Evidera
Evidence, Value & Access by PPD

DICE: A Unifying Modeling Approach Expressly Designed to Meet the Needs of Health Economic Analysis

Several decision-analytic modeling techniques are used to inform health technology assessments (HTAs). These methods have been borrowed from other fields, in the absence of any tools specifically for health economics (HE), and consequently often lead to oversimplification of the problem and/or loss of transparency. Discretely Integrated Condition Event (DICE) simulation is a novel and unifying approach specifically designed to meet HE modeling needs for accurate representation of HTA problems in a transparent and flexible way. Experience with DICE is growing rapidly as many companies are adopting it for their disease models, with applications spanning early decision analysis through formal health economic submissions.

Since DICE can reflect any aspect of a disease and its management and apply whatever values matter, its applications range from the basic cost-consequences and budget impact analyses, to full cost-effectiveness, cost-utility, and even Multi-Criteria Decision Analysis (MCDA). Multiple types of analyses can be run simultaneously since they can be implemented using the same core DICE structure.

ADVANTAGES OF DICE

SIMPLE CONCEPTS

The two concepts (conditions, events) that define a DICE are straightforward and match disease processes and their management realistically. Yet DICE can combine cohort Markov, individual, and time-to-event approaches.

STANDARD FRAMEWORK

Since DICE uses a standard framework, terminology, and a generic macro, users and reviewers need not "relearn" each new model. The disease-specific terms will change but the structuring and implementation remain consistent across models.

EASILY UNDERSTOOD & COMMUNICATED

DICE is very easy to understand and navigate. Even a person completely unfamiliar with modeling should be able to quickly understand the concept and review a DICE model.

MS EXCEL®

DICE can be implemented in standard MS Excel, with no add-ons or other requirements, making it easy to share a model across groups, adapt it, and critically review it.

EXTREMELY FLEXIBLE & TRANSPARENT

DICE simulation is very flexible. It can accommodate anything from very simple models to vast complex structures, all the while remaining very transparent and easy to debug. The technique eliminates the structural limitations of other methods as it can appropriately address all the components of the research question.

HOW DOES DICE WORK?

The disease process and its management are specified in terms of the *conditions* that can exist (aspects that persist over time) and the *events* that can happen (things that occur at a point in time). Each *event* has a set of consequences and these are processed when the event occurs. The level of each condition can change over time and is updated when an event occurs (hence *discretely integrated*).

A MODELING TECHNIQUE THAT CONCEPTUALIZES THE DECISION PROBLEM IN TERMS OF TWO FUNDAMENTAL ASPECTS

CONDITIONS

- Aspects that persist over time
- Have levels, which can change and affect events and conditions
- Many conditions can be present at once
- Interested in time spent at a given level (value)

EVENTS

- Aspects that happen at a point in time
- Can affect other events and conditions' levels
- Many can happen, at any time
- Interested in number that happen (and when)

EVIDICE®: AN EFFICIENT APPROACH TO DICE

Evidera has developed a user-friendly, transparent and validated Microsoft Excel-based platform for DICE applications. EviDICE provides an efficient and effective way to implement DICE using a wealth of built-in tools.

EviDICE®

For more information, publications, and a DICE demo please visit evidera.com/DICE.

Evidera

Evidence, Value & Access by PPD