

Using a discrete choice experiment to explore perioperative treatment preferences in gastric cancer and gastroesophageal junction cancer

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Objective

- To quantify patients' and physicians' preferences for characteristics of perioperative treatment for gastric cancer (GC) and gastroesophageal junction cancer (GEJC).

Conclusions

- Patients with GC/GEJC and physicians prioritise **treatment tolerability** and **recurrence-free survival** over complications from surgery, lifestyle changes, treatment duration, and medication frequency.
- These findings could indicate that patients with resectable GC/GEJC and treating physicians favour more intensive treatments, which provide greater improvement in clinical outcomes, despite their impact on lifestyle changes, risk of surgical complications, and treatment duration or frequency.

Plain language summary



Why did we perform this research?

- Gastric cancer (GC) and gastroesophageal junction cancer (GEJC) are serious conditions that often require a combination of surgery and chemotherapy or chemoradiotherapy^{1,2}. These treatments can improve survival but can also negatively affect patients' quality of life, particularly in the short term^{3,4}.
- Clinical trials provide important evidence on treatment effectiveness, but there is **limited understanding of how patients and physicians value different aspects of treatment**. Understanding these preferences is important to support **shared decision-making**, treatment design, and patient-centered care.



How did we perform this research?

We used a method called a **discrete choice experiment (DCE)** which was conducted via an online survey with patients and physicians. The DCE showed participants a series of hypothetical perioperative treatment profiles for GC/GEJC and participants select which profile they prefer in each scenario. Each profile showed a combination of six treatment characteristics. Across the two profiles, the options within each treatment characteristic differed. The results of a DCE show us which characteristics of perioperative treatment are most valued by patients and physicians.



What were the findings of this research?

Both patients and physicians prioritized treatment tolerability (side effects) and recurrence-free survival (chance of cancer not returning) the most. These characteristics were considered more important than: risk of surgical complications, lifestyle changes, treatment duration, and medication frequency.



What are the implications of this research?

From a clinical practice perspective, the study suggests both patients and physicians may be willing to accept more intensive treatments if they improve survival and are tolerable.

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References: 1. Janjigian YY, et al. MATTERHORN: phase III study of durvalumab plus FLOT chemotherapy in resectable gastric/gastroesophageal junction cancer. 2. National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Gastric Cancer. 3. Xia R, et al. Health-related quality of life and health utility score of patients with gastric cancer: A multi-centre cross-sectional survey in China. 4. van Amelsfoort RM, et al. Health-Related Quality of Life in Locally Advanced Gastric Cancer: A Systematic Review.

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Introduction

- Stomach cancer, including gastric cancer (GC) and gastroesophageal junction cancer (GEJC), is the fifth most common cancer type, and fourth leading cause of cancer deaths, globally (1).
- Standard of care treatment for resectable GC and GEJC includes surgery or perioperative systemic therapy using FLOT (fluorouracil, leucovorin, oxaliplatin and docetaxel) (2) / FLOT + durvalumab / fluoropyrimidine & oxaliplatin (3)
- Surgery and adjuvant chemotherapy / chemoradiotherapy have been shown to have a short-term detrimental impact on Health-Related Quality of Life (HRQoL) (4,5); however, there is limited research on the impact of perioperative chemotherapy / chemoradiotherapy on HRQoL.

Results and interpretation

Table 2: Participant and survey characteristics

Patient Characteristics	Patients (N=200)
Gender	
Female	85 (42.5%)
Male	115 (57.5%)
Employment level	
Employed (full / part time, or self-employed)	35 (17.5%)
Retired or unemployed	164 (82.0%)
Student	1 (0.5%)
Insurance coverage	
Private health insurance	113 (56.5%)
Public health insurance	87 (43.5%)
Cancer Type	
Gastric Cancer	145 (72.5%)
Gastroesophageal Cancer	55 (27.5%)
Stage of Cancer	
Stage 1 or 2	89 (44.5%)
Stage 3 or 4	111 (55.5%)
Had resection surgery	
No	65 (32.5%)
Yes	135 (67.5%)
Experienced recurrence	
No	111 (55.5%)
Yes	88 (44.0%)
Age, Mean (SD)	63.2 (8.7)
Time since surgery (months), Mean (SD)	15.4 (6.7)
Physician Characteristics	Physicians (N=150)
Gender	
Female	61 (40.7%)
Male	88 (58.7%)
Non-binary	1 (0.7%)
Setting	
Academic	57 (38.0%)
Community	93 (62.0%)
Specialty	
Gastric surgeon	46 (30.7%)
Oncologist	75 (50.0%)
Thoracic surgeon	29 (19.3%)
Years of experience treating GC/GEJC patients, Mean (SD)	14.6 (5.11)
Number of GC/GEJC patients managed in the last year, Mean (SD)	15.4 (6.08)
Survey details	Mean (SD)
Survey Duration in minutes	
Patients (n=200)	25.23 (2.72)
Physicians (n=150)	24.79 (2.66)
Participants passing dominance test	N (%)
Patients	188 (98.9%)
Physicians	139 (98.6%)
Participants demonstrating straightlining*	
Patients	11 (5.5%)
Physicians	5 (3.3%)

*Straightlining refers to participants selecting the same alternative (e.g., always Option A) across all or most choice tasks

Methods

- A discrete choice experiment (DCE) was conducted to explore patients' and physicians' preferences for various perioperative treatment characteristics.
- The design of the DCE was informed by qualitative interviews from a sample of patients with resectable GC/GEJC and physicians (i.e., oncologists, gastric surgeons, and thoracic surgeons).
- Six treatment attributes each with either 2 or 3 levels were included in the DCE (outlined in **Table 1**).
- Forty-eight choice tasks from a total of 486 possible combinations of attribute levels were selected for inclusion in the DCE via a fractional factorial d-efficient experimental design.

- Two-hundred patients and 150 physicians were included in the DCE analysis.
- Most of the patient participants had GC (72.5%), in line with prior expectations as GC is more prevalent than GEJC in the US. Over two-thirds of the patient participants had received resection surgery at the time of completing the survey (**Table 2**).
- Physician participants reported a mean of 14.6 years experience treating patients with GC/GEJC and 50% of the physicians were oncologists with the remainder either gastric or thoracic surgeons (**Table 2**).

Figure 1: Relative attribute importance (RAI) by sample

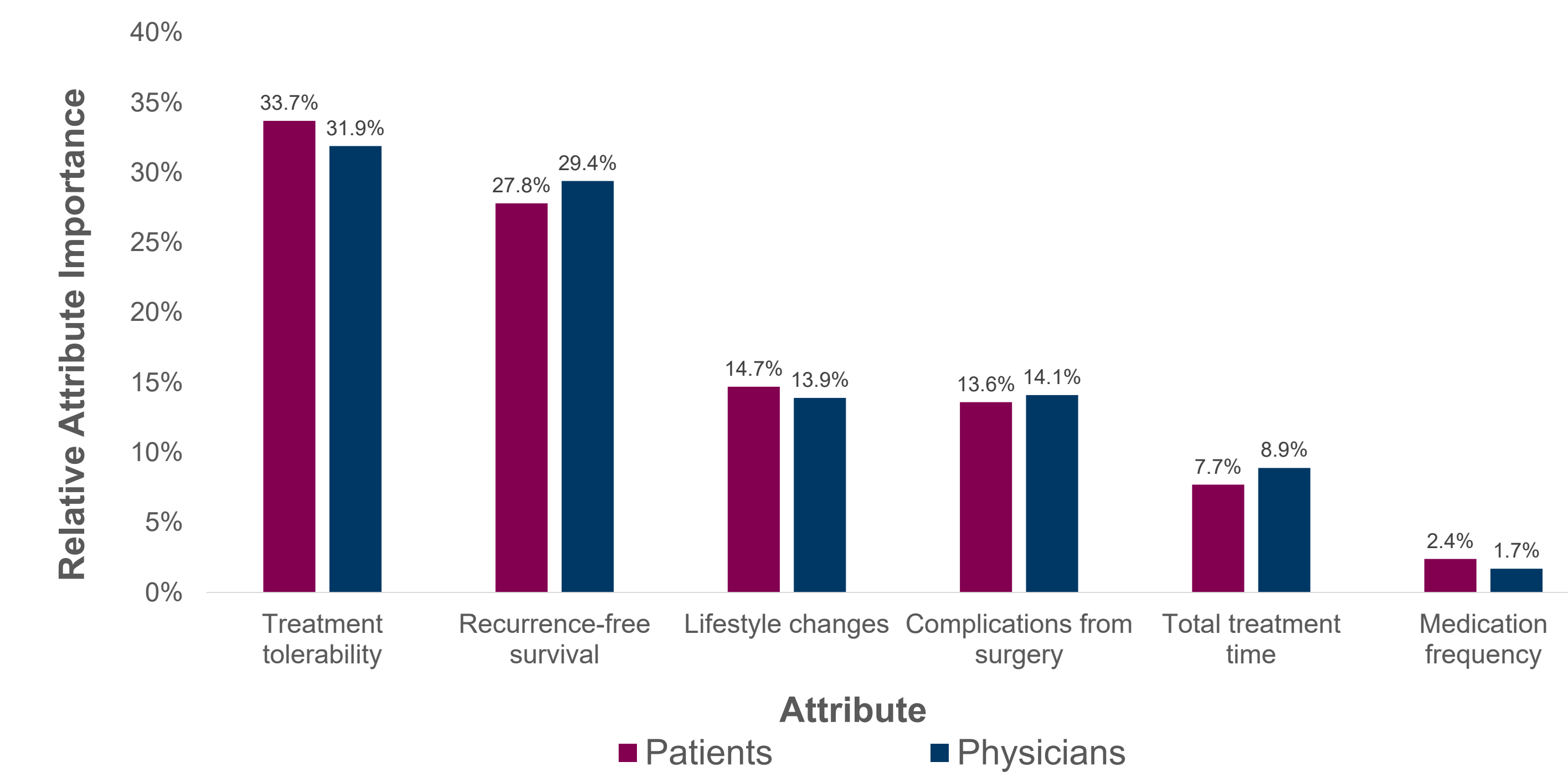


Table 3. Mixed Logit (MXL) model results for patients and physicians

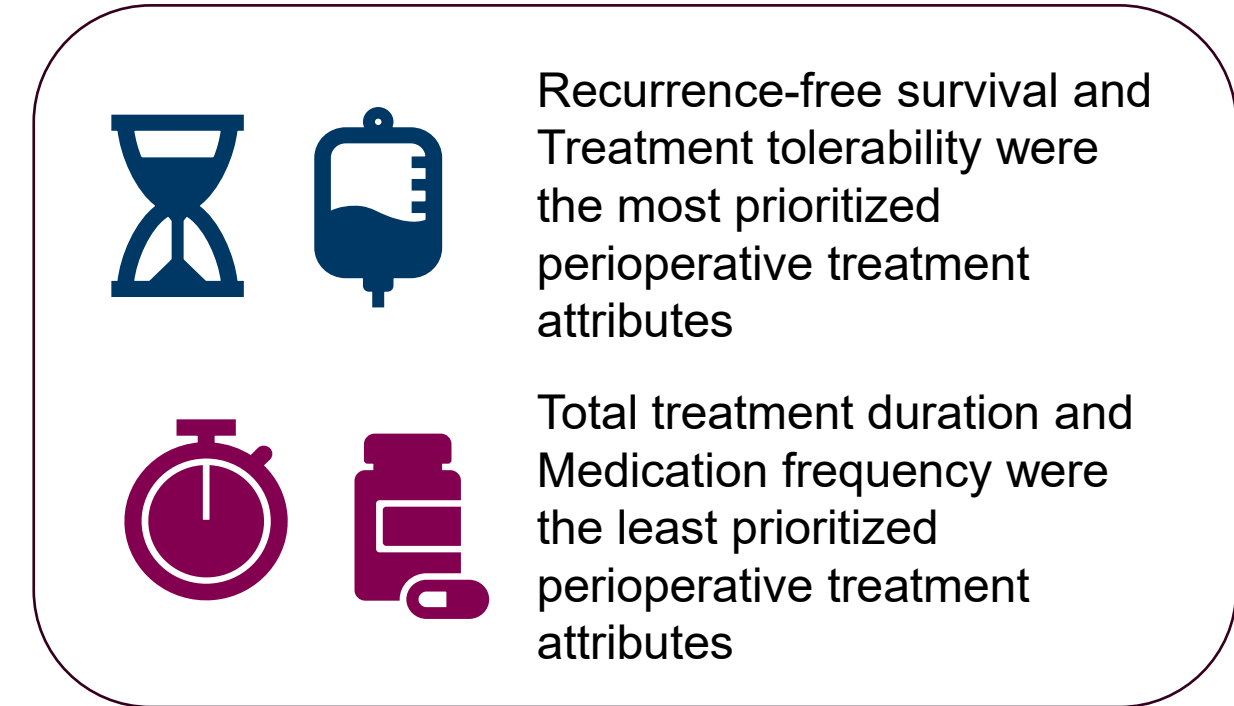
Variable ^a	Patients (N=200)		Physicians (N=150)	
	β^b	η	β^b	η
Recurrence-free survival				
50% survival	-0.651***	-0.325	-0.771***	-0.103
30% survival	-3.336***	1.282***	-3.959***	1.309***
Complications from surgery				
Complications delaying further treatment stages by 1 week	-1.793***	1.146**	-2.085***	0.820***
Treatment tolerability				
Moderate side effects (e.g., significant fatigue, appetite loss, occasional dose delays)	-0.881***	0.017	-0.775***	-0.515
Severe side effects (e.g., pain, hospitalization, treatment discontinuation)	-3.999***	1.901**	-4.329***	2.001***
Lifestyle changes				
Moderate changes	-0.929***	-0.026	-1.060***	-0.042
Significant changes	-1.464***	0.967***	-1.519***	1.407***
Medication frequency				
Weekly	0.165	-0.027	0.068	0.049
Daily	0.238*	0.097	0.223	-0.075
Total treatment time				
4-7 months	-0.013	-0.440*	-0.201	-0.027
17-20 months	-1.007***	1.382***	-1.215***	1.628***

^a The first level for each attribute was adopted as the reference level in the model specification. The reference levels for each attribute are as follows: Recurrence-free survival: 60% survival; Complications from surgery: No complications; Treatment tolerability: mild side effects; Lifestyle changes: no lifestyle changes; Medication frequency: every 2-3 weeks; Total treatment time: 1-3 months. ^b Significance levels: *p < 0.05, **p < 0.01, ***p < 0.001

Table 1: Attributes and levels

Attribute	Level 1 / Reference level	Level 2	Level 3
Recurrence-free survival	6 out of 10 people (60%) survived without their cancer coming back after 3 years	5 out of 10 people (50%) survived without their cancer coming back after 3 years	3 out of 10 people (30%) survived without their cancer coming back after 3 years
Complications from surgery	No complications from surgery so further treatment stages can happen immediately if needed	Complications from surgery (e.g., pneumonia, slow wound healing, site leak)	-
Treatment tolerability	Mild side effects (e.g., fatigue, mild nausea, manageable discomfort)	Moderate side effects (e.g., significant fatigue, appetite loss, occasional dose delays)	Severe side effects (e.g., pain, hospitalization, treatment discontinuation required)
Lifestyle changes	No lifestyle changes required	Moderate changes (e.g. dietary restrictions, no alcohol or tobacco)	Significant changes (e.g., dietary restrictions, no alcohol or tobacco, stopping work, daily exercise, major routine changes)
Medication frequency	Every 2-3 weeks	Weekly	Daily
Total treatment time (including recovery from medication and surgery)	1-3 months	4-7 months	17-20 months

- All attribute levels in the MXL, excluding medication frequency, exhibited disutility in comparison to the reference level, as seen by the negative beta coefficients on each attribute (**Table 3**), for both the patient and physician samples.
- Several standard deviation (η) coefficients in both the patient and the physician MXLs were highly statistically significant; this suggests preference heterogeneity within each sample.
- For most attributes, the standard deviation (η) coefficient for the most severe attribute level was statistically significant, suggesting there was some variation in preferences among participants for the worst level for each attribute (excluding medication frequency).



- Amongst both patients and physicians, treatment tolerability and recurrence-free survival (RFS) were considered the most important (**Figure 1**). For these attributes, the most severe levels (i.e., 30% RFS and severe side effects leading to treatment discontinuation) were key drivers in decision-making (**Table 3**).
- Patients preferred treatment tolerability (RAI 33.7%) and lifestyle changes (RAI 14.7%) slightly more than physicians (treatment tolerability: RAI 31.9%; lifestyle changes: RAI 13.9%) (**Figure 1**).
- Attribute non-attendance was assessed for the medication frequency attribute which was the only attribute in the DCE results not to show any disutility in the MXL. The results of this assessment were consistent with attribute non-attendance for the medication frequency attribute, suggesting that medication frequency had limited influence of participants' perioperative treatment choices in this study.

Acknowledgements

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Disclosures

Vishal Patel and Anuj Shah are employees of AstraZeneca PLC. William King, Sarah Hill, and Yemi Oluboyede are employees of Inizio Ignite Putnam. AstraZeneca PLC funded the research reported in this poster which was conducted by Inizio Ignite Putnam.

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