Methodological Insights on Indirect Treatment Comparisons for Ulcerative Colitis Therapies in NICE Submissions

MSR101

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INTRODUCTION

Evidence-based health care decision making relies on comprehensively comparing all the relevant competing interventions. When randomized controlled trials involving a direct comparison of these treatments are limited, indirect treatment comparisons (ITC) provide useful evidence in selecting the best choice(s) of treatments.[1]

There are several advanced therapies (i.e., administered after failure of conventional treatments) available for the treatment of ulcerative colitis (UC). However, due to the implausibility of direct comparisons, ITC methods are used to assess the relative effectiveness of different interventions.[2]

OBJECTIVE

The objective of the study was to review and critique methodologies used in the ITC of advanced therapies in UC submitted to the National Institute of Health and Care Excellence (NICE).

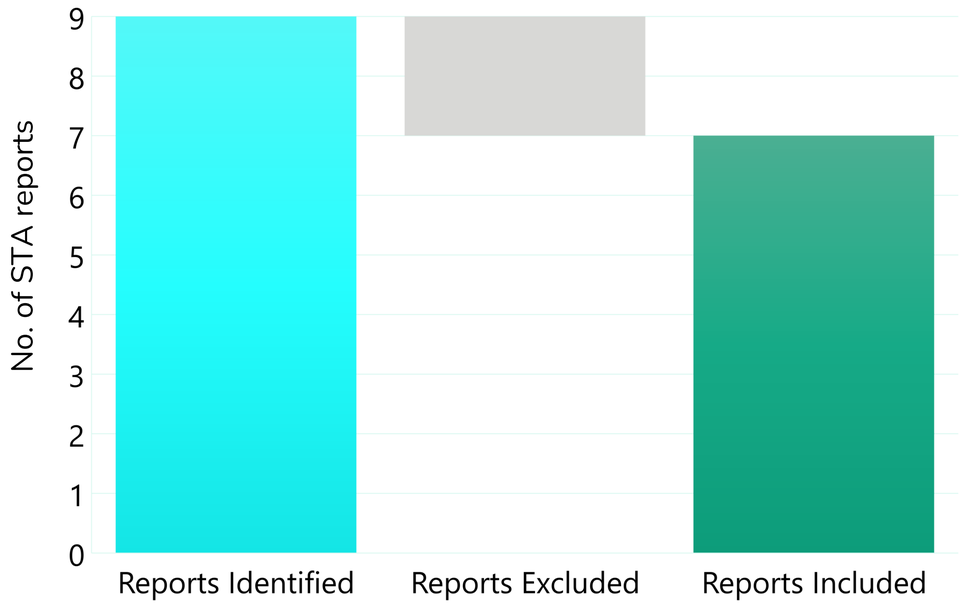
METHODS

We reviewed single technology appraisals (STAs) published by NICE on advanced therapies for UC in the last 15 years (January 2008 to May 2023). Both company submission and Evidence Review Group (ERG) reports were identified.

Information on the approaches used for ITC, their methodology and limitations were extracted. Data were extracted by one reviewer, followed by a quality check by another reviewer to ensure accuracy.

RESULTS

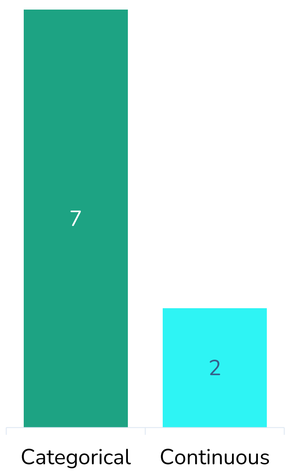
A total of 9 STAs were identified, of which two were excluded (one terminated appraisal and one did not match the population of interest)



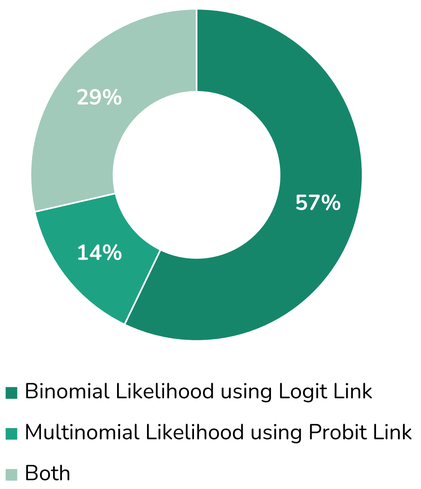
The included STAs of UC therapies covered **upadacitinib, ozanimod, filgotinib, ustekinumab, tofacitinib, vedolizumab** and **anti-TNF agents**.

- NMA was considered as an ITC approach in all the appraisals (n=7).
- In each submission, multiple NMAs were conducted for the induction and maintenance phase and for both biologic-naïve and biologic-pretreated patients.
- All NMAs used both fixed effects and random effects models for the estimation.

Type of outcomes modelled (no. of STAs)



Type of model used for categorical outcomes



Type of model used for continuous outcomes

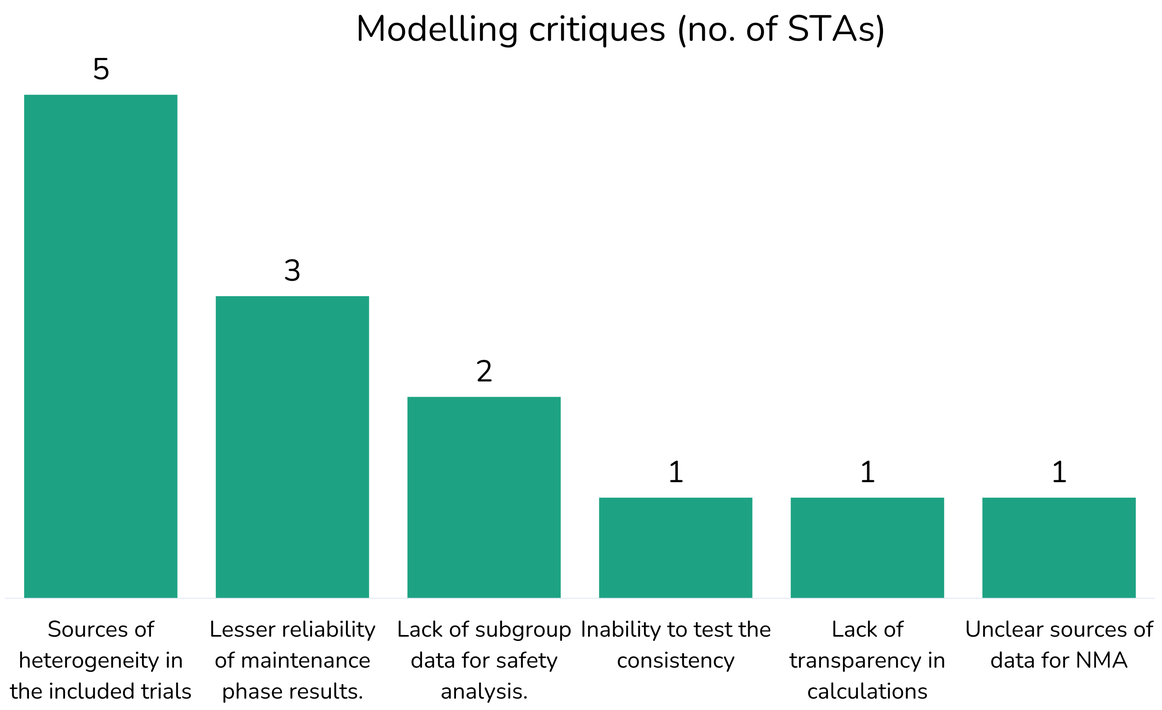
NMA was the only method used for ITC for UC therapies. Potential reason for the preference of ITC could be that MAIC and STC are used specifically in a two-study indirect comparison scenario, whereas in each of these submissions, multiple therapies were compared.

RESULTS cont.

Deviance Information Criteria (DIC), leverage plots and density plots of posterior standard deviation were the metrics used to make a choice between Random Effects and Fixed Effects model.

WinBUGS and **JAGS (Just Another Gibbs Sampler)** were the software utilized for analysis in the Bayesian Framework.
Data manipulation was carried out using **R.**

NMA was predominantly used as an ITC approach in all the appraisals and the use of novel techniques like matching-adjusted indirect comparison (**MAIC**) and simulated treatment comparison (**STC**) was absent



The most cited modelling critiques for the ITC methodologies amongst all were **sources of heterogeneity in the included trials, lesser reliability of maintenance phase results and the lack of subgroup data for safety analysis.**

The highlighted critiques emphasize the need for adherence to the existing methods and guidelines to ensure robust and reliable ITC assessment in the evaluation of UC therapies.

References

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2. Panaccione R, et al. Crohn's Colitis 360. 2023;5(2):otad009
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4. Ozanimod NICE STA [TA828].
5. Filgotinib NICE STA [TA792].
6. Ustekinumab NICE STA [TA633].
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9. Infliximab, Adalimumab, Golimumab NICE STA [TA329].

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