RETINAL PIONEERS
Poster series

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Real-world service costs for neovascular-AMD clinics in the United Kingdom: structured literature review and scenario analysis

INTRODUCTION

- With age a key risk factor for nAMD, the ageing population in the UK means that the **prevalence** of nAMD, and the subsequent demand for care, will continue to **increase**.[1]
- HTA guidance makes recommendations on the use of new and existing medicines and other treatments within the NHS and are based on a review of **clinical evidence** and **cost effectiveness**.[2]
- Whilst NICE acknowledges **service costs** may influence cost-effectiveness of a drug, HTA assumes that non-drug health service costs in nAMD **are similar between treatments**.[3] Therefore, current cost-effective analyses focus on **drug acquisition costs** to differentiate NICE-recommended anti-VEGF treatments.[4]
- This study identified **real-world service costs** relevant to UK NHS nAMD clinics, particularly those arising from clinics under **operational strain**.[4]
- In this context, "**strain**" occurs when demand for resources (which includes space, staff and consumables) exceeds capacity.[4]

METHODS

A **mixed method approach** was utilised[2]

1 Real-world costs of running an NHS nAMD treatment and monitoring service identified

Jandhyala method for evidence identification via a structured review of peer-reviewed and grey literature combined with expert opinion comprising 10 UK-based ophthalmologists

2 Ecological validity of current HTA costs lists determined

The extent to which the findings of the study can be applied to real-world NHS retina clinics, as opposed to idealised or theoretical settings (includes neutrality analysis)

3 Impact of accounting for cost of operational strain determined

A hypothetical scenario analysis was used to determine the impact of operational strain (it was assumed that healthcare resource utilisation would increase by 50% under these conditions).

To assess clinic cost burden, the analysis was conducted using both minimum and maximum estimates of HTA costs over a 1-year time horizon

Two hypothetical nAMD anti-VEGF treatments were compared:

Drug 1 (D1): A cheaper generic requiring more frequent injections and monitoring visits

Drug 2 (D2): A more expensive standard therapy with fewer injections and monitoring visits

RESULTS

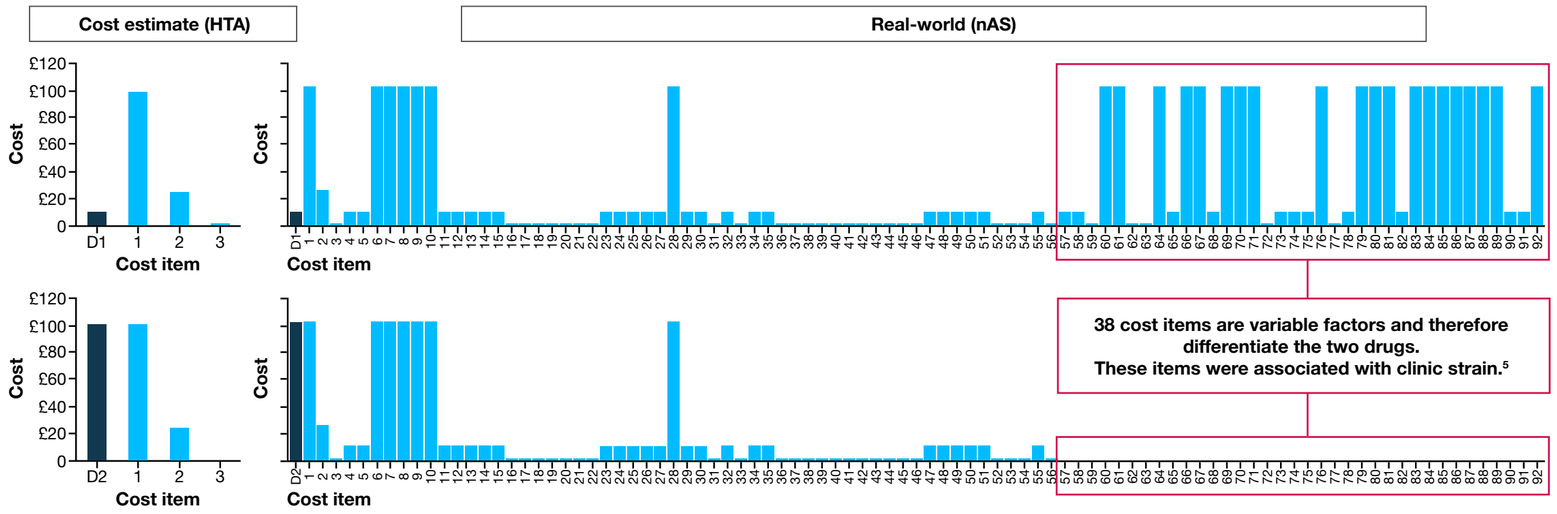
A total of **217 cost items** were identified as a real-world NHS nAMD treatment and monitoring service cost burden in the UK and were used as the reference standard (nAS). These cost items included drug acquisition costs, direct medical costs, indirect costs and additional costs related to strain.[4]

Costs due to **strain** on the clinic, which could include overtime pay for staff, additional resources required to manage a high volume of patients, delays in patient care etc, were the **key differentiator between the two drugs** in the hypothetical scenario analysis (please see graph below), influencing the overall cost of drugs and subsequently their **cost-effectiveness**.[4,5]

In this hypothetical scenario analysis, **Drug 2 (D2) was the cheaper option under strain conditions than Drug 1 (D1), despite having a higher initial cost**. This was due to D2 having **longer durability than D1**, which resulted in a lower frequency of injections and monitoring visits and meant that the additional costs of operating under strain were reduced.[4]

Costs such as direct medical costs associated with the treatment (e.g. cost of diagnostic tests, the cost of medical procedures, the cost of hospital stays, etc.), direct non-medical costs (e.g. travel expenses for patients to get to and from the clinic, or other non-medical costs associated with the treatment), and indirect costs (e.g. cost of lost productivity due to time off work for treatment) remained **comparable between the two drugs**.[4,5]

Scenario analysis of HTA and real-world cost estimates for two hypothetical anti-VEGF drugs



Anti-VEGF drug acquisition cost
Non-anti-VEGF drug acquisition cost

Drug 1 (D1): A cheaper generic requiring more frequent injections and monitoring visits
Drug 2 (D2): A more expensive standard therapy with fewer injections and monitoring visits

Adapted from Sivaprasad *et al*. 2024.

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AI, artificial intelligence; AMD, age-related macular degeneration; HTA, health technology assessments; NHS, National Health Service; nAS, nAMD Service Non-Drug Cost Instrument; NICE, National Institute for Health and Care Excellence; nAMD, neovascular age-related macular degeneration; VEGF, vascular endothelial growth factor.

1. Rahman F *et al. Eye* (Lond) 2020; 34 (7): 1271–1278. **2.** NICE. Technology appraisal guidance. Available at: https://www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-technology-appraisal-guidance. Accessed December 2024. **3.** NICE. High-dose aflibercept for treating wet age-related macular degeneration TS ID 10590. Available at: https://www.nice.org.uk/guidance/topic-selection/gid-ta11133. Accessed December 2024. **4.** Sivaprasad S *et al. Curr Med Res Opin* 2024; 40 (7): 1221–1233. **5.** Sivaprasad S *et al. Curr Med Res Opin* 2024; 40 (7): 1221–1233 (supplement).

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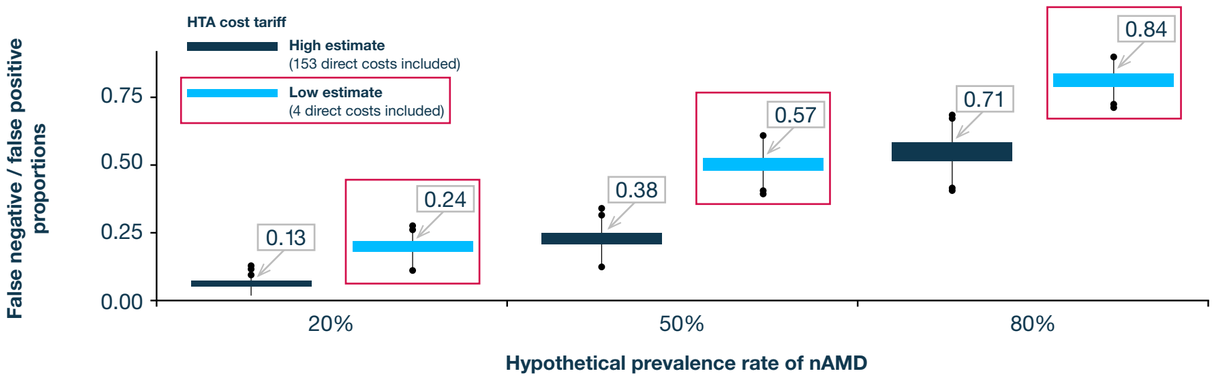
Ecological validity assessments showed that HTA tariffs **fail to capture** many relevant real-world NHS nAMD service costs, and the minimum HTA estimate is more likely than the maximum HTA estimate to potentially misclassify a 'costly' clinic as a 'non-costly' clinic as nAMD prevalence increases (please see graph below)[4]

Likelihood of underestimating clinic cost burden



Adapted from Sivaprasad *et al*. 2024.

HTA estimates of non-drug costs of nAMD anti-VEGF treatments are based upon **per-patient annual administration and monitoring visit frequency**, but this does not accurately reflect actual service costs due to **clinic capacity limits**.[4]

This hypothetical scenario analysis shows HTA estimates substantially **underestimate** the real-world costs of running an nAMD clinic (please see graph below)[4]

Annual per-patient NHS nAMD non-drug clinic cost burden

Adapted from Sivaprasad *et al*. 2024.

LIMITATIONS

- The ability of the study to predict the impact of cost of strain on cost-effectiveness, based on estimated cost magnitudes, was restricted by the **lack of cost value data in the literature**.[4]
- Cost of strain was only considered from a **healthcare clinic perspective**, and did not include the cost magnitude of strain to **patients, caregivers, and society**.[4] Therefore, the potential cost savings arising from treatment durability may not have been fully captured.
- The hypothetical scenario depicting strain was chosen based on **anecdotal evidence** and **might vary across retina clinics**.[4]
- An increase of 50% was used as a benchmark, enabling readers to extrapolate resource usage across different levels of increased consumption.[4]
- The study context is explicitly **focused on the UK**, as all the experts involved were recruited from UK ophthalmology centres.[4]
- **Durability alone may not be the only solution for undertreatment due to strain. Service innovation** such as utilisation of AI to aid decision making and digitally-enabled remote services may free up availability of resources.[4]

CONCLUSIONS

HTA tariffs used to calculate service costs may not be representative of the actual cost of running a clinic – accurate cost-effectiveness analysis requires real-world cost data.[4]

Based on the hypothetical scenario, the cost of strain which is a major issue in the current UK NHS ophthalmology practice, could significantly differentiate anti-VEGF treatments in terms of cost-effectiveness and these wider costs of running a nAMD service clinic must be considered.[4]

Increasing drug durability is suggested as one of the important factors for maintaining robust UK ophthalmology services under current limited capacity conditions[4] and alongside effective workforce planning, could be key in reducing demand of services to manageable levels.[4]

To read more and access the full paper, please click here.

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