A Multinational Study to Explore Patient Preferences for Chronic Myeloid Leukaemia (CML) Treatments

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INTRODUCTION Tyrosine kinase inhibitors (TKIs) have enabled most chronic-phase chronic myeloid leukaemia (CP-CML) patients to achieve near-normal life expectancy, but adverse events (AEs) remain a challenge. Maintaining tolerability is important to sustain adherence and thereby achieve optimal outcomes. Therefore, **understanding patient preferences and trade-offs is critical to ensure that treatment decisions reflect what matters most to patients.**

METHODS We conducted an online discrete choice experiment (DCE) survey with CP-CML patients recruited via the CML Advocates Network from North America (USA, Canada), Europe (France, Germany, Italy, Spain, the UK), and East Asia (China, Japan), to understand preferences for TKI treatments.

- Respondents chose between hypothetical treatments described by key attributes (see Figure 1).
- Analysis used a multinomial logit (MNL) model to estimate conditional **relative attribute importance** (RAI) scores by region.
- We also estimated **Minimum Acceptable Benefit** - the minimum acceptable improvement in the chance of achieving DMR that respondents require to tolerate defined treatment-related side-effects, on average.

DCE ATTRIBUTES & LEVELS Attributes and levels were selected through patient interviews and clinical evidence (see Table 1).

Interview participants highlighted the importance of:

- Treatment efficacy, with mixed views on the desirability of achieving treatment-free remission (TFR);
- Tolerability, including fatigue, gastrointestinal issues (GI), and myalgia;
- Longer-term side effects that may persist even upon cessation of treatment;
- Challenges with communication from clinicians and psychological support.

TABLE 1: DCE attributes and levels

Attribute	Levels			
How treatment is taken	Once/day, no fasting	Twice/day, no fasting	Once/day, 3-hour fast	Twice/day, 3-hour fast
Chance of DMR in 2yrs	15 /100 patients	35 /100 patients	50 /100 patients	
Experience of fatigue	No or mild fatigue most days	Moderate fatigue most days	Strong fatigue most days	
Risk of GI issues	15 /100 patients	45 /100 patients	75 /100 patients	
Risk of breathing issues	5 /100 patients	25 /100 patients	40 /100 patients	
Risk of long-term CV issues	5 /100 patients	15 /100 patients	25 /100 patients	

RESULTS The analytic sample consisted of 750 respondents (Table 2).

- Respondents preferred lower levels of fatigue, a higher chance of DMR, lower risk of AEs, and more convenience in how treatment is taken, especially avoiding fasting.
- Fatigue was the most important factor influencing respondents' choices.
- The second most important attribute was chance of achieving DMR in Europe and North America, and how the treatment is taken in East Asia.
- Risk of GI problems ranked third in all regions. How treatment was taken ranked fourth in Europe but sixth in North America.
- Across all three regions, the relative importance scores for the risk of breathing problems and the risk of long-term CV problems were similar.

TABLE 2: Respondent characteristics

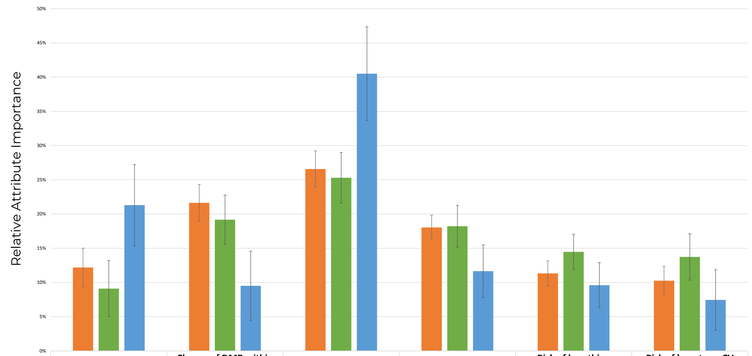
	Canada (N=50)	China (N=147)	France (N=84)	Germany (N=71)	Italy (N=47)	Japan (N=90)	Spain (N=39)	UK (N=110)	USA (N=112)	Combined (N=750)
Data collection dates										
Opened	01/05/25	08/08/25	24/05/25	24/06/25	26/06/25	22/08/25	02/05/25	20/04/25	29/04/25	
Data cut	20/11/25	20/11/25	20/11/25	20/11/25	20/11/25	20/11/25	20/11/25	20/11/25	20/11/25	
Line of treatment										
Not started	**0**(0.0%)	**0**(0.0%)	**0**(0.0%)	**0**(0.0%)	**0**(0.0%)	**1**(1.1%)	**0**(0.0%)	**0**(0.0%)	**2**(1.8%)	**3**(0.4%)
First	**15**(30.0%)	**104**(70.7%)	**38**(45.2%)	**23**(32.4%)	**23**(48.9%)	**30**(33.3%)	**14**(35.9%)	**48**(43.6%)	**46**(41.1%)	**341**(45.5%)
Second	**17**(34.0%)	**29**(19.7%)	**18**(21.4%)	**16**(22.5%)	**12**(25.5%)	**22**(24.4%)	**7**(17.9%)	**23**(20.9%)	**33**(29.5%)	**177**(23.6%)
Third	**4**(8.0%)	**7**(4.8%)	**11**(13.1%)	**8**(11.4%)	**5**(10.6%)	**14**(15.6%)	**4**(10.3%)	**15**(13.6%)	**14**(12.5%)	**82**(10.9%)
Fourth+	**3**(6.0%)	**2**(1.4%)	**9**(10.7%)	**8**(11.4%)	**2**(4.3%)	**6**(6.7%)	**2**(5.1%)	**12**(10.9%)	**11**(9.8%)	**55**(7.3%)
TFR	**11**(22.0%)	**5**(3.4%)	**8**(9.5%)	**16**(22.5%)	**5**(10.6%)	**17**(18.9%)	**12**(30.8%)	**12**(10.9%)	**6**(5.4%)	**92**(12.3%)

FIGURE 1: Example choice task

Treatment A	Treatment B
How the treatment is taken Pill taken **once daily** (with or without food)	**How the treatment is taken** Pill taken **twice daily** on an **empty stomach** (no food 2 hours before and 1 hour after)
Chance of Deep Molecular Response (cancer cells reducing to a very low level) within 2 years 35 out of every 100 patients (35%)	**Chance of Deep Molecular Response (cancer cells reducing to a very low level) within 2 years** 15 out of every 100 patients (15%)
Experience of fatigue **Strong fatigue** most days	**Experience of fatigue** **No or mild fatigue** most days
Risk of gastrointestinal problems 75 out of every 100 patients (75%)	**Risk of gastrointestinal problems** 15 out of every 100 patients (15%)
Risk of breathing problems 40 out of every 100 patients (40%)	**Risk of breathing problems** 25 out of every 100 patients (25%)
Risk of long-term cardiovascular problems 25 out of every 100 patients (25%)	**Risk of long-term cardiovascular problems** 5 out of every 100 patients (5%)
☐ **Select Treatment A**	☐ **Select Treatment B**

In **Figure 2**, the vertical bars show the relative importance of each attribute, conditional on the best and worse level of attributes in respondent choices, by region.

FIGURE 2: Relative attribute importance (N=750)



	How treatment is taken	Chance of DMR within two years	Fatigue	Risk of GI problems	Risk of breathing problems	Risk of long-term CV problems
Europe (n=351)	12,2%	21,6%	26,6%	18,0%	11,3%	10,3%
N. America (n=162)	9,1%	19,2%	25,3%	18,2%	14,5%	13,7%
E. Asia (n=237)	21,3%	9,5%	40,5%	11,6%	9,6%	7,4%

TABLE 3: Minimum Acceptable Benefit ("risk-benefit trade-offs")

Outcome	Equivalent to this improvement in chance of DMR	
	Europe	North America
Having strong fatigue* (compared to no or mild fatigue)	43% increase	46% increase
Increased GI risk (from 15% to 75%)	30% increase	34% increase
Less convenient treatment, from 1x/day without fasting to 2x/day with fasting	20% increase	17% increase
Increased risk of breathing problems (from 5% to 40%)	19% increase	27% increase
Increased long-term cardiovascular risk (from 5% to 25%)	18% increase	26% increase

** As fatigue can arise as both a symptom of CML and a treatment-related side effect, this trade-off should be interpreted carefully.*

Table 3 shows the improvement in the chance of achieving DMR that respondents would require to tolerate treatment-related side effects, or a less convenient treatment. For example, European patients would require a 43% increase in the chance of DMR to accept 'strong fatigue' (relative to 'no or mild fatigue'). Due to the low RAI of DMR in East Asia, risk-benefit trade-offs are not calculated for this region as they may produce misleading estimates.

CONCLUSION

- Fatigue was the most important attribute, followed by chance of achieving DMR in Europe and North America, and how treatment is taken in East Asia, highlighting unmet needs for CML patients.
- Treatment tolerability is as important as efficacy, demonstrating the importance of shared decision-making in treatment selection.
- There is preference heterogeneity across regions, which could be due to variations in culture and health systems.

These results emphasise the need to consider patient preference data when evaluating and selecting CML treatments.

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