Cure vs. toxicity: Quantifying preferences for non-surgical management of rectal cancer using a discrete choice experiment

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Purpose There is clinical interest in non-surgical management of rectal cancer using higher radiation doses than standard, which entails a trade-off between increased chance of cure and increased risk of toxicity. This study is the first to quantify patient preferences for non-surgical management of rectal cancer, including the cure/toxicity trade-off.

Methods A discrete choice experiment (DCE) was developed with qualitative input and included the attributes: treatment length (4/5/6 weeks); chance of being cancer free two years post-treatment (50/55/60%); side effect risk during treatment (25/30/35%); side effect risk two years post-treatment (5/10/20%) and support available (usual GP/dedicated nurse). The DCE had a Bayesian D-efficient design with four blocks of 10 questions each and was administered to UK rectal cancer patients prior to starting non-surgical treatment. An interim analysis used a latent class model with two preference classes.

Results There were 38 participants, 47.4% of whom were female. Their average age was 66.6 years (range 41-82 years). The first preference class had a 74.3% class membership probability. There were no significant preferences for treatment length or support, but the model

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coefficients for being cancer free and side effects were statistically significant at the 5%-level. Long-term side effects were more important than short-term. For every 1 percentage point (pp) increase in their chance of being cancer free after two years, participants were willing to accept an extra 5.2 pp risk of short-term side effects, but only a 1.6pp higher risk of long-term side effects. In the second preference class (25.7% class-membership probability), decisions were dominated by the availability of support, with a preference for a dedicated nurse over participants' usual GP the only significant coefficient.

Conclusions Most participants were prepared to accept extra toxicity risks in exchange for a better chance of cure, showing the acceptability of non-surgical management approaches with higher radiation doses. However, participants were more concerned about long-term than short-term side effects. Informing patient decision-making at the time of choosing treatment thus requires follow-up data on long-term toxicity and patient-reported outcomes. For a minority of patients, the care-toxicity trade-off was relatively unimportant, but they had a strong preference for dedicated support. This is the first study of its kind in rectal cancer, and the results will aid clinical practice to better align with patient preferences.

Keywords: Rectal cancer; patient preference; discrete choice experiment; latent class; radiotherapy; non-surgical management

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Commented [EH8]: Statistically significant?

Commented [ds9]: May just be me, but I prefer to see % rather then pp

Commented [AA10R9]: I think there is a risk of misunderstanding when using %, so I'd support keeping percentage points

Commented [EW11R9]: Technically % would be incorrect.

Commented [AG12]: So interesting! :)
DSM - agree!

Commented [AA13R12]: Yep!

Commented [EH14]: Can see you want to shorten but if space perhaps for clarity may need re-iterate the comparison, i.e. for the same 1pp increase

Commented [EH15]: Given fairly small sample size, perhaps worth mentioning number of patients here is it 8,9?

A little confused by this percent, 8/37 = 21.6%
9/37 = 24.3%

With such small number in group, I imagine that's why coefficients were significant

Commented [EW16R15]: It's really probability of being in the class rather than the size of the group – have changed the wording to be more accurate.

Commented [AA17]: Again, you could consider emphasising the uniqueness of your study / your data here – if you have the space