Prioritization of comparative effectiveness research questions based on identification of the most relevant outcomes to improve clinical practice: an application of MCDA to dialysis research planning

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OBJECTIVE

• To prioritize comparative effectiveness research (CER) questions to improve home dialysis practice using an MCDA framework.

METHODS

• Thirteen candidate CER questions were generated and framed in PICO format (Population, Intervention, Comparator, Outcome) by an international network of nephrologists (n=28) using a nominal group process.

• An MCDA model, the Evidence and Value: Impact on Decision Making (EVIDEM) framework1 was adapted to include 11 criteria to assess the value of CER in improving practice from a holistic standpoint. Criteria pertained to the impact, context and outcomes of the CER question, CER study feasibility, economics and implementation of CER study findings. Quality of evidence generated by a CER question was also included as a criterion, with consideration of 13 substudies outlining the risk of bias and precision.

• As a first step, participants were asked to weight each criterion according to its importance in rating the CER questions, from their own perspectives and independently from the research questions. Weighting scale was 1 (low) to 5 (high). A weight of 0 was allowed if the participant thought the criterion should not be considered.

• Second, for each research question, participants assigned a score for each criterion of the MCDA matrix. Scoring scale was 0 (worst) to 3 (best).

• Average overall value estimates of CER questions were obtained by combining weights and scores using a linear model.

• Standard descriptive statistics (mean, min, max) were used to assess variability across participants.

CONCLUSIONS

• This application for home dialysis shows that holistic MCDA provides a useful tool for comparative effectiveness research to ensure prioritization of CER questions with highest benefits for improving clinical practice.

• Results of this ranking process were used to prioritize research planning for the international network of participant nephrologists.

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REFERENCES

3. Hemodialysis is the most commonly used treatment for end-stage renal disease in the absence of sufficient supply of donor organs. In 2013, more than 24,000 Canadians received hemodialysis.1-3

RESULTS

1. Weighing of decision criteria

• Participants assigned highest importance to the following criteria: impact on patient survival and other major clinical outcomes (mean weight: 4.7), Unmet needs (mean weight: 4.5), feasibility of CER question (mean weight: 4.3). Wide variations across participants were noticed on the remaining criteria.

2. CER Questions

• Participant nephrologists identified 13 research questions related to home dialysis.

3. Value Estimates of CER Questions

• Value estimates of CER questions, combining weights and scores from participants, varied between 48% and 73% of maximum value on the MCDA scale.

• Highest value estimates (> 70%) were obtained for research questions exploring the association between dialysis selection process or vascular access/antimicrobial prophylaxis and mortality/morbidity (Q1 and Q5).

• Lowest value estimates (48%) were obtained for CER questions exploring incidence/prevalence rates, baseline characteristics and outcomes of hemodialysis patients (Q7 and Q9).

• Ranking had excellent face validity for all criteria.

EVIDEM: evidence and value: impact on decision making.