock: BeOne Medicines, Ltd. BWY, FJ: No disclosures.

## ACKNOWLEDGMENTS

The authors would like to thank the Korea Blood Disease and Cancer Association for their efforts in patient recruitment and survey collection. This study was sponsored by BeOne Medicines, Ltd. Editorial assistance was provided by Nucleus Global, an InHiz company, and supported by BeOne Medicines.