

Determinants of Willingness to Pay Thresholds in NICE Oncology Technology Appraisals

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Objective

To explore determinants of willingness to pay threshold (WTPT) selection in recent NICE oncology appraisals, including the influence of uncertainty, uncaptured benefits and non-health factors.

Background

- NICE typically use a WTPT of £20,000–£30,000/quality-adjusted life year (QALY) as a benchmark when assessing the cost-effectiveness of novel interventions.
- When the incremental cost-effectiveness ratio (ICER) is >£20,000/QALY, NICE committees consider several factors when selecting an appropriate WTPT. These include: the degree of uncertainty around the ICER, whether there are any uncaptured benefits/non-health factors associated with an intervention and health inequalities.¹ NICE committees may accept a greater degree of uncertainty in circumstances where evidence generation is particularly difficult due to small population sizes, paediatric patient populations or highly complex innovative interventions.¹

Methods

- The NICE website was searched on 11 June 2025 to identify all oncology technology appraisals with final draft guidance (FDG) published since 01 January 2023. Appraisals falling outside of the standard NICE STA (single technology appraisal) procedure were excluded.^a
- The WTPT selected by the Committee and the accompanying rationale were extracted from final draft guidance documents.

Results

- WTPTs were set at £20,000/QALY for 12/65 (18%), £25,000/QALY for 16/65 (25%) and £30,000/QALY for 21/65 (32%) appraisals. No specific WTPT was stated for 14/65 (22%) appraisals.^b The proportion of appraisals with specified WTPTs increased over time (Figure 1).
- Factors specifically acknowledged as contributing to WTPT decision-making included level of uncertainty (see below), high unmet need (23/65 [35%]), benefits not captured in the QALY calculation (17/65 [26%]) and difficulties generating robust evidence due to small population sizes (4/65 [6%]).

Quantification of uncertainty

- The committee did not explicitly quantify overall uncertainty in 34/65 (52%) of appraisals, and quantified overall uncertainty as 'high' in 25/65 (38%) appraisals. These proportions were consistent over time (Figure 1). Uncertainty was rarely classified as 'low' (one appraisal), but low overall uncertainty was implied in 5/65 (8%) appraisals.
- Sources of uncertainty were discussed in detail in the 'acceptable ICER' section of 60/65 (92%) appraisals. Sources of uncertainty were diverse, and there were no clear differences in the frequency of six key uncertainty drivers across appraisals with high overall uncertainty versus unclassified overall uncertainty: 1) reliance on an indirect treatment comparison (ITC) for comparative effectiveness estimates, 2) substantial uncertainty in ITC estimates due to methodological issues or wide confidence intervals, 3) data immaturity, 4) other survival modelling uncertainties (commonly around cure assumptions or treatment waning approaches), 5) generalisability concerns and 6) choice of utility values (Figure 2).
- The mean number of uncertainty categories acknowledged as contributing to uncertainty was also similar across high and unclassified appraisals: 3.1 (median: 3; range: 3) and 2.4 (median: 2; range: 5), respectively.

Factors affecting WTPT

- WTPTs were set at £30,000/QALY for a lower proportion of appraisals with high overall uncertainty (4/19 [21%]) compared with appraisals with low (4/5 [80%]) or unclassified (13/25 [52%]) overall uncertainty (Figure 3).
- All four appraisals with high overall uncertainty and a £30,000/QALY WTPT cited at least one mitigating factor (uncaptured benefits, high unmet need or difficulties with evidence generation) as contributing to WTPT decision-making, and three appraisals cited two mitigating factors, suggesting that the presence of mitigating factors may lead committees to select higher WTPTs despite high uncertainty.
- However, of the seven appraisals with high overall uncertainty in which committees selected £20,000/QALY WTPTs, three (43%) cited one mitigating factor as contributing to WTPT decision making, and one (14%) cited two mitigating factors.

Conclusion

Reporting of specific WTPTs increased over time. Overall uncertainty was not specifically classified in the majority of appraisals, and while overall uncertainty was classified as high in a substantial proportion of appraisals it is unclear how this determination was made. Among appraisals with a specified WTPT, high overall uncertainty was typically associated with lower WTPTs. However, higher WTPTs could be selected in high overall uncertainty appraisals where mitigating factors including unmet need or uncaptured benefits were accepted by the Committee. The impact of these factors on the WTPT appears to be inconsistent however, with lower WTPTs sometimes selected despite acknowledgement of mitigating factors.

FIGURE 1

Percentage of appraisals with specified WTPTs and unclassified or high overall uncertainty over time

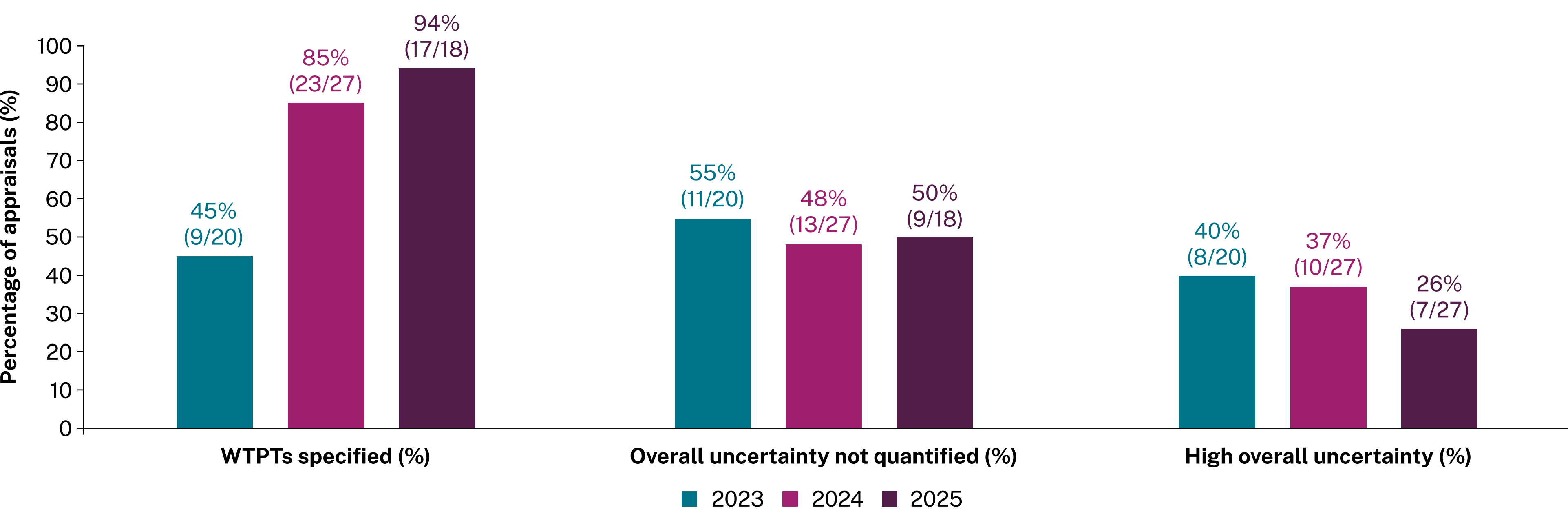


FIGURE 2

Drivers of uncertainty in high and unclassified overall uncertainty appraisals^c

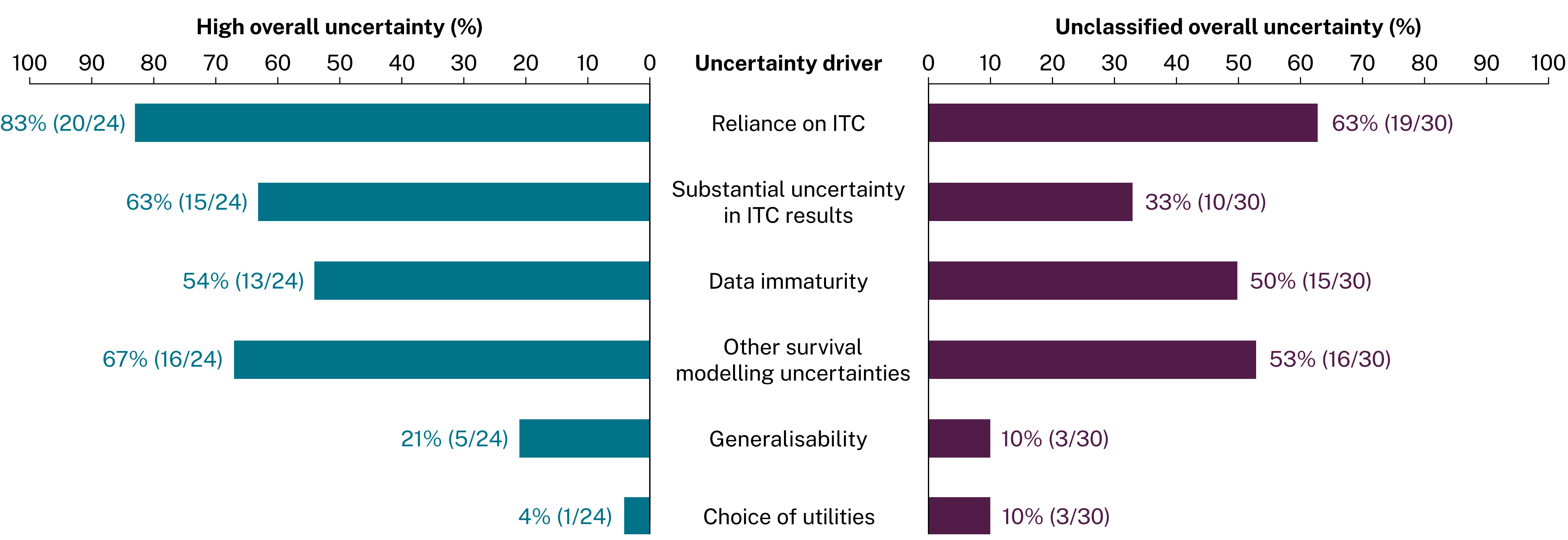
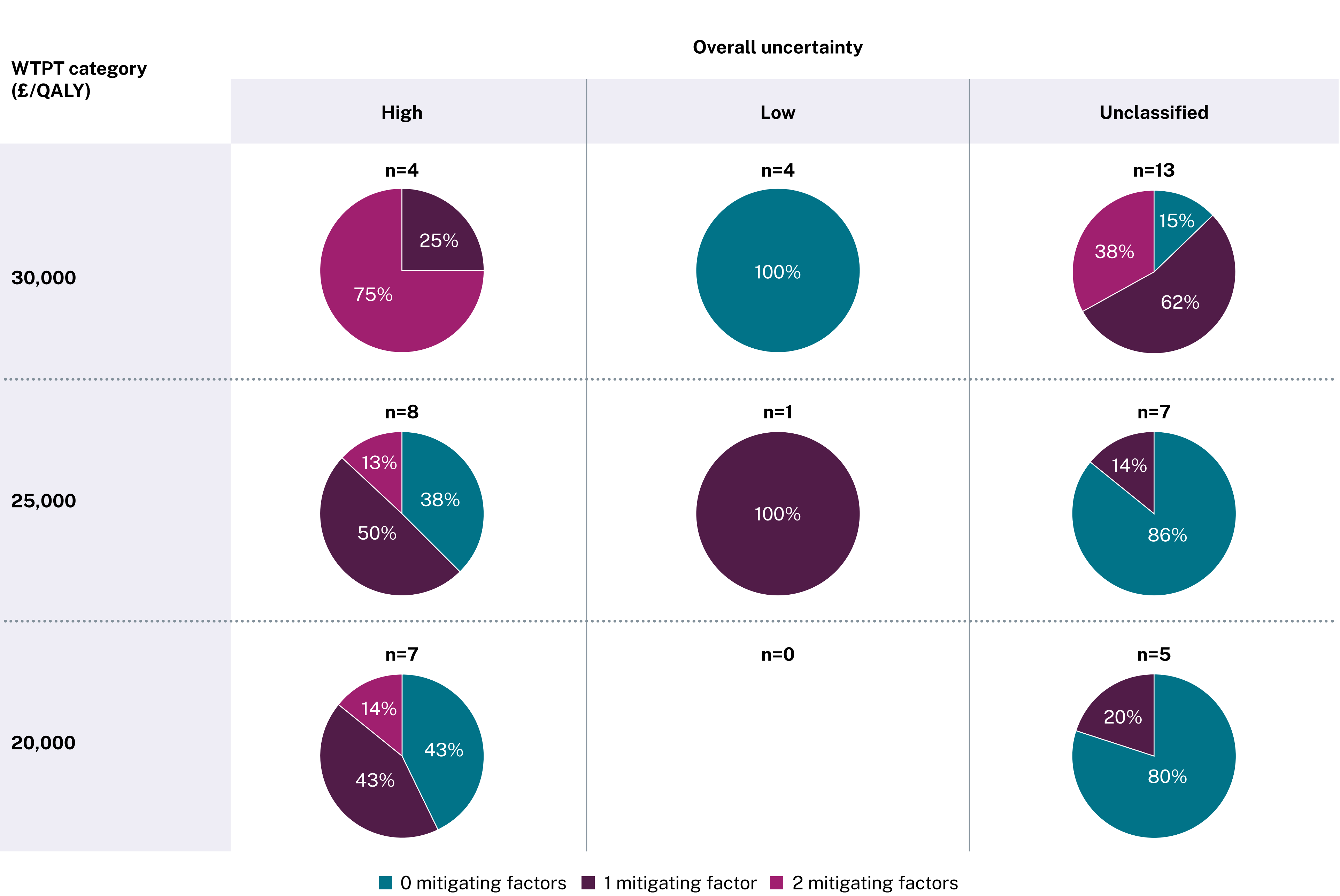


FIGURE 3

Impact of overall uncertainty and mitigating factors on WTPTs in TAs with a specified WTPT (n=49)



^aCost comparison appraisals (n=5), and appraisals involving managed access or former end of life criteria (n=6 and n=8 respectively) were excluded. Appraisals in which the intervention was dominant and the selection of a specific WTPT was therefore not required (n=2) were also excluded, and one appraisal was excluded due to being replaced by a more recent appraisal. ^bNo WTPT was required for 2/65 (3%) appraisals as all ICERs were comfortably below £20,000/QALY. ^cAmong appraisals which discussed uncertainty in detail in the 'acceptable ICER section'.

Abbreviations: FDG: final draft guidance; ICER: incremental cost-effectiveness ratio; ISPOR: International Society for Pharmacoeconomics and Outcomes Research; ITC: indirect treatment comparison; NICE: National Institute for Health and Care Excellence; QALY: quality-adjusted life year; STA: single technology appraisal; UK: United Kingdom; WTPT: willingness-to-pay threshold.
References: ¹National Institute for Health and Care Excellence (NICE). National Institute for Health and Care Excellence (NICE). NICE health technology evaluations: the manual. [PMG36]. 2023. Available at: <https://www.nice.org.uk/process/pmg36/resources/nice-health-technology-evaluations-the-manual-pdf-72286779244741>. (Last accessed: 18/08/25). **Acknowledgements:** The authors would like to acknowledge Philippa Murphy, Gavin Stewart, Olivia O'Byrne and Andrei Georgescu of AstraZeneca, UK for their contribution and strategic oversight of this work. The authors thank Amie Ennew and Brenda Ow Yong, Costello Medical, for graphic design assistance. We also thank Naman Kochar for his contributions.