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Methodology

The Evolving Nature of Health Technology Assessment: A Critical Appraisal of NICE's New Methods Manual

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ABSTRACT

Objectives: The National Institute for Health and Care Excellence (NICE) recently completed a review of its methods for health technology assessment, involving a 2-stage public consultation. We appraise proposed methodological changes and analyze key decisions.

Methods: We categorize all changes proposed in the first consultation as "critical," "moderate" or "limited" updates, considering the importance of the topic and the degree of change or the level of reinforcement. Proposals were followed through the review process, for their inclusion, exclusion, or amendment in the second consultation and the new manual.

Results: The end-of-life value modifier was replaced with a new "disease severity" modifier and other potential modifiers were rejected. The usefulness of a comprehensive evidence base was emphasized, clarifying when nonrandomized studies can be used, with further guidance on "real-world" evidence developed separately. A greater degree of uncertainty was accepted in circumstances when evidence generation raised challenges, in particular for children, rare diseases, and innovative technologies. For some topics, such as health inequality, discounting, unrelated healthcare costs, and value of information, significant changes were possibly warranted, but NICE decided not to make any revisions at present.

Conclusion: Most of the changes to NICE's health technology assessment methods are appropriate and modest in impact. Nevertheless, some decisions were not well justified and further research is needed on several topics, including investigation of societal preferences. Ultimately, NICE's role of protecting National Health Services resources for valuable interventions that can contribute toward improving overall population health must be safeguarded, without accepting weaker evidence.

Keywords: Health Technology Assessment (HTA), National Institute for Health and Care Excellence (NICE), NHS England, technology evaluation, economic evaluation, methods development.

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Introduction

The National Institute for Health and Care Excellence (NICE), the national Health Technology Assessment (HTA) body in England and Wales, acts as a role model organization for the production of evidence-based guidance for health, public health, and social care practitioners. Many countries consider NICE's health technology evaluation (HTE) decisions to inform their own funding decisions, whereas others adopt or adapt NICE's methods in their jurisdictions.[1,2] By issuing recommendations to National Health Services (NHS) for which healthcare interventions to fund, NICE remains under extensive public scrutiny given its pivotal role in patient access. Therefore, NICE's update of its HTE methods after nearly 9 years represents an important development for all healthcare stakeholders and decision makers, both in the United Kingdom and abroad.

In July 2019, NICE commenced a review of its methods including a 2-stage public consultation.[3-5] The rationale was to ensure its methods "remain cutting edge and future proof" and to "support the attractiveness of the United Kingdom as a first-launch country" for innovative health technologies,[4] by ensuring fair and predictable evaluations, while sustaining its "world leading reputation."[6]

In November 2020, NICE published "the case for change" document in parallel with a 6-week consultation process[3,4] detailing the evidence and considerations to change the methods of its 4 HTE programmes, which are, namely: the Technology Appraisals Programme, the Highly Specialized Technologies (HST) Programme, the Medical Technologies Evaluation Programme, and the Diagnostics Assessment Programme. The "case for change" listed 56 proposals for changes to NICE's assessment methods falling under 5 themes: "Valuing the benefits of health technologies," "Understanding and improving the evidence base," "Structured decision making," "Challenging technologies conditions and evaluations," and "Aligning methods across programs" (Appendix Table 1 in Supplemental Materials found at https://doi.org/10.1

016/j.jval.2023.05.015). This first consultation on methods was complemented by separate initial consultations on changes to NICE's assessment processes and to topic selection.[5] A second consultation round ran from August to October 2021, focusing on more detailed proposals on revising methods, processes, and topic selection for the HTE programmes.[7] The revision to methods, referred to as "proposals for change" included 20 proposals under the 5 original themes.

NICE's newly updated manual for all 4 HTE programmes was published in January 2022,[6,8] combining for first time HTE processes and methods into a single document, accompanied by a topic selection manual. More details on the review process adopted by NICE are provided in the Appendix in Supplemental Materials found at https://doi.org/10.1016/j.jval.2023.05.015.

Here, we focus on the changes to NICE's HTE methods, spanning the 2 consultation rounds and the final manual. In "NICE's Proposed Changes to Its Health Technology Evaluation Methods," we introduce a summary of NICE's most important proposals, in "Analysis of Key Decisions," we categorize proposals and respond to key decisions that we consider of most interest to the HTA community, in "Discussion," we provide a discussion of issues raised, and in "Conclusion," we present concluding remarks.

NICE's Proposed Changes to Its HTE Methods

Overview

In reporting the publication of its new HTE manual, NICE chose to highlight 5 areas in which the evaluation of health technologies will be modified:

1. giving additional weight to health benefits in the most severe diseases (not just for end-of-life [EOL] conditions);
2. adopting new approaches to the evidence considered (eg, "real-world" evidence [RWE]);
3. allowing more flexibility to NICE's appraisal committees in considering uncertainty when it is difficult to generate evidence (eg, pediatric conditions and rare diseases);
4. adopting clearer principles and routing criteria for the HST Programme, and;
5. aligning methods and processes across different types of evaluations.[5]

These areas broadly reflect the 5 themes that NICE presented in the original "case for change" consultation document.[4]

In its short summary of the changes for the NICE Board, NICE also highlighted a few more key methodological decisions: no changes made about the consideration of health inequalities because more work is needed; no change to the discount rate at this time because of the wider implications, with more evidence collected in the meantime; and general updates to ensure methods are appropriate for different evaluation types, including clearer instructions for measuring health-related quality of life when the preferred instrument (EQ-5D) is unsuitable, and on the use of appropriate medicine prices.[9] Most changes made were not listed or commented on by NICE.

Summary of Key Updates

In Table 1, we include a summary of what we consider as the most important decisions made by NICE in its review of the HTE methods, in terms of their implications and changes from current practice.

The perspective that health benefits of the same magnitude are of equal value (ie, regardless of other characteristics of the technology and people receiving those benefits) was retained; nevertheless, it is acknowledged that in "exceptional circumstances," additional factors affect NICE's decisions, which are identified and operationalized in the form of value "modifiers." A range of potential value modifiers were considered, most of which were rejected, including the use of a health inequalities modifier, for which it was decided that further work is needed. The EOL modifier, introduced in 2009, was removed and replaced with a new modifier for "severity of disease"; more information about its underlying principles, design features and implementation are provided in the Appendix in Supplemental Materials found at https://doi.org/10.1016/j.jval.2023.05.015. Originally NICE proposed that value modifiers should be "as consistent as possible" between all 4 HTE programmes, but its final decision was that the disease severity modifier is appropriate only for the Technology Appraisals Programme,[10] with the HST Programme (covering technologies indicated for ultra-rare conditions) continuing to have its own modifier.

Regarding sources of clinical evidence, the preference for randomized controlled trials was retained. However, the use of a comprehensive evidence base was also emphasized while clarifying situations in which nonrandomized studies can be used with the appropriate justification, including interventional and noninterventional "real-world" observational evidence. Further guidance on collecting and using RWE was subsequently developed by NICE.[11]

In terms of conditions of uncertainty, a greater degree of uncertainty will be accepted by NICE committees in specific circumstances in which generation of evidence is challenging, such as for children, rare diseases, and innovative technologies.

Regarding how NICE values future costs and health effects in the form of "discounting," NICE presented evidence supporting a change to the reference-case discount rate from 3.5% to 1.5% per year. Nevertheless, such a change would create several policy and affordability challenges across health and social care systems in the UK; therefore, wider policy discussions would be needed before any future change to the discount rate.

Other changes related to how appraisal committees evaluate evidence, make judgments and come to a conclusion, with the aim of improving the quality and consistency of structured decision-making processes followed by NICE committees.

Analysis of Key Decisions

Categorization of Updates

All 56 changes proposed in the first consultation were categorized by the authors, shown in Appendix Table 1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2023.05.015 as "critical," "moderate," and "limited" updates. This reflected the following: (1) the importance of the topic, that is, representing the significance of the topic given the current decision-making process, and (2) the degree of change or level of enforcement, that is, representing the potential impact of proposals on the topic to NICE's decision making. Consequently, "critical" updates corresponded to important methodological topics undergoing major change or an important reinforcement; "moderate" updates corresponded to important methodological topics undergoing smaller changes, more minor reinforcement, or helpful clarifications; and "limited" updates corresponded to less important methodological topics undergoing no significant change from previous practice, but providing additional guidance, clarification, or a proposal to undertake further work.

All "critical" updates are appraised and discussed below. "Moderate" updates of most interest are appraised in the

Table 1. Selected NICE decisions in its health technology evaluation methods revision.

Topic	NICE decision	Importance
Valuing the benefits of health technologies		
Equal value of benefits	Retain the perspective that health benefits are of equal value except in exceptional circumstances	Critical update
End-of-life modifier	Remove the end-of-life modifier	Critical update
Disease severity modifier	Introduce a new disease severity modifier	Critical update
Disease severity modifier	Use both proportional and absolute QALY shortfall for quantifying disease severity, with cut-offs for the levels for severity taking into account the number of conditions that would be eligible	Critical update
Disease severity modifier	Adopt an "opportunity cost neutral" principle to reallocate the weights applied to incremental QALYs currently invested in end-of-life treatments to those for severe disease	Critical update
Disease severity modifier	Use QALY weights of $\times 1.2$ for conditions with absolute QALY shortfall of ≥ 12 and < 18 or proportional shortfall of ≥ 0.85 and < 0.95; and $\times 1.7$ for conditions with absolute QALY shortfall ≥ 18 or proportional shortfall of ≥ 0.95. This essentially translates to cost-effectiveness thresholds of £36 000 and £50 000 per QALY gained	Critical update
Greater degree of uncertainty	Accept higher degree of uncertainty, that is, greater flexibility, when evidence generation is particularly difficult (for rare diseases, children, innovative or complex technologies)	Critical update
Health inequalities	Consider whether reducing health inequalities could be a modifier. Further work is needed to consider how this could be defined and implemented	Moderate update
Consistency of modifiers	The revised modifiers are relevant across all NICE HTE processes, except for the HST programme, and are considered within the relevant context and decision-making framework	Critical update
HST value modifiers	The HST programme will continue to apply the size of benefit modifier	Moderate update
Other potential modifiers	The introduction of potential modifiers for innovation, magnitude of benefit, curative potential, rarity, age, and uncertainty was considered, but not recommended	Moderate update
Discount rate	Retain the existing reference-case discount rate of 3.5%	Moderate update
Discount rate	Retain the provision for a nonreference-case discount rate of 1.5% in certain circumstances	Moderate update
Understanding and improving the evidence base		
Role of RCTs	Emphasize the role of a comprehensive evidence base, retaining the general preference for RCTs when feasible	Moderate update
Role of "real-world" evidence	More guidance on obtaining and using "real-world" evidence, in the manual and in a new "Real-world evidence framework"	Moderate update
Unrelated healthcare costs	Retain the exclusion of unrelated healthcare costs	Moderate update
Data extrapolation	Methods for extrapolating beyond the available data clarified and expanded	Moderate update
Value of information	The expected value of perfect information should not be routinely presented	Critical update*
Structured decision making		
Excluding background care costs ("not cost-effective at £0")	A nonreference-case analysis with background care costs removed may be considered alongside the reference case where the NHS is already providing other care that is expensive or would not be considered cost-effective at NICE's normal levels	Moderate update
Challenging technologies, conditions and evaluations		
Basket trials	When basket trials are used, they should be appropriately designed and analyzed, include relevant internal comparators, use a random allocation of treatments, use appropriate clinical endpoints, and enroll all relevant patient groups	Moderate update
Aligning methods across programs		
Use of cost-comparison analysis	Use a single, consistent approach for cost-comparison analysis in relevant circumstances in all HTE programmes	Critical update

HST indicates highly specialized technologies; HTE, health technology evaluation; NHS, National Health Services; NICE, National Institute for Health and Care Excellence; QALY, quality-adjusted life-year; RCTs, randomized controlled trials
*An initial proposal that this should be routinely presented was dropped from the final methods adopted.

Appendix in Supplemental Materials found at https://doi.org/10.1016/j.jval.2023.05.015. "Limited" updates were beyond the scope of this article.

EOL and Severity of Disease Modifiers

We support the principle that health benefits should generally have equal value but that a case may be made for exceptional "modifiers." We agree with the arguments for removing the EOL modifier in favor of a disease severity modifier given the evidence on societal preferences for such a value aspect.[12-14] Nevertheless, the available evidence is not clear cut and does not support any particular modifier design. Because of the lack of evidence on how much the society favors severe diseases over other (nonsevere) diseases, NICE adopted the assumption that the effect of the severity modifier should be equivalent (ie, opportunity cost neutral) to that of the previous EOL modifier, with a plan to reconsider this accordingly once new evidence has been generated. Another working assumption was that interventions could qualify for the modifier on the basis of either relative or absolute quality-adjusted life-year (QALY) shortfall, with the one yielding higher severity being used.

One key feature of the severity modifier design relates to the definition of the medium and high severity levels, based on the magnitude of QALY shortfalls. These were supposed to maintain the principle of using modifiers only in exceptional circumstances; however, based on NICE's retrospective analysis of its past appraisals (n = 364), the number of appraisals eligible for the severity modifier (n = 141, 39%) would be more than double the number eligible for the EOL modifier (n = 65, 18%).[6] Therefore, it does not seem accurate to classify this modifier as "exceptional," given that almost 40% of technologies may be eligible. More clarity is also required on the definition of "current treatment" because this determines the severity of the disease.

Another relevant point is that the incremental cost-effectiveness ratio (ICER) calculations (presented in Appendix Table 2 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2023.05.015) are based on a cost-effectiveness threshold of £30 000 per QALY gained, whereas NICE's standard threshold is supposed to be £20 000 to £30 000, with the top of that range intended to be reached only in particular circumstances (such as very low uncertainty). Therefore, £20 000 would be a better starting point for benchmarking QALY weighting, particularly given past empirical research demonstrating that a threshold of £20 000 to £30 000 is too high for the NHS, and that around £13 000 would be more appropriate.[15] Using a £30 000 threshold in these calculations might have underestimated the weights that should be applied by the modifier and may need to be recalibrated.

Based on the abovementioned points, it would be hard to argue that the severity modifier design is "evidence-based." The rationality and robustness of the underlying principles and working assumptions adopted, including the principle of "exceptionality," the principle of "opportunity cost neutrality," and the benchmarking against the previous EOL modifier are far from proven, with little empirical basis. Minor changes in the working assumptions or design characteristics, such as in the definitions of severity levels or the QALY weights, could have a substantial impact on the NHS budget. The application of the modifier only to the Technology Appraisals Programme, with more generous arrangements continuing to apply to the HST Programme, also undermines NICE's general aim for consistency and fairness between programs.

We encourage the future research proposed by NICE to engage with all relevant stakeholders including the public. Nevertheless, we are concerned that if the findings do not support the features of the new disease severity modifier, it may prove difficult to reverse. We would emphasize that the introduction of the disease severity modifier in its current form should be perceived as a temporary measure and that it should not constrain the final decision once the required evidence has been reviewed.

Greater Degree of Uncertainty

We support NICE's commitment to keep uncertainty as a key factor that influences decision making. Nevertheless, caution is needed in considering where greater uncertainty is acceptable because this cannot be generalized across all circumstances. We agree that for conditions such as rare diseases and pediatric illnesses, in which evidence generation can be more challenging, uncertainty may be unavoidable. We do not, however, see a justification for allowing greater uncertainty for "innovative and complex technologies," outside of provisional reimbursement in the context of existing managed access schemes that focus on evidence generation to reduce uncertainty. The manual does not define or give examples of "innovative and complex technologies," and there is no justification for why they may need to present evidence that is less certain. Without firm definitions it may be too easy for the manufacturers to claim that their own technology is "exceptional" and deserves exemption from normal evidence requirements. We welcome the fact that NICE dropped an earlier proposal according to which "technologies that provide large benefits" could be allowed greater uncertainty because this had not been justified.

The initial proposal by NICE to make the calculation of population expected value of perfect information (EVPI) a routine requirement (more information below in Expected Value of Perfect Information) would have helped determine those situations where it is reasonable to proceed to a decision without additional evidence, and we recommend its use as a routine output from cost-effectiveness models. In terms of evidence generation, the role of NICE in informing the clinical research agenda through closer linkages to the National Institute for Health and Care Research and Medical Research Council should be strengthened[16]; steering publicly funded research more efficiently is critical to address the evidence gaps, especially given the fiscal pressure surrounding clinical research and the NHS.

Expected Value of Perfect Information

Previous NICE methods guidance has not required estimates of the value of information (VOI).[17,18] In the first consultation round NICE proposed requiring estimates of EVPI, but this proposal was regrettably dropped at later stages, with no estimate of VOI recommended in the final manual. EVPI, together with other VOI approaches such as expected value of partial perfect information and expected value of sample information, would help in decision making, as long as it is presented in context and with sufficient guidance to inform the publicly funded clinical research agenda.[19,20] This would be particularly helpful in situations where there is substantial uncertainty; in particular, for technologies considered as candidates for the Cancer Drugs Fund (CDF) or the new Innovative Medicines Fund (IMF)[21] and given the past inadequacy of managed access arrangements to address clinical evidence uncertainty.[22,23]

The basis for NICE's decision not to adopt EVPI is questionable. NICE noted that stakeholders had disagreed with the proposal but did not discuss whether some of these objections may have been self-interested commercial concerns that formal use of VOI may weaken the case for some technologies being approved.[7] Another objection was that VOI increases complexity and workload;[7]

however, it has been implemented as a legal requirement by other HTA bodies with fewer resources than NICE,[24] and in any case, such logistical challenges would be equally applicable to the disease severity modifier, which was adopted after general support from stakeholders. Such a selective adoption or rejection of different methodological innovations based on stakeholder support rather than on technical merit could be concerning, given that stakeholders can act in alignment with their own interests, such as the prospects of increased or decreased likelihood of approvals.

Cost-Minimization Analysis and Cost–Consequences Analysis

NICE has widened the use of cost-minimization analysis (CMA), which it refers to as "cost-comparison analysis,"[25] to all HTE programmes as an alternative to cost–utility analysis. NICE commissioned 2 detailed reports to look into the methods of CMA[25,26]. These recommended that CMA should only be used after a rigorous consideration of clinical equivalence or noninferiority for all important outcomes, and gave detailed guidance on methods. Unfortunately, NICE did not adopt these recommendations; its new methods do not require evidence of noninferiority, allowing consideration of "similarity of health benefits […] based on a pragmatic view of all available evidence." At the same time, NICE has removed the option of conducting cost–consequences analysis, which was previously available in the Medical Technologies Evaluation Programme, although in practice was typically operated effectively as CMA. This unnecessarily restricts the types of analysis that may be conducted. Instead, NICE could have taken this opportunity to widen the availability of cost–consequences analysis, as routinely used in its Guidelines Programme, to all HTE programmes. In this way, all relevant outcomes—both costs and consequences—can be fairly and transparently assessed and reported in a disaggregated manner, and thorough uncertainty analyses conducted.

Discussion

While it is appropriate that NICE should regularly review its methods, the fundamental principles of economic evaluation for HTA have neither altered since the last revision in 2013, nor indeed since the inception of NICE in 1999. Although NICE faces constant pressure from industry, government, and patient associations to "innovate" its methods to enable faster and fairer access to promising therapies, this should not come at the expense of approving technologies with weaker evidence standards. If it were to become more permissive, NICE's responsibilities would shift away from its traditional gatekeeper role of protecting NHS resources, toward facilitating access to new therapies whose added clinical benefits might not justify their additional cost, resulting in a net reduction in population health.[27]

Overall, NICE's final changes to its HTE methods may be seen as relatively modest, and less radical than as presented throughout the consultation process. In the areas of health inequality, discounting, unrelated healthcare costs, and VOI, significant changes were considered and were possibly warranted, but NICE decided not to make any revisions at present to its methods. Other than the notable introduction of the disease severity modifier, whose design assumptions and operational aspects raise methodological concerns, most of the updates correspond to clarifications, formalization of best practice, and guidance for new challenges in line with existing principles, while allowing for more flexibility in some cases.

In terms of evidence sources, although it is welcome that the updated methods manual includes guidance for RWE generation standards, it will be important for NICE to enforce good practice by rejecting submissions that fail to adhere to these basic requirements, should the number of submissions relying entirely on RWE for comparative effectiveness increase.

NICE now offers more flexibility by accepting greater uncertainty when evidence generation is perceived to be particularly difficult, as in the case of rare diseases, pediatric conditions, and "innovative and complex technologies." In parallel, the role of managed access schemes which fast-track promising drugs, while further data collection takes place to address uncertainties in their value, is being expanded through the launch of the IMF, operating on similar terms to the CDF.[28]

Instead, such evidential deficiencies could be resolved by drug regulatory agencies at the stage of marketing authorization, requiring manufacturers to conduct appropriately designed clinical trials to provide the required evidence to demonstrate their products' therapeutic value and cost-effectiveness,[29] rather than seek solutions through additional post-licensing data collection and methods development. EVPI could also have been emphasized, and relevant methods developed, given its clear relevance for managed access schemes in the CDF and IMF.

One of the greatest achievements of NICE's methods review was to bring the methods of the 4 HTE programmes into closer alignment. Although some differences still exist, the same general principles underlie all the programmes, with exceptions explained.

NICE's ability for methodological reform is limited by existing policy commitments in the 2019 Voluntary Scheme for Branded Medicines Pricing and Access (VPAS).[30] This is a formal agreement between the Department of Health and Social Care and the Association of the British Pharmaceutical Industry outlining the maximum permitted expenditure on branded medicines and price increases over a period of 5 years. It imposes important restrictions on NICE methods because NICE's standard cost-effectiveness threshold of £20 000 to £30 000 per QALY gained cannot be changed during the agreement period (until the end of 2023).

Reconsideration of the ICER threshold level is already overdue because it is above the suggested approximate £13 000 per QALY, which has been empirically estimated to provide the maximum health benefit for the NHS budget, reflecting opportunity costs to the NHS.[15] Although the use of an ICER threshold higher than the actual opportunity cost will benefit some NHS patients, others will become disadvantaged,[27] reducing the overall population health because of the displacement of more cost-effective therapies with larger clinical benefits by cost-ineffective therapies with smaller benefits.

The adoption of new value modifiers has implications for the cost-effectiveness threshold. Whenever modifiers allow additional technologies to be reimbursed and utilized, this displaces other healthcare interventions.[31] Within a constrained budget, adopting new modifiers that enable more expensive technologies to be recommended implies the application of lower thresholds to technologies that do not satisfy the criteria for the modifier, unless their introduction is coupled with budget growth. For example, any future health inequalities modifier that favors or allows a higher cost-effectiveness threshold for interventions that reduce health inequalities, should also disfavor technologies that increase health inequalities by down-weighting estimated QALY gains. The disease severity modifier has been designed with the intention of being opportunity cost neutral compared with the EOL modifier; however, the EOL modifier was itself not neutral compared with the standard

threshold because it displaced spending from elsewhere in the NHS to EOL care. If it works as intended, the current change will merely maintain this opportunity cost discrepancy.

Another methodological choice with implications for the cost-effectiveness threshold is the discount rate. NICE determined that evidence supported reducing this to 1.5%. However, such a change in isolation would increase the number of technologies adopted and enable technologies to be approved at higher prices, therefore increasing the cost to the NHS, which would be unaffordable. Therefore, the cost-effectiveness threshold should be reviewed at the same time as the discount rate, with the prospects of a decrease in threshold to offset the effect of the decrease in discount rate.

NICE's actions are, however, constrained by the desirability for consistency in key HTA methods across UK healthcare bodies. A 2018 review of the Joint Committee on Vaccination and Immunization methodology proposed decreasing its discount rate and threshold, but this was declined by the UK government due to the inconsistencies that would have been created in relation to NICE.[32,33] Therefore, stronger coordination on methods development between NHS bodies, including NICE, the Joint Committee on Vaccination and Immunization, the National Screening Committee, and the UK Health Security Agency, is urgently needed. Meanwhile, the successor agreement to VPAS should not prescribe a set threshold, to allow a multi-agency review of the threshold and discount rate to be undertaken.

In terms of the overall process adopted by NICE for its methods review, we welcome the degree of stakeholder engagement through 2 public consultations, and the publication of the supporting evidence reviews. Nevertheless, the breadth and complexity of the material considered led to difficulties in the process. At the first stage, 56 proposals were put forward and commented upon, but NICE did not report its decisions on the majority of these at the second or final stages, leaving stakeholders to read the entire manual to discover which had been adopted or amended.

Conclusion

NICE must be commended for its willingness to critically examine all of its methods, and for the breadth and depth of the work which has fed into its methods review. Consequently, the updates cover a wide variety of issues, while bringing the methods of the 4 HTE programmes into closer alignment.

Nevertheless, as acknowledged by NICE itself, more work is needed on several methodological topics that might lead to further revisions. For example, the design and implementation of the new disease severity modifier, together with the details of any other potential value modifier in the future, such as a health inequity modifier, should be empirically validated. Further research should involve preference elicitation studies that engage all relevant stakeholders, including patients and members of the public.

Ultimately, NICE's gatekeeper role of protecting NHS resources for valuable interventions that can contribute toward improving overall population health should be safeguarded, grounded on its cost-effectiveness principles. Government and the wider healthcare community should not allow NICE to become permissive in using weaker evidence standards for new technologies with uncertain value, whose approval might risk reducing population health through displacing existing, cost-effective interventions.

Supplemental Material

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