Applying Continual Stakeholder Engagement to Develop Multi-Criteria Decision Analysis (MCDA) for Health Technology Assessment in Major Depressive Disorder

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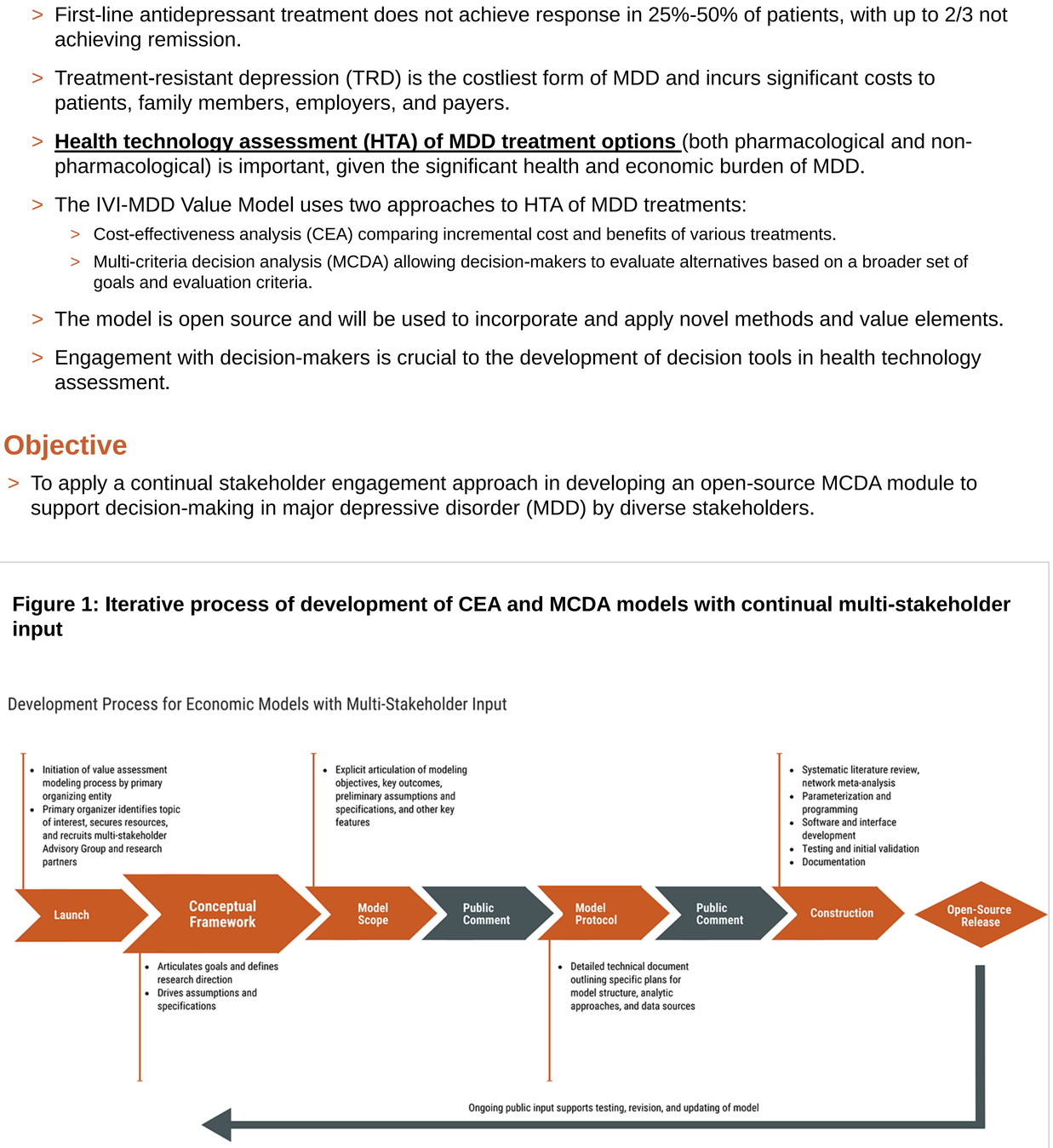
Background

- Major depressive disorder (MDD) is a serious mental health condition characterized by a set of debilitating symptoms that severely impact day-to-day functions of individuals affected.
- Symptoms vary by patient, but may include:
  - Changes in sleep
  - Changes in appetite
  - Lack of concentration
  - Loss of energy
  - Lack of interest in activities
  - Hopelessness or guilty thoughts
  - Changes in movement (less activity or agitation)
  - Physical aches and pains
  - Suicidal thoughts
- For MDD-inflicted patients, symptoms typically last >2 weeks.
- 2017 estimated prevalence of MDD was ~7.1% among US adults (~17.3 million).
  - ~7.6% among the workforce
- MDD's impacts on individual's functioning and quality of life can have deleterious health and economic impacts for individuals, employers, and society, including:
  - Higher healthcare costs
  - Decreased work participation and productivity
- Total economic burden is estimated to be $210.5 billion per year for the US.
  - Depression among US workers estimated as $44 billion annual loss to employers.
- **Treatments for MDD** include both pharmacologic and non-pharmacologic treatments:
  - Psychotherapy (e.g., cognitive behavioral therapy)
  - Psychoeducation and support groups
  - Antidepressant medications (e.g., selective serotonin reuptake inhibitors)
  - Brian stimulation therapies (e.g., electroconvulsive therapy)
  - Newer treatments (e.g., ketamine, esketamine)
- Guidelines generally recommend either of or a combination of psychotherapy and antidepressants as initial treatment for adults with MDD.
- **Challenges with MDD treatment** remain despite effective treatments.
- Only ~70% of patients with MDD receive treatment.
- First-line antidepressant treatment does not achieve response in 25%-50% of patients, with up to 2/3 not achieving remission.
- Treatment-resistant depression (TRD) is the costliest form of MDD and incurs significant costs to patients, family members, employers, and payers.
- **Health technology assessment (HTA) of MDD treatment options** (both pharmacological and non-pharmacological) is important, given the significant health and economic burden of MDD.
- The IVI-MDD Value Model uses two approaches to HTA of MDD treatments:
  - Cost-effectiveness analysis (CEA) comparing incremental cost and benefits of various treatments.
  - Multi-criteria decision analysis (MCDA) allowing decision-makers to evaluate alternatives based on a broader set of goals and evaluation criteria.
- The model is open source and will be used to incorporate and apply novel methods and value elements.
- Engagement with decision-makers is crucial to the development of decision tools in health technology assessment.

Objective

- To apply a continual stakeholder engagement approach in developing an open-source MCDA module to support decision-making in major depressive disorder (MDD) by diverse stakeholders.

Figure 1: Iterative process of development of CEA and MCDA models with continual multi-stakeholder input



Methods

- The MCDA was developed based on the 8-step process in ISPOR Good Practices reports and included multiple opportunities for stakeholder input (Figure 1).
- IVI convened a 20-member advisory group (AG) throughout the process to ensure MCDA module can effectively address real-world decision needs, including perspectives of:
  - People with MDD
  - Clinicians
  - Employers
  - Payers
  - Manufacturers
  - Researchers
- Facilitated discussions were conducted to define decision problems, prioritize outcome criteria, and identify performance metrics for different criteria.
- Three MCDA experts provided guidance to identify best approaches to incorporate stakeholder insights into MCDA and most appropriate methods for eliciting weights and scores.
- Design was also informed by the CEA model (e.g., outputs as performance metrics for criteria) and a patient preference study that estimated how patients make trade-offs in MDD treatment selection (e.g., preference weights as criteria weights).

Results

- The MCDA is designed to support population-level decision-making by multi-stakeholder committees to evaluate the value of individual treatments and treatment sequences for MDD.
- Previous work by the PAVE Center (U. of Maryland Baltimore) had used a stated preference instrument in a discrete choice experiment (DCE) to quantify preferences for treatment attributes, identifying key attributes for individuals living with MDD:
  - Mode of treatment
  - Time to treatment benefit
  - Level of MDD relief
  - Work quality
  - Interaction with others
  - Affordability.
- These attributes were considered, along with other criteria identified by the multi-stakeholder Advisory Group, when selecting criteria to include in the MCDA.
- 21 criteria across 4 domains that represented potential decision factors for diverse stakeholders were included:

Clinical Benefits: • Average days to achieve 1st remission • % of patients that never achieve response OR • % of patients that never achieve remission • Average months in complete or partial response OR • Average months in remission • Average number of relapses per patient	**Productivity:** • Total productivity impact OR • Absenteeism • Presenteeism
Caregiver impacts: • Unpaid caregiver costs	**Equity impacts:** • % of patients who can access treatment

- Criteria may differ, depending on perspective, by allowing users to select from the larger list of potential criteria. Some criteria input may come from CEA model output and the PAVE DCE.
- Initial weights will be derived based on multi-stakeholder committees and will be user-modifiable.
- Linear partial value functions will be used to convert performance measures into scores for each criterion.
- Aggregate scores will be calculated as the weighted sum of criterion-specific scores and used to determine ranking of different alternatives.

Conclusions

- Continual stakeholder engagement has generated important insights that have informed the design of the MCDA, which will yield a flexible open-source tool that can better support healthcare decision-making by various stakeholders.
- Individual preferences for MDD treatment revealed trade-offs between mode of treatment, time to treatment benefit, functional outcomes, and cost.
- These insights are important for quantifying the relative value of attributes influencing preferences and, ultimately, treatment decisions.

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Help improve the IVI-MDD model - Submit feedback by December 15, 2023

The model's R code, UI, and supporting documentation can be found at: https://thevalueinitiative.org/ivi-mdd-value-model/. We are seeking feedback on four major areas: Model design (structure, assumptions, key inputs), UI design, data gaps, and potential applications of the model.

Disclosure

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