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Zorginstituut Nederland



Trends in health economics modeling
*Past, present and future of using simulation
models to support health economic evaluations*

Chair: Manuela Joore

Brief historic overview

*Talitha Feenstra – University of Groningen &
RIVM*

Trends and ways forward:

In Policy

Saskia Knies – Zorginstituut Nederland

In model types and validity

Erik Koffijberg – University of Twente

In uncertainty analyses

*Bram Ramaekers – Maastricht UMC+
Xavier Pouwels - University of Twente*



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Health Economic decision models

Very brief historic overview and explanation of use

Talitha Feenstra



Decision modeling applications to health in early sixties.

- Often rather theoretical (Data issues)
- Applied example: Resource allocation model for public health planning. A case study of tuberculosis control. Feldstein MS, et al. Bull WHO; 1973.
- Operations research, decision science.
 - Not specifically economic
 - Aim: optimization of objective



Notion of opportunity costs

“To spend more money on buying drugs and equipment, attracting more nurses, building more hospitals, or otherwise increasing health-care resources is also a decision not to spend that money on education, housing, or other desirable purposes. Selecting a particular method of health care is justified not because it is a " good " or " necessary " use of resources, but because it is a better use - better than all other uses to which they might be put.” Feldstein 1963



Health economic decision model

Textbook definition (applied methods of CE analysis in Healthcare, Gray et al.)

- Systematic quantitative approach to decision making under uncertainty
 - At least two decision options are compared and evaluated
 - in terms of expected costs and health outcomes.
 - Complements trial-based approach: extrapolate and synthesize.

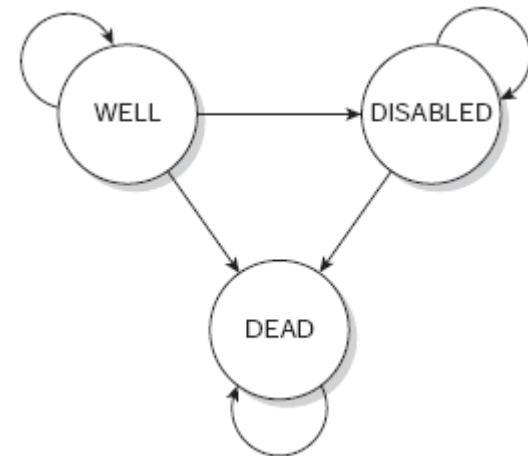
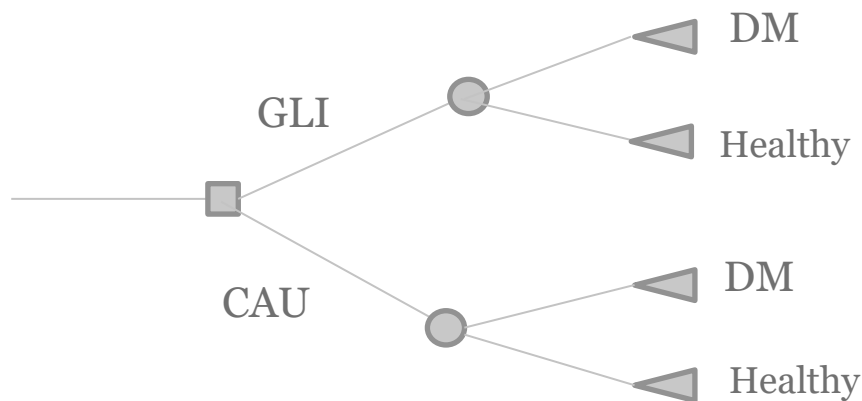


So what is a health economic decision model

- Roots in operations research and decision science
- Support decision making regarding health interventions
- Includes economic aspects: scarce resources/endless needs
- Devil is in the details
 - Measuring health outcomes
 - Proper formulation of objective and constraints
 - Measuring costs and avoiding double counting
 - Dynamic aspects: treatment now affects future health
 - Uncertainty
 - Heterogeneity

Focus from optimization to comparison

- Which scenario is better?
- To enable handling some develish details.





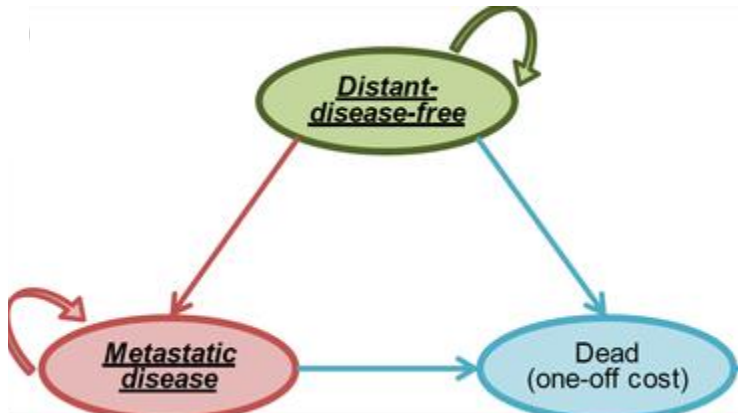
Some early models were quite complex .

- United Kingdom: SCRMOD by G.P.Knox
- Netherlands: MISCAN by van Ootmarssen et al. (early 80s)
- Screening for cancer
- Applied, with strong epidemiology roots
- Microsimulation
- Aim: scenario analysis



Current HE decision model

- Focus on comparison of scenarios
- Wide variety
- Heterogeneity and uncertainty addressed





Topic addressed in this workshop

Purpose of the workshop: highlight some of the challenges in nowadays modeling

- Trends and ways forward in policy: Saskia Knies
- Trends and ways forward in model types and validity: Erik Koffijberg
- Trends and way forwards in uncertainty analysis: Bram Ramaekers



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PharmacoTherapy, -Epidemiology & -Economics



Please give your opinion

- What do you think are important issues to tackle?
- What do you think about the role of health economic decision modeling?
- Could we make you change opinion?

**With proper registries and good trials,
health economic decision models are no
longer needed to support policy makers**

Agree

Disagree

Neutral



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What do you consider is the most important challenge for health economic decision modelers?

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The most important challenge for Health economic decision modelling is:

To adopt new and better types of models (stop with cohort state-transition (Markov)) models

To use better data in a better way.

To improve the methods for uncertainty analysis

To perform more and better model validation

To involve all stakeholders in the modeling process

Something else