Exploring Potential: Performing Multi-Criteria Decision Analysis (MCDA) on Orphan Drugs in the Dutch Context

HTA268

E.A. Kok[1,2] and C.A. Uyl-de Groot[1]

[1]Erasmus School of Health Policy & Management, Erasmus University Rotterdam, Rotterdam, Netherlands

[2]Sanofi, Amsterdam, Netherlands

Let's connect!

INTRODUCTION

Orphan drugs can address an unmet medical need but have relatively high prices and uncertainty regarding efficacy due to their small target populations *[1-4].* It is also argued by some that their value is not adequately captured in the Quality-Adjusted Life Year (QALY) metric used in cost-utility analysis *[1]*. These factors make it challenging for orphan drugs to meet national cost-effectiveness thresholds, influencing reimbursement decisions and patient access *[1-4]*.

OBJECTIVE

This study aims to determine whether a Multi-Criteria Decision Analysis (MCDA) framework can support orphan drug reimbursement decision-making in the Netherlands.

METHOD (Mixed-Methods)

1. **Systematic literature review (N = 28)** to identify criteria for orphan drug value assessment.

2. **Criteria selection for draft MCDA framework** based on frequency and relevance claims, and following ISPOR MCDA guidelines *[5-6]*.

3. **Dutch stakeholder interviews (N = 12).** For preference elicitation, prioritization, direct rating, and swing weighting methods were used. Quotes made by participants were written down.
   - 3 pediatric clinicians
   - 3 policymakers
   - 2 hospital pharmacists
   - 2 patient representatives
   - 2 health economists

4. **Data analysis of preferences** via Ranked Summed Weighting (RSW) and Direct Assignment Technique (DAT) methods *[7]*. Refinement of MCDA framework via consideration of quotes and ISPOR MCDA guidelines *[5-6]*.

RESULTS

- The publications included in the systematic literature review (N = 28) described 32 quantitative and 15 qualitative criteria.

- The draft MCDA framework incorporated 12 quantitative (4 with sub-criteria) and 8 qualitative (also referred to as contextual) criteria.

- The different preference elicitation methods yielded the same overall results, with minor differences in preferences between stakeholder groups noticeable.

- The **final MCDA framework**, suitable for the evaluation of first-in-class orphan drugs in the Dutch context, contains **5 quantitative** and **4 contextual criteria** (Table 1).
  - To fulfill **completeness** requirements, additional **relevant sub-criteria** have been identified.

- Challenges were encountered in meeting nonoverlap, preference independence, and operational MCDA value measurement model assumptions.
  - **Nonoverlap**: between criteria and with the use of sub-criteria.
  - **Preference independence**: disease severity/unmet (medical) needs was sometimes preferred over the others due to emotional attachment.
  - **Operational**: for some criteria, no single value could be identified that was fundamental, absolute, natural, and/or objective, making it challenging to calculate and interpret an overall MCDA score.

Table 1: Proposed MCDA framework to support first-in-class orphan drug evaluation in the Dutch context

Criteria included in the MCDA framework	
Quantitative criteria	**Contextual criteria**
1. Efficacy/Effectiveness • *Disease-relevant clinical endpoints related to the progression rate* • *QALY gain* • *Health-Related Quality of Life (HRQoL)*	**1. Opportunity costs and affordability** • *Annual budget impact including the size of the population*
2. Therapeutic impact/benefit	**2. System capacity and appropriate use of the intervention**
3. Disease severity/ Unmet (medical) needs	**3. Population priorities and access** • *Age of target population*
4. Safety/Tolerability • *Seriousness of Adverse Event (AE)* • *Frequency of AE*	**4. Expert consensus/ Clinical practice guidelines**
5. Quality of evidence • *Type of evidence* • *Completeness of reporting* • *Relevance and validity*	

CONCLUSIONS

This research establishes a pioneering MCDA framework for evaluating first-in-class orphan drugs in the Netherlands to support healthcare decision-making. Even though all participants recognize its potential, there are still some hurdles to overcome in aligning with MCDA value measurement model assumptions before this method can be implemented in practice.

REFERENCES

1. Postma MJ, Noone D, Rozenbaum MH, Carter JA, Botteman MF, Fenwick E, et al. Assessing the value of orphan drugs using conventional cost-effectiveness analysis: Is it fit for purpose? Orphanet J Rare Dis 2022;17:157. https://doi.org/10.1186/s13023-022-02283-z.
2. De Andrés-Nogales F, Cruz E, Calleja MÁ, Delgado O, Gorgas MQ, Espín J, et al. A multi-stakeholder multicriteria decision analysis for the reimbursement of orphan drugs (FinMHU-MCDA study). Orphanet J Rare Dis 2021;16:186. https://doi.org/10.1186/s13023-021-01809-1.
3. Schey C, Krabbe PFM, Postma MJ, Connolly MP. Multi-criteria decision analysis (MCDA): testing a proposed MCDA framework for orphan drugs. Orphanet J Rare Dis 2017;12:10. https://doi.org/10.1186/s13023-016-0555-3.
4. Eichler H-G, Kossmeier M, Zeitlinger M, Schwarzer-Daum B. Orphan drugs' clinical uncertainty and prices: Addressing allocative and technical inefficiencies in orphan drug reimbursement. Front Pharmacol 2023;14:1074512. https://doi.org/10.3389/fphar.2023.1074512.
5. Thokala P, Devlin N, Marsh K, Baltussen R, Boysen M, Kalo Z, et al. Multiple Criteria Decision Analysis for Health Care Decision Making—An Introduction: Report 1 of the ISPOR MCDA Emerging Good Practices Task Force. Value Health 2016;19:1–13. https://doi.org/10.1016/j.jval.2015.12.003.
6. Marsh K, IJzerman M, Thokala P, Baltussen R, Boysen M, Kaló Z, et al. Multiple Criteria Decision Analysis for Health Care Decision Making—Emerging Good Practices: Report 2 of the ISPOR MCDA Emerging Good Practices Task Force. Value Health 2016;19:125–37. https://doi.org/10.1016/j.jval.2015.12.016.
7. Ezell B, Lynch C, Hester P. Methods for Weighting Decisions to Assist Modelers and Decision Analysts: A Review of Ratio Assignment and Approximate Techniques. Appl Sci 2021;11:10397. https://doi.org/10.3390/app112110397.

CONTACT INFORMATION

Corresponding author: E.A. Kok

Email: Ellen.kokx@hotmail.com

Disclosures: this work was sponsored by Sanofi, Amsterdam, Netherlands. EA Kok was employed by Sanofi during this project. CA Uyl-de Groot has nothing to disclose.

ISPOR Europe 2024, Barcelona, Spain.