

M C D A

Multiple Criteria Decision Analysis
for Healthcare Decision Making



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KEY POINTS

Multiple criteria decision analysis (MCDA) facilitates decision making that addresses multiple, often conflicting, objectives.

In healthcare, MCDA models can help address the competing demands of patients, payers, commercial stakeholders, regulators, and policy makers.

MCDA modeling can help guide public policy decisions impacting healthcare, including, but not limited to, reimbursement decisions.

MCDA can provide transparency of decision making, and increase accountability among decision makers.

THE NEED FOR MULTIPLE CRITERIA DECISION ANALYSIS

Around the world, there is a growing demand for broad, society-wide healthcare coverage that allows for sustained well-being and quality of life.



- Governments providing their citizens with any form of healthcare coverage must weigh the costs and benefits of every public expenditure. However, as people's expectations for healthcare change, governmental decision-making models should also evolve to include a wide range of considerations

To ensure access to essential care, it has been proposed that all countries should strive to devote at least 5% of GDP to promoting public health¹.



- Provision of healthcare is recognized as a primary responsibility of governments, but it is a responsibility that places extra pressure on healthcare systems with limited resources
- To ensure that resources are directed where they can do the most good, governments are looking for new tools to prioritize investment options

The World Healthcare Organization (WHO) has endorsed the establishment of national systems of health technology assessment (HTA) to set funding priorities for provision of universal health care².



- HTA is becoming a valued tool for helping national healthcare systems set reimbursement priorities^{3,4}

Current HTA tools typically focus on efficiency criteria such as cost-effectiveness, neglecting factors such as innovation, equity in access to care and adherence to clinical guidelines for best practices⁵.



- When diverse factors are acknowledged, the importance assigned to each factor in the decision-making is seldom transparent⁶

To address health care decision making holistically, multiple criteria decision analysis (MCDA) models can be used in HTA, wherein decision-making considers multiple healthcare objectives from the perspectives of different stakeholders⁷.

MCDA models employed to perform HTAs differ across healthcare systems, but may include criteria such as^{8, 9, 7, 10}:



Clinical outcomes



Family and caregiver burden



Costs



Social justice/
human dignity



Innovation (meeting an unmet need)



Profitability



Societal burden of disease

MCDA considers all priorities with greater transparency and accountability than deliberations occurring behind the closed doors of a government agency or board room^{8, 5, 11, 6}.



- Transparency allows patients, physicians, and other stakeholders to know the basis for decisions about the treatments made available to them

The WHO has reported that countries are increasingly using MCDA as a component of HTA to guide their reimbursement decisions, particularly with respect to orphan drugs that address unmet healthcare needs¹².

MCDA CAN BE PERFORMED USING BASIC STEPS

Critical steps for conducting an MCDA are⁵:

Defining the problem

and identifying the stakeholders who will be affected by the decisions made to address the problem.

Selecting and structuring criteria

Measuring performance

of an intervention in relation to the selected criteria.

Additional steps will differ according to the health system and the decision to be made, but may include⁷:

WEIGHTING CRITERIA

prioritizing the criteria used to evaluate decision alternatives.

SCORING METHODS

converting performance measures into scores based on stakeholders' preferences.

CALCULATING AGGREGATE SCORES

to arrive at the total value of an alternative.

PERFORMING UNCERTAINTY ANALYSES

to assess the robustness/reliability of the MCDA results.

REPORTING AND EXAMINING THE RESULTS

in a form that can help guide decision making in different situations.

EXAMPLE: MCDA APPLIED TO ASSESS THE VALUE OF A REAL-WORLD TREATMENT

The basic steps for conducting MCDA may be illustrated using the example of a new drug for a rare cancer⁹

Defining the problem

The question:

- Should a national health system reimburse the use of obinutuzumab for the treatment of rituximab-refractory indolent non-Hodgkin lymphoma (iNHL)?
- Treatment alternatives: obinutuzumab plus bendamustine followed by obinutuzumab maintenance, versus bendamustine alone
- The stakeholders:



Patients



Payers



Clinicians

Selecting and structuring criteria

Five criteria domains with 13 individual criteria were selected using the EVIDEM (Evidence and Value: Impact on Decision Making) framework, a tool developed to facilitate the process of selecting from among different healthcare alternatives⁹:

- The need for the intervention: 1) disease severity, 2) size of affected population, 3) addressing an unmet need
- Comparative outcomes: 4) comparative efficacy/effectiveness, 5) comparative safety/tolerability, 6) comparative patient-perceived health
- Type of benefit: 7) type of preventive effect, 8) type of therapeutic effect
- Comparative cost consequences of the intervention: 9) comparative medical cost, 10) other medical costs (eg, patient monitoring, cost of managing side effects), 11) nonmedical costs (eg, effect on work productivity)
- Knowledge of intervention: 12) quality of evidence, and 13) expert consensus/clinical practice guidelines support

For the cost and clinical outcomes data, bendamustine (alone) was the comparator because it is the only treatment with proven efficacy against resistant forms of iNHL

Measuring performance in relation to selected criteria

Stakeholder weighting of criteria

- Patients and clinicians prioritized treatments that address severe conditions and placed less importance on economic criteria
- Payers preferred treatments that addressed unmet needs, are less expensive than other treatments, and are supported by high-quality evidence

Stakeholder ratings of obinutuzumab

- All 3 stakeholder groups gave obinutuzumab high marks when considered in the context of disease severity, meeting an unmet need, and type of therapeutic effect
- Obinutuzumab had negative ratings compared with bendamustine based on cost criteria, which was expected given that the patent on bendamustine has expired

Overall score for obinutuzumab

- After combining criteria weights and scores, the overall value of obinutuzumab versus bendamustine was 0.45 (or 45% of the maximum value), and 0.55 when cost criteria were removed from consideration
- Key drivers of obinutuzumab value were disease severity (18% of total value), type of therapeutic response (13%), and unmet need (13%)

These results support the view that for most stakeholders, the value of an intervention go beyond traditional cost-effectiveness analyses.

MCDA studies provide useful evidence to decision makers on what constitutes the value of health interventions according to different stakeholder perspectives, and has the potential to structure and inform reimbursement decisions.

CONCLUSION: MCDA – IMPROVING HEALTHCARE DECISION MAKING

Systematic consideration of a broad range of objectives from the perspectives of multiple stakeholders promotes optimal healthcare decision making.

MCDA can help prioritize and address the objectives of each stakeholder, including:



Patients who want the most effective and safe treatment



Payers and public policymakers who want to minimize costs



Medicine developers who need to recover their R&D investments



Society as a whole, which wants to promote public health and the equitable allocation of healthcare resources

While supporting decision making in health care, MCDA can improve participation and transparency, which:



Empowers patients to participate in the decisions that shape their health, and reassures them about the basis for those decisions



Creates greater accountability for healthcare professionals and public-sector decision makers



Allows interested parties to understand the role and impact of each factor in the decision making

Inequity in the provision of healthcare or the delivery of suboptimal care is easier to address if the basis for healthcare decisions that caused them – as well as the motives and objectives of the decision makers involved -- are open to public scrutiny.

Ultimately, the emergence of formal, transparent, and systematic reimbursement decisions supported by tools such as MCDA will improve access to standard-of-care treatments, including innovative new treatments, and help make healthcare systems with limited budgets sustainable.

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