Assessing the value of novel diagnostics
Methods and challenges: an academic perspective

Dr. H. (Erik) Koffijberg
Associate Professor - HTA
Dept of Health Technology & Services Research
TechMed Centre
University of Twente, the Netherlands

Introduction

• Discussed so far
  • The different dimensions of the VODI framework
  • The multidimensional value offered by diagnostic information

• Focus on methods needed to support this framework

• Consideration of
  1. Aspects that may be captured in a health economic framework
  2. Aspects that fall outside a health economic framework
Often aspects are not included in health economic analyses or models because:

- Evidence is lacking
- Inclusion of all aspects increases model complexity
- Researchers may not be aware of all relevant aspects

Exclusion may be on purpose and may be justified:
- But restricts the scope of the value assessment

Recent checklist: many aspects **can** be captured in a HE framework:
- Based on scoping review and consensus process
- Set of 44 items in 6 major categories across the entire pathway

Aspects in a health economic framework

• **Examples of items included in (almost) all evaluations (n=63)**
  - Costs of the diagnostic test(s) \( (n=62) \)
  - Test performance (sensitivity/specificity/NPV/PPV) \( (n=62) \)
  - Impact of the test on selecting the patient management strategy \( (n=56) \)

• **Examples of items included in only a few evaluations (n=63)**
  - Choice for test based on implicit (shared) decision-making \( (n=13) \)
  - Choice cut-off value of test \( (n=5) \)
  - Impact of incidental findings \( (n=2) \)
  - Patient’s adherence to treatment \( (n=14) \)

Aspects outside a health economic framework

• **Many examples of aspects not included in health economic framework**
  - Value of knowing, planning value
  - Tax revenues from more healthy and working citizens
  - Burden of disease on families and relatives

• **Wider evaluation scope necessary**
  - Link to existing methods to deal with multi-dimensional outcomes
Aspects outside a health economic framework

• Social Cost-Benefit Analysis
  • Includes non-health impact of policies, includes inter-sectorial effects
  • Data intense analysis, hard to express all consequences in monetary terms

• Multi-Criteria Decision Analysis
  • Can capture any number of outcome dimensions/criteria
  • Requires criteria weights for aggregation

• Distributional CEA (concept)
  • Introduces dual objectives into the health economic evaluation
  • Describes the the value judgments necessary to perform trade-offs
  • Requires a underlying/pre-defined utility function

Aspects outside a health economic framework

• Social Cost-Benefit Analysis
  National, domain specific, guidelines and reference prices
  (Example: de Wit et al, RIVM Report 2016-0065, 2016)

• Multi-Criteria Decision Analysis
  ISPOR MCDA Good Practice Guidelines

• Distributional CEA
  Tutorial and illustration on trade-off between objectives
  (Asaria et al. Health Econ. 2015 & Med Decis Making, 2016)
Collecting evidence

- **Practical feasibility**
  - Budget and time for evaluating new diagnostic tests is limited
  - Not all aspects / dimensions are likely equally relevant to every new test
  - Aspect studied determines the optimal study design
  - Some aspects may be hard to measure and quantify accurately

- **Prioritization of aspects to study and quantify is needed**
  - Based on contribution of aspects to the overall value of the test

Collecting evidence

- **Feasible with Value of Information Analysis***
  - Also outside a health economic context for outcomes other than cost/QALY
  - Also for complex model based analyses when using approximations
  - Requires some technical expertise

*Two ISPOR Value of Information Taskforce Reports are forthcoming (early 2019)*
*Report 1 describes the relevance and application of VOI analysis, report 2 the technical aspects of VOI analysis.*
• Existing guidance on evidence synthesis, on modelling (if applicable), and on reporting (ISPOR, Cochrane, ...)
  • Too much to mention....transparency and justification of
    • Included and excluded aspects
    • Metrics used to evaluate aspects
    • Included evidence, and reporting of the quality of evidence
    • The methods used for evidence synthesis and analysis
    • Full description of the model (if applicable) justification of modelling choices and structure
    • ....

Overview of methods

Aspects in the VODI framework

- Aspects commonly captured in HE framework
- Additional aspects in HE framework
- Aspects outside HE framework

Value function / weights
- Evidence aggregation
- Outcome trade-offs

VOI analysis
- Research prioritization
- Inform study design
Overview of methods

Aspects in the VODI framework

Aspects commonly captured in HE framework

Additional aspects in HE framework

Aspects outside HE framework

Value function / weights
- Evidence aggregation
- Outcome trade-offs

VOI analysis
- Research prioritization
- Inform study design

Discussion

• Challenges for manufacturers
  • Prioritizing research on test impact
  • Measuring test impact

• Challenges for decision makers
  • Formal and transparent incorporation of aspects not in the standard health economic framework into policy making

Efficiently generate relevant evidence

Develop acceptable value function

Multidimensional evidence-based value
Discussion

• Methods to support VODI framework
  • Useful but generic
  • Tests may have unique multidimensional impact

• Room for improvement by tailoring methods
  • Systematic approaches to measure test aspects
  • Approaches to identify the value of aspects
  • Systematic approaches to optimize test use

Questions?

Erik Koffijberg
H.Koffijberg@utwente.nl
Associate Professor - HTA
Dept of Health Technology & Services Research
TechMed Centre
University of Twente, the Netherlands