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Does Modelling Adherence Matter? Insights From Prior NICE Appraisals

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Objective

A review of health technology assessment (HTA) appraisals was conducted to examine approaches to modelling adherence, and criticism by assessors.

Background

- Without treatment adherence, likelihood of clinical benefit diminishes significantly. Adherence can substantially influence treatment outcomes and thus has important implications for cost-effectiveness.
- Adherence can be modelled in cost-effectiveness models via dose adjustment, based on trial or real-world data.

Methods

- All National Institute of Health and Care Excellence (NICE) appraisals with published final guidance between May 2024 and May 2025 were reviewed. Appraisals that had been updated, but the cost-effectiveness analysis had not, were excluded.
- Information on treatment adherence modelling methods and critique from External Assessment Groups (EAG) and Committees was extracted from the appraisals.

Results

- There were 72 NICE appraisals identified that met the inclusion criteria, presented in **Figure 1**.
  - Adherence was reported from pivotal trial data in the clinical section of the submission in 34 appraisals, four of which did not explicitly model adherence within the model.
  - The cost-effectiveness analysis modelled reduced adherence for either the intervention or comparator in 29 appraisals. There were nine appraisals that explicitly reported an assumption of 100% adherence across all modelled treatments as presented in **Figure 3A**.
  - There were 34 appraisals that did not report on modelling adherence within the submission, of which four received assessor criticism, as presented in **Figure 2**. On three occasions, the manufacturers argued that the higher intervention compliance rates justified modelling full adherence as a conservative assumption.
  - Methods of modelling adherence were presented in **Figure 3A**. Adherence was modeled solely through dose adjustment, most commonly via relative dose intensity (RDI) (n=23) but also via compliance rate (n=3), dosing adherence (n=1), overall dose modifier (n=1) and dose intensity (n=1). Models were not available to be reviewed as part of this analysis and so some of these methods could be describing the same approach.
- When adherence was reported as a key driver of results (n=10), assessors criticised the inclusion of adherence modelling in over half of these appraisals (n=7).
  - The most frequent criticisms included inconsistent application of adherence across treatments (n=4), preference for an alternative source of adherence (n=2), or concern about using dose intensity versus dose skipping data (n=1).
  - Data were redacted in many other appraisals (n=10), and thus we were unable to determine if adherence was a key driver.
- When adherence was modelled, inclusion was discussed in Committee meetings as key issue (n=5) or a minor criticism (n=2). On five occasions adherence was mentioned within the Committee meeting, however was not raised as a key issue or minor criticism as presented in **Figure 3B**. There were four occasions where adherence appears to have been discussed by the Committee (based on the public meeting slides), but no Committee discussion was included within the NICE guidance.
- Committee preferred assumptions from all appraisals are presented in **Figure 3B**.
  - Preferences for alternative adherence sources or assumptions (n=6), inconsistent application of adherence between treatments (n=2) or concerns over using dose intensity versus dose skipping (n=2) were raised by Committees.

Conclusion

Adherence is an underreported outcome in HTA dossiers and economic modelling. When directly modelled, it is often only through cost impact. Given drug costs are frequently a major contributor to results, it can be a key driver and subject to criticism. Therefore, care should be taken when modelling adherence impact on cost, ensuring the most appropriate source and definition of adherence is used for all treatments within the model, considering the efficacy source being utilised.

FIGURE 1

Was adherence included in the model?

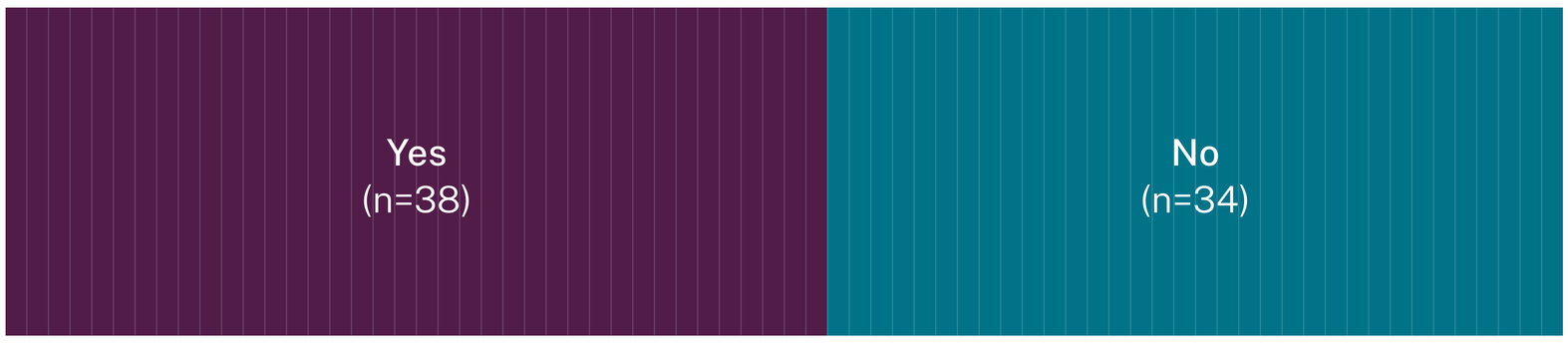


FIGURE 2

When adherence was not included, was this criticised by the EAG?

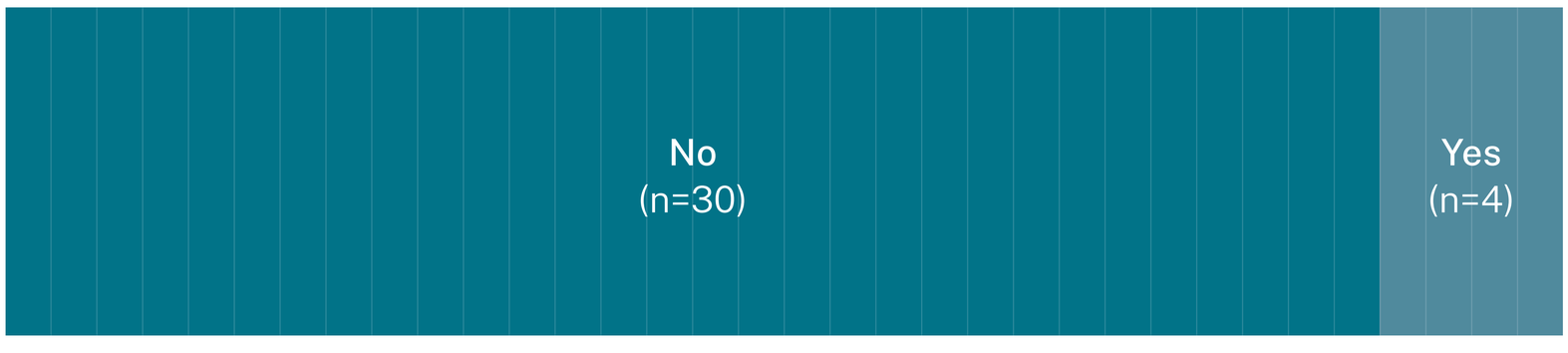
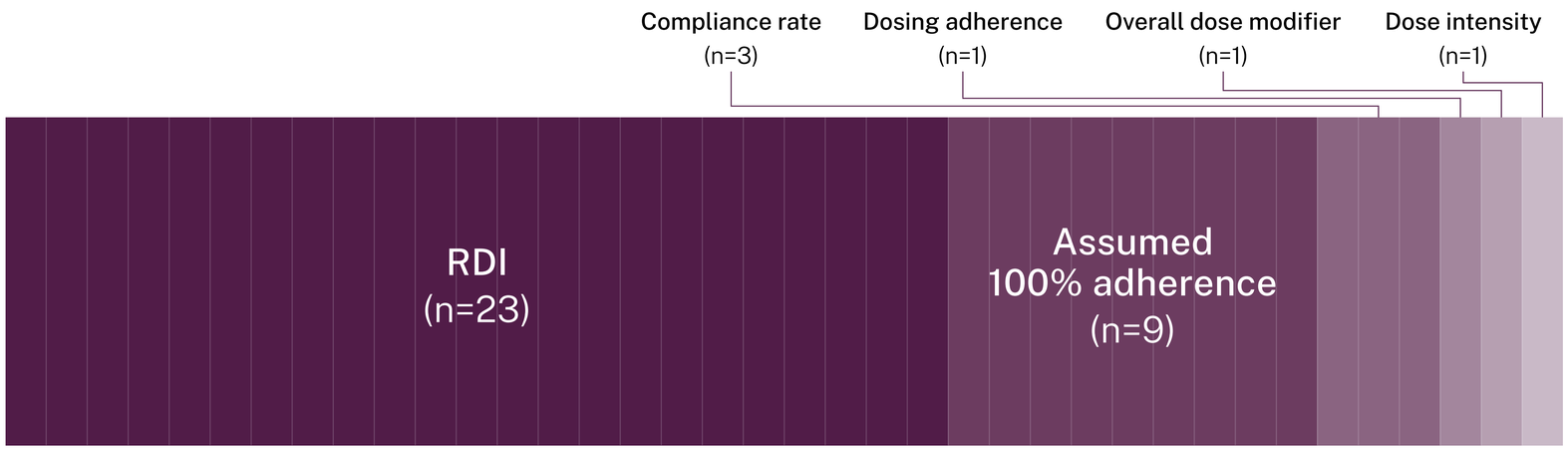


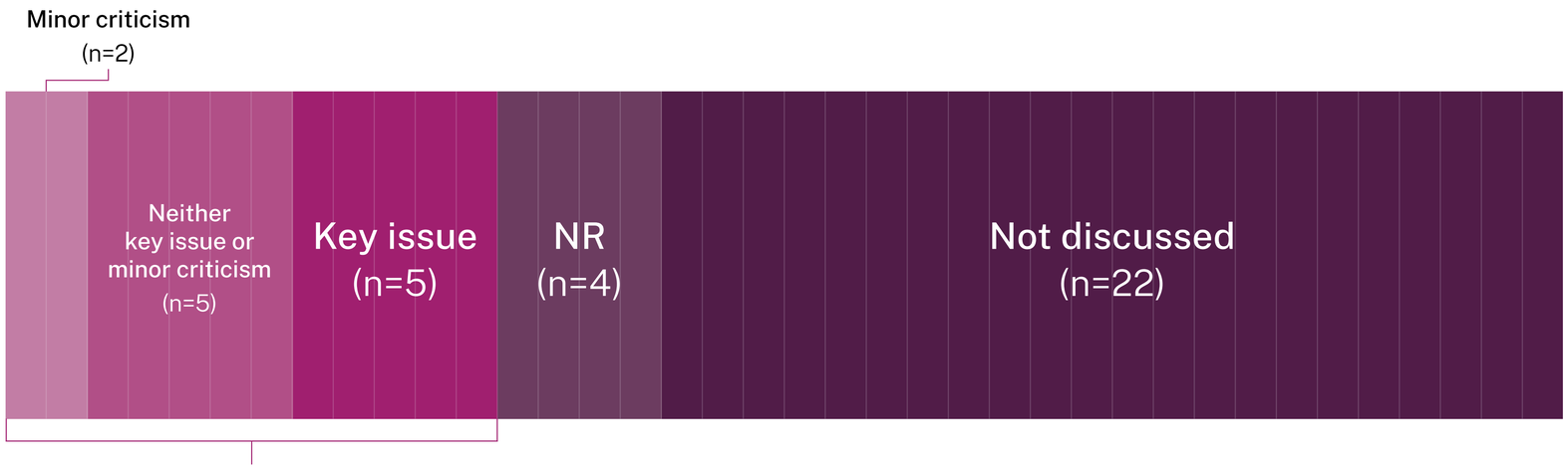
FIGURE 3

When adherence was included in the model, how was it included and what were Commitee preferences?

A. How was adherence modelled?



B. Was modelled adherence discussed in the Committee meeting?



C. What were NICE Commitee preferred assumptions?

Abbreviations: EAG: External Assesment Groups; **HTA:** health technology assessment; **NICE:** National Institute of Health and Care Excellence; **NR:** not reported; **RDI:** relative dose intensity.

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